Cumulative Disadvantage of Judicial Harshness: The Effect of Previous Harsh Sentences at Sentencing*

Jakub Drápal† Michal Šoltés‡ Jan de Keijser§ Sigrid van Wingerden¶

Abstract

Sentencing disparities are often conceptualized as a static problem in which one judge imposes a harsher sentence than another would impose in the same or a similar case. However, less is known about the impact of sentencing disparities on subsequent sentencing decisions. We argue that most sentencing rationales imply that a previously harsh sentence—even if unwarranted—leads to a harsher sentence in the subsequent case of the same offender. To test this effect, we conduct four vignette experiments with judges and public prosecutors in the Netherlands and the Czech Republic. In one experiment, an offender who had previously been excessively incarcerated was 20 percentage points (49%) more likely to be incarcerated again. Pooling the data from the three remaining experiments, we find that doubling the initial prison sentence increased the length of the subsequent prison sentence by 0.62 standard deviations. Our findings suggest that sentencing disparities persist and compound over an offender's criminal career, generating cumulative disadvantage at sentencing.

*We express our sincere gratitude to all participants in the various experiments for their time and willingness to participate. We also thank Ondřej Kubů, Martin Lýsek, Julian V. Roberts, Hana Šimánová, and Michael Tonry for their valuable comments and suggestions. Jakub Drápal and Michal Šoltés share first authorship. Michal Šoltés would like to thank the Czech Science Foundation – GA CR (project number 25-15735S "Sentencing Disparities: Causes, Consequences, and Remedies") for financial support; Jakub Drápal would like to acknowledge funding by the European Union (ERC StG RE-CON-SENT, project n. 101219946); views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them.

†Faculty of Law, Charles University

‡Faculty of Law, Charles University

§Institute of Criminal Law and Criminology, Faculty of Law, Leiden University

¶Institute of Criminal Law and Criminology, Faculty of Law, Leiden University

1 Introduction

Disparities in judicial decision-making—defined as judges' differing approaches to the same or similar cases in the absence of proper legal justification—have been documented across jurisdictions and legal contexts (Anderson et al., 1999; Yang, 2014; Johnson, 2003; Bushway and Morrison Piehl, 2001; Abrams et al., 2012; Sporer and Goodman-Delahunty, 2009; Kang and Silveira, 2021; Scott, 2010; Arnold et al., 2022; Pina-Sánchez and Linacre, 2013; Mamak et al., 2022; Drápal, 2020; Drápal and Šoltés, 2024). In the criminal justice context, judicial disparities most commonly manifest as sentencing disparities and are typically understood as variation in judicial harshness, with some judges imposing more severe sentences than others. However, the existing literature has largely treated sentencing disparities as a static cross-sectional phenomenon. Much less is known about whether prior harsh sentences influence subsequent sentencing decisions of the same offender.

Suppose two identical offenders commit the same crime. One is assigned to a judge who imposes a median sentence, while the other is assigned to a judge who imposes an excessively harsh sentence, e.g. harsher than that of 95% of judges. Both offenders later reoffend by committing an identical crime, and their new cases are assigned to a third judge. Will this judge ignore the earlier disparity in sentencing and impose identical sentences? Will the judge compensate for the previous harshness by sentencing the second offender more leniently? Or will the judge reinforce the initial disparity by imposing a harsher sentence on the offender who was already punished more severely, thereby causing cumulative disadvantage at sentencing? And what should the judge do according to the various sentencing rationales?

Despite the importance of this question for understanding the consequences of sentencing disparities and informing judicial decision-making, the existing literature offers few empirical or doctrinal answers. Although considerable attention has been devoted to the role of prior convictions, the influence of previously imposed sentences on subsequent sentencing decisions has received little attention (Frase and Roberts, 2019; Roberts and von Hirsch, 2010).[1] This omission suggests an implicit assumption that the nature and severity of previous sentences are normatively irrelevant to subsequent sentencing decisions. While some scholars briefly acknowledge the censuring function of prior sentences (von Hirsch, 2017), there has been little systematic theoretical engagement with how prior sentence severity should affect future punishment.

