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Slippery scales: Cost prompts, but not benefit prompts, modulate sentencing recommendations in laypeople

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Abstract:	<p>Do people punish more than they would if the decision costs were more transparent? In two Internet-based vignette experiments, we tested whether juvenile sentencing recommendations among U.S. adults are responsive to variation in the salience of the taxpayer costs and public safety benefits of incarceration. Using a 2 Cost (present vs. absent) x 2 Benefit (present vs. absent) factorial design, Experiment 1 (N = 234) found that exposure to information about the direct costs of incarcerating the juvenile offender reduced sentencing recommendations by about 28%, but exposure to the public safety benefits had no effect on sentences. Experiment 2 (N = 301) manipulated cost-benefit salience by asking participants to generate their own list of costs of incarceration, benefits of incarceration, or an affectively neutral, unrelated word list. Results revealed a similar selective effect whereby sentencing recommendations were reduced in the cost condition relative to the benefits and control conditions, but sentences in the benefit condition did not differ from the control. This combined pattern suggests that laypeople selectively neglect to factor cost considerations into these judgments, thereby inflating their support for punishment, unless those costs are made salient. These findings contribute to the debate on transparency in sentencing.</p>
Order of Authors:	Eyal Aharoni Heather M. Kleider-Offutt Sarah F. Brosnan Sharlene Fernandes
Opposed Reviewers:	
Response to Reviewers:	<p>Response to Reviews</p> <p>Reviewer #1: I really like that the design of the experiment has a 2x2 matrix structure, because it includes all cases and the results are very clearly seen. When I read design, it seems like everyone's money is unrelated to the answers, so you have no incentive to reveal your real preferences. There is an option to respond to what the investigator believes is expected of them.</p> <p>RESPONSE: We agree that, from a rational choice perspective, our cost-benefit manipulations are fairly minimal, and yet we still find preference differences between conditions. We'd expect even stronger effects with real, personal incentives. There is a possibility of demand characteristics in Experiment 1, which we now acknowledge on p. 26. We now explain how this risk has been minimized. The name of the case subject can determine the result of the experiment, so perhaps the results of the experiment can only be associated with this case and not with a general case. (1) The magnitude of the penalties may be associated with a similar connotation.</p> <p>RESPONSE: We agree that our conclusions are limited to the case of drug trafficking, which we acknowledge on p. 27. However, we've found similar effects using other crime types (p. 27). Consistent with the reviewer's suggestion, throughout the</p>

1 Slippery scales: Cost prompts, but not benefit prompts, modulate sentencing recommendations in
2 laypeople

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12 **Abstract**

13 Do people punish more than they would if the decision costs were more transparent? In two
14 Internet-based vignette experiments, we tested whether juvenile sentencing recommendations
15 among U.S. adults are responsive to variation in the salience of the taxpayer costs and public safety
16 benefits of incarceration. Using a 2 Cost (present vs. absent) x 2 Benefit (present vs. absent)
17 factorial design, Experiment 1 (N = 234) found that exposure to information about the direct costs
18 of incarcerating the juvenile offender reduced sentencing recommendations by about 28%, but
19 exposure to the public safety benefits had no effect on sentences. Experiment 2 (N = 301)
20 manipulated cost-benefit salience by asking participants to generate their own list of costs of
21 incarceration, benefits of incarceration, or an affectively neutral, unrelated word list. Results
22 revealed a similar selective effect whereby sentencing recommendations were reduced in the cost
23 condition relative to the benefits and control conditions, but sentences in the benefit condition did
24 not differ from the control. This combined pattern suggests that laypeople selectively neglect to
25 factor cost considerations into these judgments, thereby inflating their support for punishment,
26 unless those costs are made salient. These findings contribute to the debate on transparency in
27 sentencing.

28

29 **Keywords.** punishment; sentencing; salience; cost/benefit analysis; deontology; rationality;
30 heuristics and biases

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32

33 **Introduction**

34 When the benefits of a resource are transparent to the consumer but the costs are
35 obscured, consumption of the resource will tend to escalate [1]. Applied to public opinion on
36 criminal sentencing practices, scholars have theorized that such cost-benefit asymmetries could
37 lead people to support harsher punishments than they would under more balanced conditions [2–
38 4].

39 At the federal level, professional judges making sentencing decisions are generally
40 discouraged from considering the costs of incarceration, which might include direct monetary
41 costs, opportunity costs of foregone support for other public services, and collateral
42 consequences for offenders, their families, and communities. Consideration of such costs has
43 been argued to be the exclusive domain of legislators [5,6]. But what about the voters and
44 taxpayers whom these officials represent? If ordinary people inadvertently neglect the costs of
45 incarceration when forming punishment attitudes, or at least discount them relative to the
46 benefits (such as increased public safety), this behavior could systematically inflate their support
47 for punitive measures, as expressed through voting behavior and civic discourse. To understand
48 the degree to which ordinary people neglect to consider the costs of incarceration when forming
49 punishment attitudes, it is instructive to examine whether increasing people’s awareness of those
50 costs tempers their punitive attitudes. Such a finding would be useful for legislators and other
51 legal representatives tasked to represent the diverse values of their constituents.

52 At least three theoretical perspectives generate predictions about the way cost-benefit
53 exposure might affect lay punishment judgments. First, from a deontological perspective,
54 exposure to information about the cost of incarceration should not affect punishment judgments.
55 In this view, sentencing judgments should be based solely on the perpetrator’s level of

56 deservingness, not on the potential consequences [7]. In other words, the deontic moral
57 principles driving punishment are not “for sale.” Evidence for this prediction is supported by
58 research on sacred values, that certain types of values are absolute and unmoved by factors like
59 market pricing [8].

60 Second, from a classical, rational economic perspective, in contrast, rational actors like
61 voters and taxpayers might have self-interested reasons to factor information about the costs and
62 benefits of the punishment into their decision. According to this rational choice perspective, as
63 the costs of a given punishment increase, support for that punishment should decrease, and the
64 reverse is true for the benefits. A central tenet of this perspective is that, above all, rational actors
65 value cost and benefit information. If the benefits of a resource are more transparent than the
66 costs, consumption of the resource will tend to increase [1,2,4]. By inference, if the benefits of
67 incarceration are more transparent than the costs, people might punish more harshly than they
68 would under more balanced conditions. Moreover, rational actors should update their prior
69 valuation of the resource in light of new cost-benefit information. So, if they come to learn that
70 the cost of incarceration is substantially higher than they had believed, they might reduce their
71 support for it even though the true cost remained unchanged. Rational actors’ preferences should
72 also be consistent across broader contexts. That is, they should not be affected by contextual
73 factors that are exogenous to the relevant informational domain. By implication, being asked to
74 contemplate the existence of costs of incarceration—without being provided new cost
75 information—should not be sufficient to reduce one’s support for it.

76 Third, from a cognitive perspective, though people might place personal value on
77 information about the costs and benefits of a resource, their expressed preferences for that
78 resource may be influenced implicitly, by contextual factors outside the relevant informational

79 domain. Once such contextual factor is how salient, or conspicuous, that information is,
80 irrespective of its informational content. Marketers, for instance, have long understood how to
81 manipulate consumers' preferences by making the benefits of the product—such as a stronger
82 build—more salient than the costs, which are often relegated to the fine print. Such strategies
83 exploit the human tendency to only consider choice options that are most immediately available
84 in memory (i.e., the Availability Heuristics; Tversky & Kahneman, 1973[9]). Consistent with
85 this interpretation, research has shown, across a wide variety of applications, that people tend to
86 neglect to consider the other potential uses of their resources unless those other alternatives are
87 made explicit [10–14]. It follows that if the benefits of incarceration are more psychologically
88 salient than the costs, then ordinary people, including voters and taxpayers, might tend to support
89 the use of harsher punishment than they would if the costs and benefits were equally salient.