Several studies examining the determinants of sentencing outcomes empirically have included measures of prior sentences and consistently document a positive association between the severity of previous sanctions and the severity of sentences imposed upon

[1] In contrast, the role of prior convictions—such as their number, type, and timing—has been studied extensively.

reoffending (Crow and Johnson, 2008; Vigorita, 2001; Wermink et al., 2015; Spohn and Welch, 1987). However, the observational nature of these studies precludes causal interpretation of the estimated effect of harshness of a prior sanction on subsequent sentencing decisions. The observed association may simply reflect unobserved differences between offenders rather than the influence of prior sentence itself.[2] Additionally, such studies do not distinguish between warranted and excessive harshness, making it impossible to identify the consequences of sentencing disparities.

In this paper, we address the role of previous sentences on the subsequent sentencing theoretically and test their causal effect experimentally with judges and prosecutors in two distinct jurisdictions: Czechia and the Netherlands. We particularly focus on excessively harsh previous sentences—not warranted imprisonment and excessively long prison sentence—, allowing us to examine the potential cumulative disadvantage at sentencing.

The article is organized as follows. We first develop a normative framework for how previous sentences should influence subsequent sentencing decisions from both retributive and consequentialist perspectives. We then discuss additional mechanisms through which prior sentences may affect sentencing decisions in practice. Next, we describe the experimental design, implementation, and participants in each of the four experiments. We then present the results, including evidence on the validity of the experimental manipulation, the findings from the individual experiments, and participants' views on the mechanisms underlying the identified effect. We conclude by discussing the implications of our findings for sentencing theory, judicial decision-making, and the evaluation of sentencing disparities.

2 Theory

2.1 Normative Theory

To structure the discussion of the appropriate role of prior sentences in subsequent sentencing decisions, we consider a broader framework represented by two extreme cases resulting in harsh sentences and their informational content. In one extreme case, the harshness of a prior sentence reflects the aggravating characteristics of the offender, the offense, or both. In this case, the harsh sentence imposed in the initial case was warranted because the sentencing judge observed legally relevant aggravating factors that justified a harsher sanction. A deservedly harsh sentence therefore might serve as an informative signal to subsequent sentencing professionals about the adverse characteristics of the of-

[2]The effect of prior sentence severity may also be difficult to disentangle from other aspects of criminal history. For example, under the U.S. federal sentencing guidelines, previous custodial terms directly contribute to an offender's criminal history score (Lynch and Bertenthal, 2016).

fender or the circumstances of the prior offense that may not be directly observable in the subsequent cases.

In the opposite extreme case, the harshness of a prior sentence is unrelated to the characteristics of either the offense or the offender and instead reflects the idiosyncrasies of the sentencing judge (or other actors in the criminal justice system). In such a case, the sentence is undeserved and conveys no meaningful information about the offender's individual characteristics or the circumstances of the previous offense that were observable to the judge in the initial case. Rather than serving as an informative signal in subsequent cases, it constitutes mere noise.

Using these two extreme cases as benchmarks, we examine how a previously imposed both deserved and excessively harsh sentences *should* affect subsequent sentencing decisions under retributive (proportionalist) and consequentialist theories of punishment. For expositional purposes, we assume that the subsequent sentencing professional can perfectly distinguish between prior sentence harshness that reflects genuine information about the offender or circumstances of the offense (signal) and harshness that reflects only the identity of the previous judge (noise). We then discuss additional, less principled factors through which prior sentences may influence sentencing decisions in practice.

Retributive Theory. We begin with retributive theory, which emphasizes a proportional relationship between offense seriousness—captured by harm and culpability—and the harshness of the sentence. Because a prior sentence does not alter the seriousness of the current offense (in a strict ex post sense), a strict proportionalist approach would dictate that prior sentences—regardless of their harshness, and even if the harsh judgment was unwarranted—should be irrelevant to the subsequent sentencing decision. However, such a strict proportionalist framework is generally refuted by sentencing theorists (Frase and Roberts, 2019, 26–28).