90 Consistent with this prediction, a growing body of evidence suggests that exposure to a
91 decision's resource constraints can reduce support for criminal justice programs or policies. For
92 instance, in traditional public opinion polls, stated support for tough-on-crime policies has
93 historically been high [15], but when respondents are asked to tradeoff between building more
94 prisons and expanding other costly programs like drug treatment, probation and preventive
95 interventions, their support for prisons ranks relatively low [15,16], suggesting that the salience
96 of competing choice alternatives changes people's expressed preferences.

97 Other studies have shown that direct cost information also reduces support for
98 punishment. In one early study, Thomson and Ragona found that, compared to no cost
99 information, exposing participants to the material costs of different criminal sanctions reduced
100 support for prison relative to community service [17]. In a more recent study, participants
101 evaluated a proposition to eliminate the use of prison for low-level offenses. The results showed

102 that emphasizing the costs of incarceration versus the benefits predictably increased support for
103 sentencing reform [18]. In a survey study of professional judges, exposure to information about
104 the typical direct cost of incarceration yielded lighter sentences compared to when that cost was
105 not provided [19], suggesting that the effect might not just be the result of a lack of legal
106 knowledge or training.

107 In all of these studies, cost information had a predictable impact, but there is no way to
108 know which judgment—with or without cost information—was more representative of people’s
109 genuine preferences. Are people erroneously discounting cost information when it’s absent, or
110 are they over-weighting it when it’s present? To address this question, we previously conducted
111 a pair of vignette-based experiments, asking participants to make sentencing recommendations
112 about an aggravated robbery and home invasion either with incarceration cost information,
113 without cost information, or under the stipulation that the punishment would be cost-free to
114 taxpayers (because the costs would be paid by a third party). First, we replicated the finding that
115 exposure to information about the direct cost of incarceration reduced sentence recommendations
116 relative to conditions with no cost information. But when no cost information was presented,
117 sentencing recommendations were no different from those made under cost-free conditions. To
118 the extent the cost-free condition captures people’s free punishment choices absent any self-
119 interested motivations, then the overall pattern suggests that when cost information is not
120 provided at all, people who would otherwise factor that information into their judgments punish
121 as if cost is not a factor [20,21]. In other words, cost information does not provoke people to
122 punish less than they intend; rather, people genuinely value the cost information, but without
123 explicit prompting, they neglect to consider it.

124 Together, these studies suggest that laypeople, and even legal experts, will consider the
125 decision costs in their punishment judgments, but they do so inconsistently. That is, they neglect
126 to factor cost considerations into these judgments unless those costs are transparent.
127 Colloquially, they appear to invoke a heuristic that “what you see is all there is” [22]. If so, this
128 tendency would obscure stakeholder’s genuine sentencing preferences and could generate over-
129 consumption of criminal justice resources.

130 Although the existing research has generated important insights into the effects of cost
131 salience and cost discounting on punishment judgments, less attention has been paid to the
132 specificity of these effects. First, do people place equal consideration on sentencing costs and
133 benefits, or is one more influential than the other? From a legal perspective, the benefits of
134 incarceration (e.g., deterrence and incapacitation) should play a central role [23]. But among
135 laypeople, research suggests that the extent to which such benefits guide punishment attitude
136 formation is relatively weak [24,25]. Moreover, research is lacking on the extent to which
137 support for incarceration is increased by benefit prompts (but see [18]) or the extent to which
138 such effects are counteracted by cost prompts. If punishment recommendations are more
139 responsive to cost prompts than benefits prompts, for instance, then from a rational choice
140 perspective, this would suggest that the cost prompt is more informative with respect to the
141 participant’s prior knowledge.

142 Second, if punishment judgments are responsive to exposure to the expected
143 consequences of incarceration, is this a calculated response to learning information that was not
144 previously known, or will people change their judgments as a result of cost-benefit salience
145 alone, even when no new information is provided? Thus far, the aforementioned research has
146 assumed a necessary role for cost *information*, typically including dollar values as a part of their

147 stimulus prompts. If new cost or benefit information is necessary to persuade people to change
148 their support for incarceration, this would be consistent with the rational choice perspective. But
149 if people change their punishment judgments in response to prompts containing no new
150 information (e.g., excluding dollar values and other costs), this would suggest that heuristic
151 processes guide typical punishment judgments. According to this cognitive perspective, if people
152 are simply reminded that incarceration is costly or beneficial, but are not provided with any
153 examples or amounts, and they still change their punishment judgments, then this shift is likely
154 based on psychological mechanisms of decision making (e.g. the availability heuristic).

155 Finally, existing research on cost neglect in punishment judgments has disregarded the
156 juvenile justice domain. One line of research indicates that public support for financing juvenile
157 incarceration tends to be relatively low, but in these studies, the putative cost of incarceration
158 was always explicit [26,27], precluding a test of cost salience. Examining punishment cost
159 neglect in the juvenile context is pertinent because juvenile incarceration costs are typically far
160 greater (about five times greater) than those of adults [28] To the degree that lay punishers value
161 cost considerations but lack the subject-matter knowledge, we expect that their punishment
162 recommendations will be at least as responsive to cost prompts in the juvenile context as has
163 been observed in adult contexts, but this prediction remains to be tested.

164 This article reports two general-population survey experiments: (1) examining the
165 independent contributions of provided cost and benefit information to punishment judgments for
166 juvenile offenders, and (2) examining the effect of cost and benefit prompting on such
167 judgments, but without providing any additional information about the costs or benefits. Human
168 subject research was authorized by the Georgia State University institutional review board:

169 H16349. Written consent was obtained from all participants. All study data files are available
170 from the Open Science Framework (DOI 10.17605/OSF.IO/UVNFY).

171 We predicted that, under both of these conditions, increased cost salience would drive
172 down sentencing recommendations because, while people care about the costs, previous research
173 supports that they do not spontaneously consider them without prompting. The inverse effect was
174 not predicted for increasing benefit salience. Although people often explicitly justify their
175 support for incarceration in terms of benefits like deterrence and incarceration, implicit measures
176 of punishment attitudes casts doubt on their actual motivational influence [24,25]. Moreover, to
177 the extent that people do value such benefits of incarceration, we suspect that such benefits are
178 already a salient feature of criminal punishment decisions, so any new benefit information
179 presented on this topic could have limited marginal effect. Evidence of a selective effect of cost
180 salience on juvenile punishment judgments is important because it would suggest the operation
181 of a systematic bias in how laypeople, including voters and taxpayers, weigh the costs versus
182 benefits of these punishment judgments.

183 **Experiment 1**

184 The purpose of this experiment was to test the specificity of the effect of cost salience on
185 punishment judgments in a juvenile justice context. Toward this end, we employed an
186 experimental vignette method wherein participants made sentencing recommendations about
187 individual offenders. Although laypeople do not render sentencing recommendations in juvenile
188 cases, we made this design choice because, compared to more abstract policy-position
189 approaches, case narratives about individual offenders are likely to provide a concrete way of
190 activating people's genuine punishment attitudes. If sensitivity to cost-benefit information is the

191 result of a calculated response to new information, the effect should be bidirectional, such that
192 exposure to the costs evokes punishment decreases, exposure to the benefits evokes punishment
193 increases, and when both cues are present, any cost and benefit effects should, to some degree,
194 cancel each other out. But if people do not value typical benefits of incarceration, or neglect to
195 consider them by default (i.e., without exposure), then the marginal effect of additional benefits
196 exposure on punishments should be relatively weak; Cost exposure, thus, would exert a
197 disproportionate effect on such punishments. A supplemental aim of this experiment was to
198 examine, in an exploratory fashion, whether any observed effects were influenced by
199 participants' self-reported political ideology, socioeconomic status (SES), or emotion regulation
200 abilities, or their explicit justifications for punishment (i.e., where retributivists less affected by
201 cost prompting?).

202 **Method**

203 **Participants**

204 Participants were 297 U.S. adults recruited on Amazon Mechanical Turk (see [29]) and
205 paid \$2.00 for their participation. Participation was restricted by age (18+ yrs.), country (U.S.),
206 and an approval rating of 96% or higher (see [30]). Individuals who had previously participated
207 in Mechanical Turk surveys by the principal investigator were blocked from participation.
208 Eighteen were excluded for incomplete data; 11 for failing a multiple-choice attention check
209 (“What are the colors of the American flag?”); 23 for failing to recognize the correct crime type
210 from a multiple-choice list; and 11 for failing to recognize the cost condition to which they were
211 exposed. The remaining 234 reportedly were 50.0% male, 48.7% female, and 1.3% “other” or
212 “prefer not to answer”; 13.2% Hispanic or Latino; 76.5% White/Caucasian, 13.2% Black or

213 African American, 7.3% Asian, and 4.7% other/unknown (ethnic and racial categories were non-
214 exclusive); and with a mean age of 36.4 ($SD = 11.7$). Numbers of participants were similar
215 across conditions, as were gender ratios: Cost Absent ($n = 117$, 50.4% M), Cost Present ($n = 114$,
216 50.9% M), Benefit Absent ($n = 113$; 52.2% M), Benefit Present ($n = 118$; 49.2% M).

217 **Design and Hypotheses**

218 The study design was a 2 Cost (present vs. absent) x 2 Benefit (present vs. absent)
219 between-subjects factorial design with random assignment to conditions. In the present-present
220 condition, the order of the cost and benefit statements were counterbalanced. The dependent
221 measure was a sentencing judgment about time in juvenile detention.

222 *H1.* We hypothesized a main effect of cost salience such that sentencing
223 recommendations would be lower when cost information was present than absent. We did not
224 predict a change in punishment as a function of benefit salience or the cost-by-benefit interaction
225 because we expected that people would have already factored the benefit information into their
226 initial punishment judgments by default.

227 **Materials and procedure**

228 The criminal case summary was adapted from Rachlinski et al. [19] and described a
229 fictitious juvenile defendant convicted of drug trafficking, followed by statements putatively
230 provided by the sentencing advisory commission. The statement of the benefits of incarceration
231 reported that incarcerating the defendant would likely prevent three new violent crimes for each
232 year in custody because his detainment would reduce the number of unlawful debt collections
233 and other risky encounters in the criminal supply chain. (The stipulation of “three” violent
234 crimes was empirically derived from a pilot test of 32 independent Mechanical Turk workers
235 responding to the multiple choice question: “How many violent crimes do you think are actually

236 prevented when a drug trafficker is incarcerated for 1 year in prison in the United State on
237 average?").)

238 The statement of the costs of incarceration reported the true-to-life taxpayer cost of
239 \$148,000 for each year of custody [28]. Defining the cost of incarceration in terms of direct
240 monetary cost is admittedly narrow and ignores the many other potential collateral consequences
241 of incarceration. To offset this problem, we specified that the funds spent on incarceration is
242 money that could otherwise have been invested in reentry support services known to reduce the
243 risk of reoffending. This design choice means that it is not possible to determine which of these
244 two cost types is the primary driver of any observed effects, but if they operate in combination,
245 this would be consistent with our theoretical framework. The crime of drug trafficking was used
246 because it is a common example of a crime that is relatively moderate in seriousness, and while
247 an explicit test of the effect of crime seriousness was beyond the scope of this project, we
248 nonetheless expect that sensitivity to cost information will be greatest among crimes of low to
249 moderate seriousness. The vignette text and manipulations were as follows:

250 Joseph Campbell, a high school dropout, was arrested at a party for allegedly selling 50
251 grams of methamphetamine. Joseph was charged with drug trafficking. The evidence at trial,
252 which included testimony from an undercover police officer and two other witnesses, showed
253 convincingly that he exchanged the methamphetamine for \$3,000 in cash. Joseph is 17-years-old,
254 has a spotty employment record, and a history of drug addiction. He has one prior conviction for
255 possession of methamphetamine.

256 In your jurisdiction, methamphetamine sales carries a maximum sentence of 6 years in a
257 secure juvenile detention center. [BENEFIT STATEMENT:] According to your jurisdiction's
258 sentencing advisory commission, incarcerating Joseph would likely prevent 3 new violent crimes
259 for each year of custody. This is because his detainment would reduce the number of unlawful
260 debt collections and other risky encounters in the criminal supply chain. On the other hand,
261 [COST STATEMENT:] the commission states that incarcerating Joseph would likely cost
262 taxpayers \$148,000 for each year of custody. This is money that could otherwise have been
263 invested in reentry support services known to reduce the risk of reoffending.

264
265 Immediately following the narrative, the dependent measure was delivered. Participants
266 were asked to indicate how much time in a juvenile detention center the defendant should receive

267 on a ratio slider scale from 0 to 6 years. We also assessed participants' relative endorsement of
268 five common motivations for punishment [31] to test whether people who are motivated by
269 retribution might be less responsive to cost salience than others. This instrument asks
270 respondents to rank order statements describing one of four justifications for punishment:
271 retribution, specific deterrence, general deterrence, and rehabilitation (e.g., "People who commit
272 crimes should be punished because: [RETRIBUTION] by punishing them we give them what
273 they deserve and giving offenders their just deserts is a good thing"). Respondents who ranked
274 the retributive item among their top two justifications were classified as relatively supportive of
275 retributivism. All others were classified as more supportive of utilitarianism. The Difficulties in
276 Emotion Regulation Scale (DERS-SF [32]) was also collected to explore its relation to cost
277 salience, predicated on a significant association between DERS total score and punishment
278 recommendations. Finally, we assessed participants' self-reported demographic information,
279 including political ideology, from very liberal (-3) to very conservative (+3), and SES (lower,
280 lower-middle, upper-middle, and upper).

281 **Results**

282 As a check of the credibility of the evidence, participants were asked whether there was
283 enough evidence to support the defendant's conviction. The vast majority (94.83%) answered
284 affirmatively.