Proportionalists who view criminal history as a relevant factor in sentencing decisions tend to emphasize the offender's agency and increased blameworthiness (Frase and Roberts, 2019; von Hirsch, 2010, p. 38). If an excessively harsh prior sentence served as an informative signal (reflecting the seriousness of the previous offense and adverse characteristics of the offender), it could, in principle, provide a basis for a harsher subsequent sentence. However, most scholars are dismissive of prior high offense seriousness importantly affecting sentencing for a subsequent offense. For example, Frase and Roberts (2019) argue that there is no "clear basis to posit increased culpability [from] ... high prior-offense severity" (p. 213-214). Accordingly, under the predominant proportionalist account, a warranted harsh prior sentence may subtly increase subsequent sentencing decisions, while an unwarranted one should not lead to an increase.

A potentially different conclusion could arise if proportionality were assessed more broadly—by considering sentences in both cases as a whole in pursuit of overall justice—under which an excessively harsh prior sentence, representing noise in the sentencing decision, could be offset by a more lenient subsequent one, and possibly *vice versa*. Such an argument, however, runs counter to the core notion of proportionality, which is typically tied to the specific case under adjudication (von Hirsch, 2017). Proportionality is generally grounded in the view that broader contextual considerations should play only a limited role (Frase, 2012, 34–35, 221–224), rendering compensation for unwarranted sentences across cases or over time improper.

Even if one were to argue that an unwarranted sentence (whether too harsh or too lenient) constitutes a form of criminal injustice requiring a remedy (Zaibert et al., 2025), the more plausible intervention would be compensation in the offender's favor rather than to the offender's detriment. Consistent with limiting retributivism, some theorists permit the imposition of lesser penalties when doing so serves other sentencing purposes (Frase, 2004, 2012). By contrast, increasing a sentence to compensate for a previously lenient one would result in disproportionate punitiveness—a consequence widely regarded as problematic. Even broader conceptions of proportionality thus do not support the imposition of harsher sentences to offset a previously overly lenient punishment.

Consequentialist Theory. Consequentionalist approaches could be more receptive to considering previous sentences at sentencing. We focus on specific deterrence and incapacitation and do not consider general deterrence nor rehabilitation, as prior sentences are less directly relevant to these latter rationales.

Under a specific-deterrence rationale, the failure of a previously imposed sentence to prevent reoffending may justify a harsher subsequent sentence, regardless of whether the earlier sentence was warranted. This logic is embedded in the legal frameworks of several countries, where the repeated use of certain lenient sanctions—such as suspended prison sentences and community service—is restricted or prohibited within a specified period.[3] It is also consistent with evidence that judges view the progressive escalation of sanctions as an important consideration in sentencing decisions (Kaiser and Leibetseder, 2026; van Wingerden, 2014). A similar implication emerges from a model in which offenders differ in the level of punishment required to deter future offending and judges learn about these individual deterrence thresholds by progressively increasing sanction harshness. Under plausible parameter values, observing that an offender reoffended despite having previously received a harsh sentence increases the likelihood that a judge will impose a

[3]See, for example, Dutch Penal Code s. 22b(2), Polish Penal Code s. 69(1), and Slovak Penal Code s. 49(3)

harsher sentence again. Importantly, none of the arguments grounded in the specific-deterrence rationale for imposing a harsher sentence in the subsequent case depends on whether the earlier harsh sentence was warranted or unwarranted. The same inference follows both when the severity of the prior sentence reflects relevant information about the offender (a signal) and merely unwarranted variation in sentencing severity (noise).

The second relevant consequentialist rationale is incapacitation. If a previously imposed harsh sentence signals particularly adverse offender characteristics associated with a high risk of reoffending, incapacitation may justify a harsher subsequent sentence, either by imposing imprisonment rather than a non-custodial sanction or by increasing the duration of incarceration. Similarly, if imprisonment and longer prison sentences have criminogenic effects, judges may view subsequent offending as evidence of an elevated risk to public safety and therefore place greater weight on incapacitative considerations compared to someone who has not yet been imprisoned or served only a short prison sentence. Assuming that the imposed sentence was actually served, this mechanism can operate even when the original harsh sentence was excessively harsh and conveyed no meaningful information about the offender or the circumstances of the prior offense. As a result, incapacitation may generate a "once in prison, always in prison" dynamic and, more broadly, a Matthew effect (Merton, 1968) whereby those who receive severe sanctions become increasingly likely to receive even harsher ones in the future.