285 Next, a two-way Analysis of Variance (ANOVA) was employed to test for any
286 independent and interactive effects of cost and benefit information on recommended sentence
287 length. (A pre-test showed no main effect of order on sentencing recommendations within the
288 present-present condition, $F(1, 57) = .09, p = .771$, so we did not enter order as a factor in our

289 models.) The overall model was significant, $F(3, 230) = 5.02, p = .002, 1-\beta = .91$, and all
290 comparisons were consistent with our hypothesis. First, we found a main effect of cost, $F(1, 230)$
291 $= 13.58, p < .001, 1-\beta = .96$, such that sentencing recommendations were significantly (~28.7%)
292 lower in the presence of information about the cost of incarceration ($M = 1.96, SE = .15, 95\% CI$
293 $[1.66, 2.26]$) than without it ($M = 2.75, SE = .15, 95\% CI [2.45, 3.04], \eta^2 = .056$, Bonferroni
294 corrected). Yet, there were no main effects of benefit information, $F(1, 230) = .89, p = .348, 1-\beta =$
295 $.16, (M\text{-present} = 2.25, SE = .15; M\text{-absent} = 2.45, SE = .15)$, and no cost-by-benefit interaction,
296 $F(1, 230) = .51, p = .478, 1-\beta = .11$.

297 To more fully evaluate the effect of cost information on sentences, we constructed a
298 hierarchical linear regression to rule out possible influences of age and gender. Age and gender
299 were entered as first-level predictors, and the cost condition was entered at the second-level.
300 Neither age nor gender exerted main effects on sentence length, $R^2 = .009, F(2, 201) = .90, p =$
301 $.409$, but cost information exerted the predicted effect above and beyond age and gender, $R^2 =$
302 $.044, t(201) = -2.71, p = .007, B = -.618, \eta_p^2 = .188$. Taken together, punishment judgments
303 were selectively responsive to cost information. Presenting benefit information did nothing to
304 counteract this effect. (See Fig. 1.)

305 [INSERT FIG. 1 AND CAPTION HERE]

306 **Figure 1.** Sentence recommendations were lower following exposure to information about the
307 cost of incarceration relative to no cost information ($p < .001$), but sentence recommendations
308 with and without exposure to benefit information did not differ from one another ($p = .348$), nor
309 was there a cost-by-benefit interaction ($p = .478$).

310

311 Next, we asked whether people who ranked retribution as an important justification for
312 criminal punishment might be less responsive to the reductive effect of cost salience on
313 punishment than those who ranked retribution as less important. According to a two-way
314 ANOVA with cost level (present vs. absent) and punishment justification (support for
315 retributivism vs. utilitarianism) as between-subjects factors, there was not a significant
316 interaction between support for retribution and cost salience on sentencing recommendation, $F(1,$
317 $230) = .97, p = .33, 1-\beta = .16$, suggesting that sensitivity to cost salience might have similar
318 effects on individuals regardless of their explicit justifications for punishment. However,
319 descriptively speaking, the mean scores demonstrated consistency with the predictions of such an
320 interaction, whereby participants who were exposed to cost information and who ranked low in
321 the retributive motive tended to recommend lighter sentences than those in the other three
322 conditions (retributive/cost present $M = 2.86, SE = .49, 95\% CI [1.90, 3.83]$; retributive/cost
323 absent $M = 2.98, SE = .54, 95\% CI [1.91, 4.04]$; non-retributive/cost absent $M = 2.73, SE = .16,$
324 $95\% CI [2.42, 3.03]$). Thus, it is possible that this model was not sufficiently powerful to detect a
325 true interactive effect.

326 Last, we separately examined whether the effect of cost salience on sentencing
327 recommendations might depend on self-reported political ideology or SES (characterized by a
328 median split), or on the total score of the Difficulties in Emotion Regulation Scale (DERS). A
329 two-way ANOVA with political ideology yielded a significant overall model, $F(3, 228) = 8.07, p$
330 $< .001, 1-\beta = .99$, with a marginal interaction, $F(1, 228) = 3.18, p < .076, 1-\beta = .43$, suggesting
331 that, relative to no cost information ($M = 2.65, SE = .21, 95\% CI [2.23, 3.08]$), the presence of
332 cost information tended to reduce sentencing recommendations for liberals ($M = 1.50, SE = .21,$
333 $95\% CI [1.09, 1.92], p < .001$) but not conservatives ($M = 2.84, SE = .21, 95\% CI [2.44, 3.25], p$

334 = .18). SES, however, did not moderate the effect of cost salience on sentence recommendations,
335 $F(1, 219) = 2.29, p = .13, 1-\beta = .34$. Finally, DERS score was not correlated with sentencing
336 scores ($r = .02, p = .749$), so no further analysis of this question was conducted.

337 The overall pattern of results suggests that juvenile punishment recommendations are
338 predictably responsive to exposure to information about the costs of incarceration but not the
339 benefits. The cost effect discredits the deontological prediction that punishment judgments
340 should exclude cost considerations. In contrast, the cost effect can be explained by the rational
341 choice perspective, which predicted that people should factor new cost information into their
342 punishment judgments. From this perspective, the cost effect permits the inference that
343 participants, on average, valued the costs of incarceration, and the cost information provided was
344 significantly greater than any prior estimate they might have consulted.

345 The null effect of the benefit information in this first experiment is open to interpretation.
346 This result could potentially indicate that our participants did not value deterrence, but this
347 interpretation would directly contradict a body of research that suggests otherwise (e.g., (33–
348 35)), as well as our own pilot data. A more plausible explanation, still consistent with the
349 economic framework, is that the benefit information provided was not ultimately informative to
350 participants because the deterrent effect, as we defined it, was on par with what participants
351 already believed. That is, it did not require them to update their prior beliefs, so an increase in
352 punishment was not necessary. While this rational choice perspective is plausible, the cognitive
353 perspective made similar predictions. Experiment 2 was constructed to de-confound these
354 alternative explanations.

Experiment 2

355

356 Extending the findings of Experiment 1, Experiment 2 tested whether the reductive effect
357 of cost exposure on punishment is a calculated response to learning new information relevant to
358 the decision, or instead the result of cognitive availability, whereby a minimal prompt about the
359 presence of those costs is sufficient to inspire preference change, even without new information
360 being presented.

361 The rational choice perspective is predicated on the introduction of new cost-benefit
362 information and predicts consistency across exogenous contexts. So, if sentencing attitudes are
363 truly driven by economic reasoning, then these attitudes should not be influenced by mere
364 appeals to prior beliefs about the costs and benefits of incarceration. But if sentencing judgments
365 change in response to self-generated cost-benefit information, even when no new information is
366 provided, this would violate the consistency tenet of the rational choice perspective and instead
367 favor the cognitive perspective. According to this perspective, though people may ultimately care
368 about the costs of incarceration, they do not spontaneously consider those costs without the aid
369 of external prompts that make these costs more salient. This prediction formed the basis of
370 Experiment 2.

371 Method

372 Participants

373 Participants were 343 U.S. adults recruited on Amazon Mechanical Turk. All recruitment
374 procedures were the same as Experiment 1 except that they were paid \$1.50 for their
375 participation. Twenty-one were excluded for incomplete data; 7 for failing the “American flag”

376 attention check; and 14 were excluded for failing to recognize the correct crime type from a
377 multiple-choice list. The remaining 301 reportedly were 57.1% male, 42.5% female, and 0.3%
378 preferred not to answer; 11.0% Hispanic or Latino; 81.1% White/Caucasian, 9.0% Black or
379 African American, 7.0% Asian, and 5.3% other/unknown (ethnic and racial categories were non-
380 exclusive); and with a mean age of 37.7 ($SD = 12.4$). Numbers of participants were similar
381 across conditions: Salient Cost ($n = 105$, 65.7% M), Salient Benefit ($n = 97$, 48.5% M), Control
382 condition ($n = 99$; 56.6% M).

383 *Design and Hypotheses*

384 The experiment employed a between-subjects, three groups design with random
385 assignment to one of three prompts: salient cost, salient benefit, and a control condition. A cost-
386 and-benefit condition was not included in this design because no such interaction was observed
387 in Experiment 1. All participants read a hypothetical criminal case summary about a juvenile
388 drug trafficking case. The two treatment conditions prompted participants to generate three
389 examples of costs and benefits of incarceration, respectively. The control condition prompted
390 participants to generate a list of three unrelated words. This condition enables us to understand
391 how the cost and benefit conditions compare, not just to each other, but to a thematically neutral
392 benchmark designed to take about the same amount of time. We limited each list to three items
393 to minimize demand characteristics. Specifically, research on the availability heuristic suggests
394 that when people are unable to generate a large number of requested items, they tend to interpret
395 their relatively low performance as evidence that the real world must not contain many instances
396 of that item (36). The dependent measure was a sentencing judgment.

397 ***H1.*** Our primary hypothesis was that, when participants were minimally prompted
398 (without the provision of new cost information) to consider the negative consequences of

399 incarceration, sentencing judgments would be more lenient than in either the control or the
400 salient benefit conditions.

401 *H2.* Based on the results of Experiment 1, we also predicted that sentencing judgments in
402 the salient benefit condition would not differ from the control condition.

403 **Materials and procedure**

404 We presented a vignette describing a fictitious case of juvenile drug trafficking. The
405 vignette was identical to that of Experiment 1 with two exceptions: (1) The new vignette
406 included an additional clause clarifying that the defendant was tried as a juvenile for a felony; (2)
407 Instead of positing substantive cost and benefit information, the following manipulation was
408 administered: In the salient cost condition, participants were asked to imagine that they had just
409 read a newly released government report stating that custodial sentences produce many
410 [negative] consequences for the community. They were then instructed to list three examples of
411 possible [negative] consequences of incarcerating the defendant. Participants in the salient
412 benefit condition followed the same instructions for positive consequences. This experiment also
413 included an affectively neutral condition to control for the additional cognitive demands evoked
414 by the treatment conditions, such that those who were not exposed to cost or benefit prompts
415 would engage in an unrelated task of similar difficulty. In the control condition, participants were
416 instructed to list three words whose third character is the letter ‘k’ (adapted from Tversky &
417 Kahneman, 1973). (See S1 Appendix for exact vignette text and manipulations.)

418 Following the salience manipulation, the dependent measure was delivered. Participants
419 were asked to indicate how much time in a juvenile detention center the defendant should receive
420 on a ratio slider scale from 0 to 4 years, slightly shorter than the scale used in Experiment 1 to
421 approximate a more normal distribution. All additional survey questions were the same as in

422 Experiment 1 except that the DERS was not included, and the punishment justification scale
423 included an additional statement for ranking the importance of giving the victim's friends and
424 family the revenge they deserve (coded as a retributive item).

425 Text-based responses to the listing task were coded for qualitative analysis. All such
426 responses were coded by two independent, trained raters who were blind to the study hypotheses.
427 Coding categories were predefined by the investigators. The initial categories for positive
428 consequences were: Incapacitation, Specific deterrence, General deterrence, Rehabilitation,
429 Justice, and Revenge. The initial categories for negative consequences were: Increased
430 recidivism; Monetary/Opportunity costs, Collateral consequences for defendant, Collateral
431 consequences for defendant's family, and Violates principles of fairness/justice. A miscellaneous
432 category was also included. Interrater reliability was assessed using all responses except those
433 assigned by either rater to the miscellaneous category and exceeded conventional criteria ($Kappa$
434 = .828). Coding discrepancies between raters were then resolved by the principal investigator
435 where justified by our a priori category definitions. Finally, to increase representation of low
436 frequency categories, the categories were aggregated into the following scheme:
437 Incapacitation/Deterrence, Rehabilitation, and Retribution (for the positive consequences
438 condition), and Collateral consequences for the offender and family, Collateral consequences for
439 the community, and Monetary/opportunity costs (for the negative consequences condition).

440 **Results**

441 Our hypotheses were tested using a one-way ANOVA with prompt (salient costs, salient
442 benefits, vs. the control condition) as the independent variable and sentence recommendation as
443 the dependent variable. The model was significant, $F(2, 298) = 3.81, p = .023, 1-\beta = .69$. As

444 predicted, participants who were prompted to generate a list of negative consequences of
445 incarceration recommended significantly (~20%) lower sentences ($M = 1.74$; $SE = .13$, 95% CI
446 [1.49, 1.99]) than those prompted to generate a list of positive benefits of incarceration ($M =$
447 2.18 ; $SE = .13$, 95% CI [1.93, 2.43], $p = .043$, $\eta^2 = .019$) and those in the control condition ($M =$
448 2.16 ; $SE = .12$, 95% CI [1.92, 2.41], $p = .047$, $\eta^2 = .019$), but sentences across the latter two
449 conditions did not differ, $p = .996$, suggesting a cost-specific effect, using Tukey's HSD
450 correction for multiple comparisons. (See Fig. 2).

451 To rule out any possible influence of age and gender, we constructed a hierarchical linear
452 regression with age and gender as first-level predictors, and prompt at the second level. As in
453 Experiment 1, age and gender did not exert main effects on sentence recommendations, $R^2 =$
454 $.002$, $F(2, 281) = .29$, $p = .750$, but the prompt type retained the predicted effect controlling for
455 age and gender, $R^2 = .02$, $t(281) = -2.32$, $p = .021$, $B = -.218$, $\eta_p^2 = -.138$.

456 Since the control condition prompted participants to generate single words only, it is
457 possible that differences between treatment and control conditions could be attributed to
458 differences in effort. As a proxy for effort, we constructed a one-way ANOVA to test for
459 differences in response time across the three prompt types, but none were found, $F(2, 298) =$
460 1.56 , $p = .212$, $M = 193.56$ s, $SE = 9.10$, 95% CI [175.66, 211.47]

461 [INSERT FIG. 2 AND CAPTION HERE]

462 **Figure 2.** Sentence recommendations were lower following the cost prompt relative to the
463 control prompt ($p < .05$) and benefit prompt ($p < .05$), but the control and benefit conditions did
464 not differ from one another ($p = .996$).

465 As in Experiment 1, we used a series of two-way ANOVAs to separately examine
466 whether the effect of cost salience on sentencing recommendations might depend on self-
467 reported retributive punishment attitudes, political ideology, or SES. However, cost salience did
468 not interact with any of these variables, $F(2, 295) = .25, p = .781, 1-\beta = .09, F(2, 292) = .21, p =$
469 $.811, 1-\beta = .08$, and SES, $F(2, 292) = .15, p = .862, 1-\beta = .07$, respectively.

470 As a supplemental test of the role of retributive attitudes on punishment
471 recommendations, we explored this relationship using participants' free-text responses about the
472 costs and benefits of incarceration. First, we asked whether, by isolating participants who listed a
473 retributive benefit of incarceration, we would observe an increase in punishment relative to those
474 in the control condition. However, the small number of participants in this group precluded its
475 analysis ($n = 12$), which itself suggests that most people might not tend to think of retribution as
476 a benefit of incarceration. Next, we conducted the inverse test—isolating those who listed only
477 non-retributive benefits—in search of a punishment decrease in this group relative to control
478 participants. However, the overall pattern remained unchanged. That is, no difference in
479 punishment was observed between those who listed non-retributive benefits ($M = 1.92; SE = .09,$
480 $n = 184$) and controls, ($M = 2.16; SE = .12, n = 105$), $t(287) = -1.55, p = .122$.