Consequentialist rationales, however, are persuasive only to the extent that the mechanisms they posit actually operate in practice. The empirical evidence provides only limited support for these mechanisms at the margin. Most studies find negligible effects of incarceration on subsequent offending, with some reporting reductions in recidivism and others finding the opposite effect (Loeffler and Nagin, 2022; Petrich et al., 2021). Consequently, arguments based on consequentialist rationales should be treated with caution when determining the appropriate role of prior sentences in sentencing decisions. At the same time, when explaining judicial behavior, it is important to recognize that judges' beliefs about the effectiveness of sanctions may differ from the scientific evidence in either direction.

Overall, prevailing sentencing rationales provide support for a previously harsh sentence increasing subsequent sentences, unless judges purposefully compensate for previous excessive harshness. More interestingly, this conclusion may hold even if the judge understands that the exceptionally harsh prior sentence conveys no information about the offender's characteristics and resulted from an excessively harsh decision. The strongest potential justification for such reinforcement arises from consequentialist rationales, especially incapacitation. Table 1 summarizes the implications of each considered sentencing rationale on the severity of the subsequent sentence.

Table 1: **Normative Theory**

Prior Sentence	Retributive Theory	Consequentialist Theory	
		Incapacitation	Deterrence
Informative signal	No effect/ Increase (weak)	Increase (strong)	Increase (moderate)
Uninformative noise	No effect	Increase (moderate)	Increase (moderate)

Notes: The table summarizes the implications of different sentencing rationales for the effect of a previously imposed excessively harsh sentence on subsequent sentencing decisions. The implications are shown under two extreme cases in which the prior sentence reflects either an informative signal or uninformative noise.

2.2 Behavioral Factors

We further discuss several mechanisms that are not fully captured by conventional rationales of sentencing but may nevertheless shape sentencing decisions in practice when assessing the role of previous sentences.

First, a growing literature argues that sentencing decisions are often made comparatively to other decisions, rather than in isolation (Leibovitch, 2016a,b; Zur and Leibovitch, 2025; Emerson, 1983; Tonry, 2019). Rather than determining the appropriate sentence from scratch, judges may seek coherence and proportionality across cases and use previously imposed sentences, as reference points and as a basis for going rates. In the present context, a previous sentence imposed on the offender may serve as a benchmark against which the appropriate sanction for the subsequent offense is evaluated. As a result, a harsh sentence, even if unwarranted, may propagate through comparative sentencing.

Second, a large body of research documents the anchoring effect (Tversky and Kahneman, 1974; Englich et al., 2006; Bystranowski et al., 2021). Individuals tend to choose larger numbers when exposed to higher numerical reference points. A similar process may operate in sentencing. If a judge observes that the offender previously received a relatively long sentence, this sentence may serve as an anchor, increasing the likelihood that the judge will impose a longer sentence in the current case. Again, this holds even in cases when the harsh initial sentence was unwarranted. Unlike comparative sentencing, anchoring is generally viewed as a cognitive bias rather than a normatively justified decision rule.

Third, professional collegiality and institutional deference may also play a role. Judges may be reluctant to implicitly challenge a previous sentencing decision by imposing a substantially more lenient sanction, particularly when doing so would signal that the earlier punishment was excessive. To the extent that judges defer to prior decisions, they are unlikely to compensate for a previously excessive harsh sentence, thereby enabling the cumulative disadvantage of judicial harshness.

Finally, imposing an offender's first custodial sentence may entail greater psychological or moral costs for judges than extending an existing pattern of incarceration. As a result, judges may be more willing to impose imprisonment once an offender has already been incarcerated. This mechanism may be particularly relevant in criminal justice systems that rely heavily on non-custodial sanctions and reserve imprisonment primarily for repeat offenders. In such systems, prior incarceration may increase the likelihood of future incarceration, thereby reinforcing cumulative disadvantage along the extensive margin of incarceration, i.e, the decision whether to impose imprisonment or a non-custodial sentence.