481 As a test of our supposition that costs of incarceration are naturally less salient to
482 decision makers than the benefits, we tabulated the frequency percentage of two types of text-
483 based responses to the listing task: monetary/opportunity cost relative to other costs, and reduced
484 recidivism relative to other benefits. This choice corresponds to the way costs and benefits were
485 operationalized in the criminal case summary. Of all three benefit types,
486 incapacitation/deterrence ranked first (e.g., “The offender can't re-offend while incarcerated.”),
487 representing 56.00% of all benefits listed. The others were Rehabilitation at 39.20% (e.g.,

488 “Maybe help rehabilitate the offender.”) and Retribution at 4.80% (e.g., “It punishes him for his
489 wrongdoing”). Descriptively, this pattern suggests a clear, collective perception that
490 incarceration serves a recidivism reduction function. Among the Cost observations, Collateral
491 consequences for the offender ranked first at 49.78% (e.g., “Time spent in prison will likely
492 cause psychological damage”), followed by Collateral consequences for the community at
493 25.76% (e.g., “Increases chances of violent crimes occurring when defendant is released”).
494 Monetary/opportunity costs ranked last at 24.45% (e.g., “It puts taxpayer money to waste”). This
495 pattern suggests that monetary and opportunity costs are not the most salient of the various
496 potential costs of incarceration.

497 **Discussion**

498 The purpose of this study was to examine the effects of decision cost and benefit salience
499 on sentencing attitudes of lay adults about juvenile offenders. We reasoned, based on our earlier
500 work [20,21], that when people formulate punishment judgments, they neglect to consider the
501 costs unless explicitly prompted, but do not neglect the benefits. As a result, we predicted that
502 prompting people to think about the benefits should not increase their sentencing
503 recommendations, but prompting them to think about the costs should reduce these
504 recommendations. These predictions were fully supported. Experiment 1 showed that
505 punishments were predictably responsive to information provided about the costs of
506 incarceration, but not the benefits. Experiment 2 demonstrated an equivalent effect using a
507 minimal prompting manipulation, absent any new cost or benefit information. This pattern
508 suggests that the people in our samples value the costs of incarceration but uniquely neglect to
509 consult those considerations unless actively prompted.

510 These findings contradict the prediction that punishers will defy cost considerations via
511 deontological commitments to sacred values [8]. Despite ample research suggesting that
512 retribution is the primary driver of punishment attitudes is retribution (e.g., [24,25,37]), the fact
513 that our participants rendered more lenient judgments following cost prompting suggests, at the
514 least, a boundary condition to the predictions of sacred values reasoning.

515 Rational choice theory also has difficulty explaining our overall pattern of results.
516 Although economic considerations could account for reductions in punishment in response to
517 new cost information (Experiment 1), they cannot easily explain why this pattern persisted when
518 participants were prompted to generate their own examples of costs of incarceration (Experiment
519 2). Indeed, our Experiment 2 participants violated a central tenet of rational choice theory, which
520 states that an individual's choices should track the relevant cost-benefit information but should
521 be robust to changes to the external context. This effect, however, is a direct prediction of the
522 cognitive perspective, which suggests that people's expressed preferences for a given resource
523 may be unwittingly influenced by the degree to which the relevant costs or benefits of that
524 resource are cognitively available.

525 Our pattern of results aligns closely with other research, including studies of sentencing
526 attitudes [18–21,38], showing that cost prompts can induce people to trade off these so-called
527 sacred values [39]. The present results extend these previous findings by demonstrating that the
528 effect of cost-benefit salience on punishment judgments may be specific to costs and may
529 represent an implicit effect of cognitive availability, as opposed to a calculated response to
530 gaining new insight about the costs of incarceration.

531 This study is also the first to demonstrate an effect of cost salience on sentencing
532 attitudes toward juvenile offenders. We expected attitudes toward juvenile offenders to be at

533 least as responsive to cost salience as it is toward adults because of the high cost of juvenile
534 detention [28] and because of general societal support for juvenile rehabilitation. Ultimately, the
535 observed decreases in punishment were on par with that of our 2019 study involving adult
536 offenders (between 20-30%), but note that the sentencing scale range varied between these two
537 studies, as it does in real adult versus juvenile sentencing policies.

538 The question remains regarding why people’s punishment judgments might shift in
539 response to cost prompts but not benefit prompts. One possibility, defended elsewhere, is that
540 people don’t really care very much about the benefits [24,25]. We offer a different
541 interpretation—that such cost-benefit asymmetries might reflect a more general bias in how
542 individuals manage multiple, sometimes conflicting motivations, such as the affirmative
543 motivation to get justice or to increase public safety versus the competing motivation to invest in
544 other valued social services (see also [39]). Whether prompted by intrinsic psychological cues or
545 extrinsic structural cues, the dominant motivation will selectively bias how the individual weighs
546 new incoming information. Critically, it will tend to place a premium on the decision’s expected
547 benefits (with respect to that motivation) relative to the costs because realizing the benefits is
548 definitional of goal fulfillment. In the context of criminal sentencing, for example, the whole
549 point of the sentencing hearing is to decide, not how much money to save taxpayers, but how
550 much the offender should be *punished*. This “benefit” framing treats the costs as exogenous to
551 the fulfillment of the goal. If anything, they are obstacles to the goal, not goals in their own right.
552 The individual may thus discount those costs, or neglect them entirely (see also [22,40]).

553 But in a more fundamental way, costs do represent goals. They represent the potential
554 benefits of the other alternative options that would be forgone by fulfilling the more salient goal.
555 So in our studies, the fact that experimentally increasing the salience of those neglected

556 opportunities increases their decision share confirms the proposition that these neglected
557 alternatives contain value to the individual—value that had been obscured by the more salient
558 goal. This theorized mechanism could help to explain why lay punishment judgments appear to
559 be selectively responsive to cost prompts.

560 **Limitations and Future Directions**

561 These results are not necessarily representative of U.S. voters and taxpayers as a whole.
562 Compared to traditional undergraduate samples, the Mechanical Turk pool has been shown to be
563 much more representative of the general population (see [29]), but it has not been normed for
564 this purpose. Future research should attempt to replicate our findings using more representative
565 samples.

566 The response modality used in this study has limited ecological validity since laypeople
567 are usually not called upon to render sentencing recommendations. We made this choice because
568 specific criminal case narratives provide a rich way of activating and revealing people’s moral
569 attitudes. Even so, future research should attempt to reproduce our findings using more
570 ecologically realistic tasks, such as voting on particular sentencing initiatives or economic games
571 that contain real stakes.

572 Open questions remain about the types of costs and benefits most likely to influence
573 punishment judgments. Experiment 1 showed that exposure to particular, mainly financial, costs
574 of incarceration may be sufficient to mitigate punishment judgments, whereas Experiment 2
575 revealed that these effects could be carried by a mere emphasis of many other potential negative
576 consequences of incarceration *that the participant generated*, such as family hardship,
577 psychological damage, and even the criminogenic effects of detainment. This latter finding is
578 consistent with remarks by professional judges when asked to explain their sentencing decision

579 process in interview studies (e.g., [41]). It is plausible that the effect of such non-monetary
580 factors on punishment recommendations could be even larger than the effect of direct financial
581 costs alone. These non-monetary costs could also offer a potentially better test of possible
582 demographic differences in sentencing attitudes (e.g., by political ideology or SES). Therefore,
583 comparative tests of such consequences—teasing apart monetary costs, collateral opportunity
584 costs, and other collateral consequences of incarceration—would greatly enhance research on
585 punishment judgment formation.

586 It is possible that the reason the benefit manipulation in Experiment 1 did not increase
587 sentencing recommendations is that the benefit manipulation failed to provide information that
588 was not already believed by our participants, weakening the manipulation. Our study did not
589 measure people’s prior expectations about the information presented, so we cannot address this
590 interpretation directly. However, the fact that the effect replicated in Experiment 2 suggests that
591 the difference between cost and benefit conditions is robust to the presence of information.
592 Nonetheless, future research should control for differences in such expectations on the basis of
593 careful pilot testing and targeted manipulation checks.

594 As with any vignette-based experiment, participants could have been motivated to
595 respond in a way that confirms their preconceptions about the study hypotheses. Between-
596 subjects designs were employed to reduce such demand characteristics, but may not eliminate
597 them entirely. If such demand characteristics were operating in our experiments, then we should
598 have observed confirmatory effects of both cost and benefit conditions, but the effects were
599 specific to the cost condition. So, our results appear to be robust to such demands.

600 It is unclear why the marginal interaction with political ideology found in Experiment 1
601 did not replicate in the second experiment. One possibility is that the original effect was

602 spurious, yet it is consistent with theoretical expectations that those endorsing a more
603 conservative ideology would be less moved by cost considerations. Another possibility is that
604 insufficient power was obtained in Experiment 2 to examine individual difference variables,
605 given the smaller size of the main cost salience effect. Future research can address this question
606 through the use of larger samples or by presenting opportunity costs that are likely to be more
607 relevant to conservatives (e.g., tax rebate).

608 It is also noteworthy that self-reported retributive justifications did not attenuate the cost
609 salience effect via an interaction. One interpretation of this null effect is that the cost salience
610 effect is robust to variation in punitive motives. However, the punishment mean scores are
611 consistent with the predictions of an interaction, so before accepting the null hypothesis, other
612 alternative explanations must be ruled out, such as statistical power constraints and the
613 possibility that our self-report measure of punishment justifications too weak a proxy for
614 underlying punishment motives. This prospect raises the demand for a more implicit, behavioral
615 measure of punishment justifications.

616 Finally, our conclusions are limited by the type of crime examined, namely drug
617 trafficking. Previous research has found similar effects of cost information using cases of
618 aggravated robbery and home invasion [20,21]. We do not necessarily expect punishers to
619 consider the costs of incarceration for the most serious crimes, such as murder, even after being
620 prompted. Punishments for such crimes might be governed more strongly by deontological
621 motivations that are insensitive to cost (e.g., retribution). Even so, an experimental test of this
622 question will be a valuable contribution for future research.

623 These limitations notwithstanding, the present findings suggest the operation of a default
624 benefits bias that inflates support for criminal punishment when corresponding cost information

625 is not salient. This bias, it appears, can be lessened by efforts to make the decision costs more
626 explicit, even without the introduction of new cost information. These results could help explain
627 rising incarceration rates in the United States. They also have important implications for how
628 cost and benefit information is delivered to voters and taxpayers. For instance, systematic efforts
629 to balance information about the costs and benefits of correctional services on voting ballot
630 materials could improve the internal consistency of voter support for sentencing measures. At the
631 least, such materials could include information about the direct material costs of the punishment.
632 Other types of costs could also be relevant, such as the punishment's opportunity costs (e.g.,
633 funding withheld from offender reentry services) and/or the collateral consequences of the
634 punishment (e.g., psychological damage, family hardship, employment barriers, criminogenic
635 effects), but additional research is needed to test the relative contribution of these factors to
636 sentencing attitudes.

637 If our findings represent a general property in human reasoning, we would expect to find
638 evidence of sentencing cost neglect in prosecutors and judges too. Research has shown that
639 punishment judgments by professional judges may depend on extra-legal, contextual factors [42]
640 like pretrial publicity [43] and whether the judge's favorite football team just won or lost [44].
641 Studies have also shown that even subject-matter experts can neglect opportunity costs [10,45].
642 Indeed, arguments for increasing transparency in the costs of incarceration have already been
643 directed at judges and prosecutors. For instance, Miller [3] proposes possible legislative action to
644 disclose such costs to judges in pre-sentencing reports. More broadly, several U.S. states,
645 including Illinois, California, and Ohio, have begun to experiment with performance incentive
646 funding, delivering grants and/or fines to counties that do and do not reduce their inmate

647 populations [46]. However, additional research on the effects of cost disclosure on judicial
648 sentencing attitudes is needed to confidently evaluate the need for and impacts of such practices.

649 Among non-experts, a clearer picture has begun to emerge, namely that making the costs
650 of incarceration as salient as the benefits is likely to reduce support for punishment, at least for
651 less serious crimes. Ultimately, understanding how such cognitive factors might facilitate more
652 consistent and authentic punishment judgments is a worthy enterprise.

653

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661 **References**

- 662 1. Akerlof GA. The market for “lemons”: quality uncertainty and the market mechanism. *Q J*
663 *Econ.* 1970 Aug;84(3):488.
- 664 2. D’Amico DJ. The social provision of punishment and incarceration: social provision of
665 incarceration. *Am J Econ Sociol.* 2017 Nov;76(5):1107–32.
- 666 3. Miller S. Ending Prosecutor’s Moral Hazard in Criminal Sentencing. *Georget J Leg Ethics.*
667 2019;32(4):833–54.
- 668 4. Nardulli PF. Misalignment of Penal Responsibilities and State Prison Crises-Cost,
669 Consequences, and Corrective Actions. *Univ Ill Law Rev.* 1984;1984(2):365–387.
- 670 5. *State v. Bell*, 303 Conn. 246 (2011).
- 671 6. *U.S. v. Park*, 758 F.3d 193 (2nd Cir. 2014).
- 672 7. Packer H. *The limits of the criminal sanction.* Stanford University Press; 1968.
- 673 8. Tetlock PE, Kristel OV, Elson SB, Green MC, Lerner JS. The psychology of the
674 unthinkable: Taboo trade-offs, forbidden base rates, and heretical counterfactuals. *J Pers Soc*
675 *Psychol.* 2000;78(5):853–70.
- 676 9. Tversky A, Kahneman D. Availability: A heuristic for judging frequency and probability.
677 *Cognit Psychol.* 1973 Sep;5(2):207–32.
- 678 10. Becker SW, Ronen J, Sorter GH. Opportunity costs-an experimental approach. *J Account*
679 *Res.* 1974;12(2):317.
- 680 11. Frederick S, Novemsky N, Wang J, Dhar R, Nowlis S. Opportunity cost neglect. *J Consum*
681 *Res.* 2009;36(4):553–561.
- 682 12. Hoskin RE. Opportunity cost and behavior. *J Account Res.* 1983;21(1):78.
- 683 13. Jones SK, Frisch D, Yurak TJ, Kim E. Choices and opportunities: Another effect of framing
684 on decisions. *J Behav Decis Mak.* 1998;11(3):211–226.
- 685 14. Northcraft GB, Neale MA. Opportunity costs and the framing of resource allocation
686 decisions. *Organ Behav Hum Decis Process.* 1986 Jun;37(3):348–56.
- 687 15. Cohen MA, Rust RT, Steen S. Prevention, crime control or cash? Public preferences towards
688 criminal justice spending priorities. *Justice Q.* 2006 Sep;23(3):317–35.
- 689 16. Doble J, Immerwahr S, Richardson A. *Punishing criminals: The people of Delaware consider*
690 *the options.* Edna McConnell Clark Foundation New York; 1991.