Overall, these factors suggest that a harsh prior sentence likely leads to an increased severity of subsequent sentences, regardless of whether the initial sentence was warranted or excessively harsh.

3 Experiment

3.1 Experimental Design

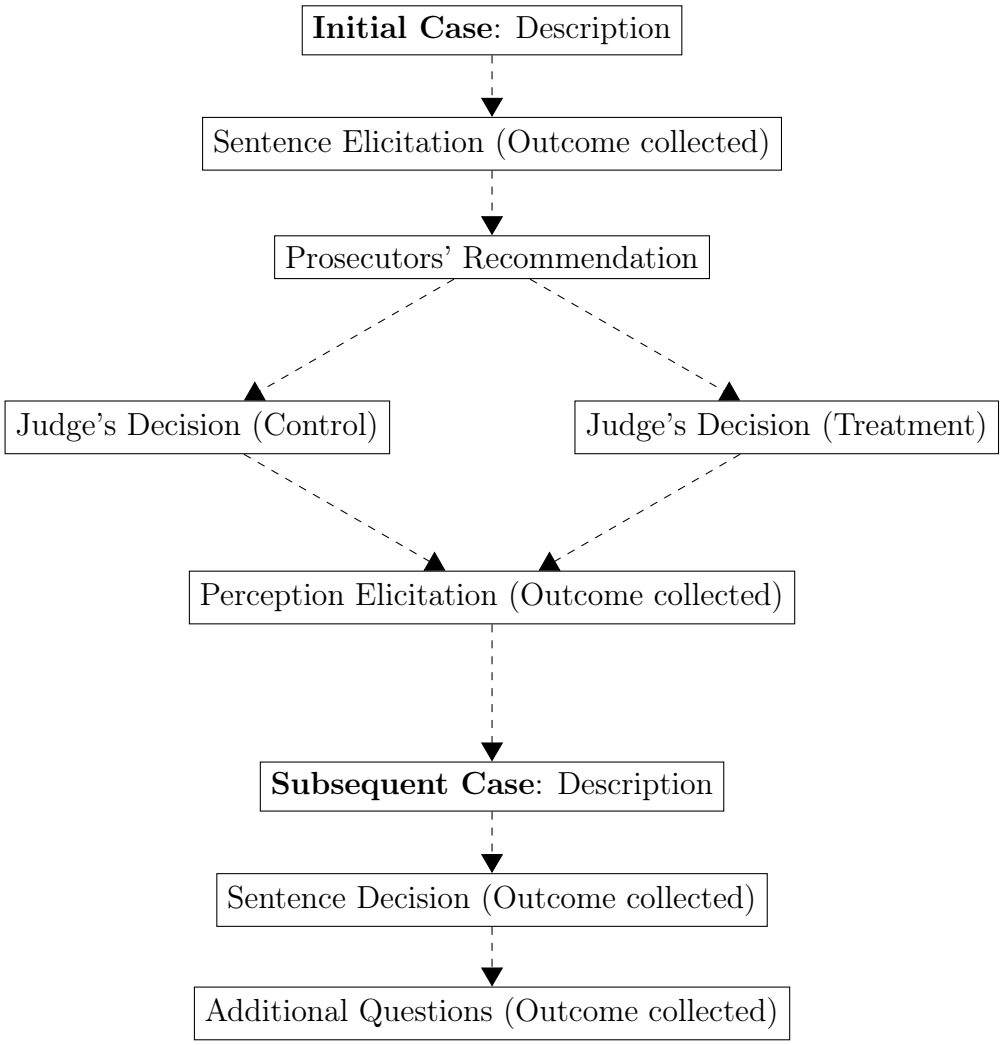
To test whether, and how, a previously imposed sentence affects subsequent sentencing decisions, we designed and implemented four vignette experiments with sentencing professionals in Czechia and the Netherlands. In each experiment, participants were randomly assigned to either a control (C) or a treatment (T) condition and were presented with two criminal cases, an **initial** one and a **subsequent** one, both involving the same offender. In the initial case, participants assumed a largely passive role: they observed a sentencing recommendation by a public prosecutor and the sentencing decision of a judge assigned to the case. In the subsequent case, participants were provided with detailed information about a new criminal offense, informed that the offender was the same individual as in the initial case, and asked to decide on the appropriate sentence.