- 691 17. Thomson DR, Ragona AJ. Popular moderation versus governmental authoritarianism: an
692 interactionist view of public sentiments toward criminal sanctions. *Crime Delinquency*. 1987
693 Jul;33(3):337–57.
- 694 18. Gottlieb A. The effect of message frames on public attitudes toward criminal justice reform
695 for nonviolent offenses. *Crime Delinquency*. 2017 May;63(5):636–56.
- 696 19. Rachlinski JJ, Wistrich AJ, Guthrie C. Altering attention in adjudication. *UCLA Rev*.
697 2013;60:1586.
- 698 20. Aharoni E, Kleider-Offutt HM, Brosnan SF, Watzek J. Justice at any cost? The impact of
699 cost-benefit salience on criminal punishment judgments. *Behav Sci Law*. 2019 Jan;37(1):38–
700 60.
- 701 21. Aharoni E, Kleider-Offutt HM, Brosnan SF. The price of justice: Cost neglect increases
702 criminal punishment recommendations. *Leg Criminol Psychol*. 2020 Feb;25(1):47–61.
- 703 22. Kahneman D. *Thinking, fast and slow*. Macmillan; 2011.
- 704 23. American Law Institute (2017). *Model penal code*. Philadelphia, Pa. The American Law
705 Institute. Retrieved on October 22, 2019 from
706 https://archive.org/stream/ModelPenalCode_ALI/MPC.
- 707 24. Carlsmith KM, Darley JM, Robinson PH. Why do we punish? Deterrence and just deserts as
708 motives for punishment. *J Pers Soc Psychol*. 2002;83(2):284–99.
- 709 25. Darley JM, Carlsmith KM, Robinson PH. Incapacitation and just deserts as motives for
710 punishment. *Law Hum Behav*. 2000;24(6):659–83.
- 711 26. Nagin DS, Piquero AR, Scott ES, Steinberg L. Public preferences for rehabilitation versus
712 incarceration of juvenile offenders: evidence from a contingent valuation survey. *Criminol*
713 *Public Policy*. 2006 Nov;5(4):627–51.
- 714 27. Piquero AR, Steinberg L. Public preferences for rehabilitation versus incarceration of
715 juvenile offenders. *J Crim Justice*. 2010 Jan;38(1):1–6.
- 716 28. Petteruti A, Schindler M, Ziedenberg J. *Stickershock: Calculating the full price tag for youth*
717 *incarceration*. justice Policy Institute; 2014.
- 718 29. Buhrmester M, Kwang T, Gosling SD. Amazon’s Mechanical Turk: A New Source of
719 Inexpensive, Yet High-Quality, Data? *Perspect Psychol Sci J Assoc Psychol Sci*. 2011
720 Jan;6(1):3–5.
- 721 30. Peer E, Vosgerau J, Acquisti A. Reputation as a sufficient condition for data quality on
722 Amazon Mechanical Turk. *Behav Res Methods*. 2014 Dec;46(4):1023–31.
- 723 31. Nadelhoffer T, Heshmati S, Kaplan D, Nichols S. Folk retributivism and the communication
724 confound. *Econ Philos*. 2013 Jul;29(2):235–61.

- 725 32. Kaufman EA, Xia M, Fosco G, Yaptangco M, Skidmore CR, Crowell SE. The Difficulties in
726 Emotion Regulation Scale Short Form (DERS-SF): Validation and Replication in Adolescent
727 and Adult Samples. *J Psychopathol Behav Assess*. 2016 Sep 1;38(3):443–55.
- 728 33. Aharoni E, Weintraub LL, Fridlund AJ. No skin off my back: Retribution deficits in
729 psychopathic motives for punishment. *Behav Sci Law*. 2007;25:869–89.
- 730 34. Delton AW, Krasnow MM. The psychology of deterrence explains why group membership
731 matters for third-party punishment. *Evol Hum Behav*. 2017;38(6):734–43.
- 732 35. McFatter RM. Sentencing strategies and justice: Effects of punishment philosophy on
733 sentencing decisions. *J Pers Soc Psychol*. 1978;36(12):1490–500.
- 734 36. Schwarz N, Bless H, Strack F, Klumpp G. Ease of retrieval as information: Another look at
735 the availability heuristic. *J Pers Soc Psychol*. 1991;61(2):195–202.
- 736 37. Aharoni E, Fridlund AJ. Punishment without reason: Isolating retribution in lay punishment
737 of criminal offenders. *Psychol Public Policy Law*. 2012;18(4):599–625.
- 738 38. Vuk M, Applegate BK, Ouellette HM, Bolin RM, Aizpurua E. The pragmatic public? The
739 impact of practical concerns on support for punitive and rehabilitative prison policies. *Am J*
740 *Crim Justice*. 2020 Apr;45(2):273–92.
- 741 39. Baron J, Leshner S. How serious are expressions of protected values? *J Exp Psychol Appl*.
742 2000;6(3):183–94.
- 743 40. Landy JF, Royzman EB. The Moral Myopia Model: Why and how reasoning matters in
744 moral judgment. In: Pennycook G, editor. *The New Reflectionism in Cognitive Psychology*.
745 Routledge; 2018. p. 76–98.
- 746 41. Steffensmeier D, Ulmer J, Kramer J. The interaction of race, gender, and age in criminal
747 sentencing: the punishment cost of being young, black, and male. *Criminology*. 1998
748 Nov;36(4):763–98.
- 749 42. Bordalo, P., Gennaioli, N., & Shleifer, A. (2015). Salience theory of judicial decisions. *The*
750 *Journal of Legal Studies*, 44(S1), S7-S33. <https://doi.org/10.1086/676007>
- 751 43. Englich B, Mussweiler T, Strack F. Playing dice with criminal sentences: the influence of
752 irrelevant anchors on experts' judicial decision making. *Pers Soc Psychol Bull*. 2006
753 Feb;32(2):188–200.
- 754 44. Eren O, Mocan N. Emotional judges and unlucky juveniles. *Am Econ J Appl Econ*. 2018
755 Jul;10(3):171–205.
- 756 45. Vera-Muñoz SC. The Effects of Accounting Knowledge and Context on the Omission of
757 Opportunity Costs in Resource Allocation Decisions. *Account Rev*. 1998;73(1).

758 46. Michaels S. Should judges have to weigh the price tag of sending someone to prison?
759 [Internet]. Mother Jones. 2020 [cited 2020 May 24]. Available from:
760 [https://www.motherjones.com/crime-justice/2020/01/judges-cost-incarceration-district-](https://www.motherjones.com/crime-justice/2020/01/judges-cost-incarceration-district-attorney-biberaj-krasner-boudin/)
761 [attorney-biberaj-krasner-boudin/](https://www.motherjones.com/crime-justice/2020/01/judges-cost-incarceration-district-attorney-biberaj-krasner-boudin/)

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763 **Captions**

764 **S1 Appendix. Experiment 2: Vignette and manipulations.**