The experimental manipulation concerned the sentence imposed by a judge in the initial case. In the control condition, the judge followed the prosecutor's recommendation, which was designed to represent a *reasonable* sentence given the circumstances of the case. In the Dutch experiment, the reasonableness of this sentence was further reinforced by its consistency with the applicable prosecutorial sentencing guidelines. By contrast, in the treatment condition, the judge imposed an *excessively harsh* sentence despite facing the same facts and receiving the same recommendation from the prosecutor.

The primary outcome of interest is the sentence determined in the subsequent case. We also elicited the sentence that participants themselves would have imposed in the initial case and their assessment of the harshness of the sentence that was actually imposed

by the judge in that case. The former measure, elicited before participants observed either the prosecutor's recommendation or the judge's decision in the initial case, serves as a proxy for individual sentencing preferences. The latter collected measure provides a manipulation check, allowing us to verify that participants in the treatment condition perceived the sentence imposed in the initial case as harsher than did participants in the control condition. Finally, after completing the experimental tasks, participants answered a set of attitudinal questions regarding the role of prior sentences in subsequent sentencing decisions. Figure 1 illustrates the flow of the experiment.

Figure 1: **Flowchart of Experiments**



Notes: This figure illustrates the design of Experiments 1–3. Experiment 4 used the same design but implemented two treatment conditions that differed in the stated justification for the harsher sentence imposed in the initial case.

3.2 Implementation

We conducted the outlined experiments with public prosecutors and judges in the Czech Republic (Experiments 1, 3, and 4) and the Netherlands (Experiment 2). To accommodate differences in criminal law and sentencing practices across jurisdictions and to enhance external relevance by employing several cases, the four experiments differ in their specific design and factual settings.

Vignettes in all four experiments were carefully designed, in collaboration with experienced judges, with particular attention to fine-tuning offenders' criminal histories and the details of the criminal cases. A key objective was to construct vignettes that generate a non-trivial distribution of imposed sentences and sufficient variation in the outcome variables collected in each experiment.[4] This motives many features of the vignettes.

The treatment-induced variation in the initial sentence necessarily creates a difference in the timing of the subsequent case between the treatment and control conditions. We address this by designing the subsequent case to occur after the offender had spent the same amount of time at liberty in both scenarios. This ensures that the period during which the offender remained offense-free, arguably the more relevant time interval for the subsequent sentencing decision, is identical across scenarios. If the difference in the elapsed time between the two offenses matters for sentencing, then the longer interval in the treatment scenario should lead to a more lenient sentence in the subsequent case, thereby attenuating the cumulative disadvantage effect.

We next provide overview of all the vignettes and discuss the experimental variation for each of the experiments. Table 2 summarizes the vignettes and Appendix C provides a complete English translation of each of the experiments.

3.2.1 Effect of Unwarranted Imprisonment

Experiment 1 was designed to assess whether imposing a custodial sentence—rather than a non-custodial one—in the initial case increases the likelihood of imprisonment in subsequent sentencing decisions. The treatment manipulation therefore alters the type of sentence imposed in the initial case.

Experiment 1. In the initial case, the offender, Jakub Matějka, committed fraud by selling counterfeit tickets. He sold 146 tickets to 84 victims, causing total damage of CZK 144,540 (approx. USD 6,300). He had previously been convicted of fraud on two occasions

[4] An example of an inappropriate vignette is one in which most imposed sentences bunch at the lower or upper bounds of the sentencing range. In such a case, even if the treatment shifted the underlying preferred sentence, the effect would be mechanically constrained by institutional settings, preventing it from materializing and rendering any statistical inference impossible.

but had never been incarcerated. The public prosecutor recommended a suspended 2-year prison sentence with supervision with a 3-year operational period, and a fine of CZK 60,000 (approx. USD 2,700).[5] In the control condition, the judge imposed the sentence recommended by the prosecutor: a suspended 2-year prison sentence with supervision with a 3-year operational period, and a fine of CZK 60,000. By contrast, in the treatment condition, the judge sentenced Jakub Matějka to 2 years of immediate (non-suspended) imprisonment and imposed the same fine of CZK 60,000; after serving one year, the offender was released on parole with an operational period of three years.

Six months after the probationary period had expired—3.5 years after the imposition of the suspended prison sentence in the control group and 3.5 years after release on parole in the treatment group—the offender committed another act of fraud. This time, he falsely offered spare parts for vintage vehicles, which he neither possessed nor intended to deliver. This offense caused damage totaling CZK 26,540 (approx. USD 1,200) to eight victims.

Participants in the experiment were instructed to impose a type of the main sentence (prison sentence, suspended prison sentence with supervision, suspended prison sentence without supervision, house arrest, community service or fine) and its extent at their discretion.

3.2.2 Effect of Excessively Long Prison Sentence

The remaining three experiments were designed to assess the effect of imposing an excessively long prison sentence, rather than a prison sentence within the normal range, in the initial case. Experiment 2, conducted with Dutch sentencing professionals, and Experiment 3, conducted with Czech sentencing professionals, were designed to be as comparable as possible. Both experiments involved a recidivist offender who committed a minor offense—a combination of circumstances that would typically result in a relatively short prison sentence. The specific details, however, were adapted to the respective criminal justice system. In particular, the public prosecutor in the Czech experiment recommended longer prison sentences than in the Dutch experiment, reflecting the fact that short prison sentences are relatively uncommon in Czechia. Additionally, Experiment 4 tests the effect of accompanied sentence justification.

[5] A suspended prison sentence is a common sanction in continental European criminal justice systems. A judge imposes a prison term that is not immediately executed but remains suspended during an operational period; if the offender commits a new offense during this period, the suspended sentence may be revoked and the prison term then served in full. In this sense, a suspended prison sentence places a "Damocles' sword" over the offender's head throughout the operational period (Drápal et al., 2026). Probationary supervision can be imposed alongside a suspended prison sentence.

Experiment 2. In the initial case, the offender, Mark B., committed a home burglary in which he stole several items, including a laptop and an iPad. He was apprehended shortly thereafter and confessed to the crime, explaining that he intended to resell the stolen goods to finance his gambling addiction. Mark B. had two prior convictions for home burglary within the preceding two years, for which he received a fine and community service. In line with the prosecutorial sentencing guidelines, the public prosecutor recommended a 3-month prison sentence. In the control condition, the judge followed this recommendation and imposed a 3-month prison sentence. In the treatment condition, by contrast, the judge imposed a 12-month prison sentence.

The subsequent case took place one year after Mark B. completed his sentence from the initial case. He committed another home burglary, during which he stole several items, including a television. Mark B. confessed to the crime. Participants were asked to decide whether to impose community service or a prison sentence and, if applicable, to determine the appropriate length of the sentence.

Experiment 3. In the initial case, the offender, Marek Novák, committed a home burglary in which he stole several items, including a laptop and an iPad. The total damage was estimated at CZK 23,000 (approx. USD 1,000).[6] He was apprehended shortly thereafter and confessed to the crime, explaining that he intended to resell the stolen items to finance his gambling addiction. Marek Novák had been convicted twice for home burglary within the preceding two years, for which he received a fine and 200 hours of community service. The public prosecutor recommended an 8-month prison sentence. In the control condition, the judge imposed the recommended 8-month prison sentence, whereas in the treatment condition, the judge imposed a 22-month prison sentence.

The subsequent case took place one year after Marek Novák completed his sentence from the initial case. He committed another home burglary, during which he stole several items, including a television, causing damage amounting to CZK 25,000 (approx. USD 1,100). Marek Novák confessed to the burglary. Participants were asked to decide whether to impose community service or a prison sentence and, if applicable, to determine the appropriate length of the sentence.

Experiment 4. In the initial case, the offender, Karel Bartoň, was caught on camera distributing methamphetamine in the Prague underground metro transport system. Police found an amount equivalent to a single dose of methamphetamine on him after a passerby alerted them. The offender has an extensive criminal history, including three

[6]Under the Czech Criminal Code, the amount of damage is a relevant factor in determining the sentence.

prior convictions, two of which were for drug distribution. The public prosecutor recommended a 2-year prison sentence, which is the lower limit of the applicable sentencing range. In the control condition, the judge imposed the recommended two-year sentence. In the treatment condition, the judge imposed a six-year prison sentence. We further divided this treatment condition according to the quality of the sentencing justification: one version provided a neutral, vague justification, while the other explicitly emphasized the defendant's previous convictions.

Six months after Karel Bartoň was released from prison, he committed fraud by selling a car that did not belong to him. Participants were placed in a situation in which their supervisor instructed them to impose a prison sentence, while leaving the length of the sentence to their discretion.

Table 2: **Experimental Manipulation**

	Recommended Sentence in Initial Case	Imposed Sentence in Initial Case	
		Control Group	Treatment Group
Exp 1 (CZ)	**Suspended** 2-year Prison Sentence	**Suspended** 2-year Prison Sentence	2-year Prison Sentence
Exp 2 (NL)	3m prison sentence	3m prison sentence	12m prison sentence
Exp 3 (CZ)	8m prison sentence	8m prison sentence	22m prison sentence
Exp 4 (CZ)	2y prison sentence	2y prison sentence	6y prison sentence

Notes: This table summarizes the sentences recommended and imposed by treatment condition for each experiment. In the control condition, the judge imposed the sentence recommended by the prosecutor, whereas in the treatment condition, the judge imposed a harsher sentence. CZ refers to experiments conducted in Czechia; NL refers to the experiment conducted in the Netherlands.

3.3 Data Collection

We recruited participants at multiple judicial seminars and workshops attended by judges, public prosecutors, and law clerks (assistants to judges and prosecutors undergoing a three-year traineeship after law school) between September 2023 and January 2026. Data collection always took place at the beginning of the seminar or workshop to ensure that responses were not influenced by the event's content. The study was introduced to participants as research on sentencing decisions.

With the exception of one data-collection event in which participants completed both Experiments 1 and 4, all participants took part in only a single experiment. Moreover, no respondent participated in more than one data-collection event. Each experiment was pre-registered separately, except for Experiments 1 and 4, which were covered by a joint pre-registration associated with their initial data collection. For the summary of the data collection events, see Table A1 in Appendix A.[7] The research project was approved by the Research Ethics Committee of the Faculty of Social Sciences, Charles University.[8]

In the experiments involving Czech participants, the study was administered online using Qualtrics, and participants completed it on their own devices (the design was optimized for smartphone readability). In the experiment involving Dutch participants, the study was administered in a pen-and-paper format that closely mirrored the structure of the Qualtrics version.

Table A2 in Appendix A reports the shares of judges and public prosecutors across experiments and by treatment condition. In none of the experiments did the composition of participants by professional background differ systematically between the control and treatment conditions.

4 Results

4.1 Experimental Manipulation

We begin by showing that the experimental manipulation worked as intended. Across all four experiments, participants in the treatment conditions evaluated the sentence imposed in the initial case as substantially harsher than did participants in the control condition. Figure 2 plots participants' assessments of the initial case sentence on a five-point scale ranging from *too lenient* to *too harsh*. In every experiment, the distribution in the treatment conditions shifts markedly toward higher perceived severity. In the control groups, the median assessment was an *appropriate sentence*, indicating that the baseline sentences were well calibrated to the case facts and institutional context.[9] By contrast, median assessments in the treatment conditions ranged from *a bit harsh* (Experiments 1 and 3) to *too harsh* (Experiments 2 and 4).

We further provide a formal test by estimating a simple regression that measures the difference in the share of participants who perceived the sentence in the initial case as

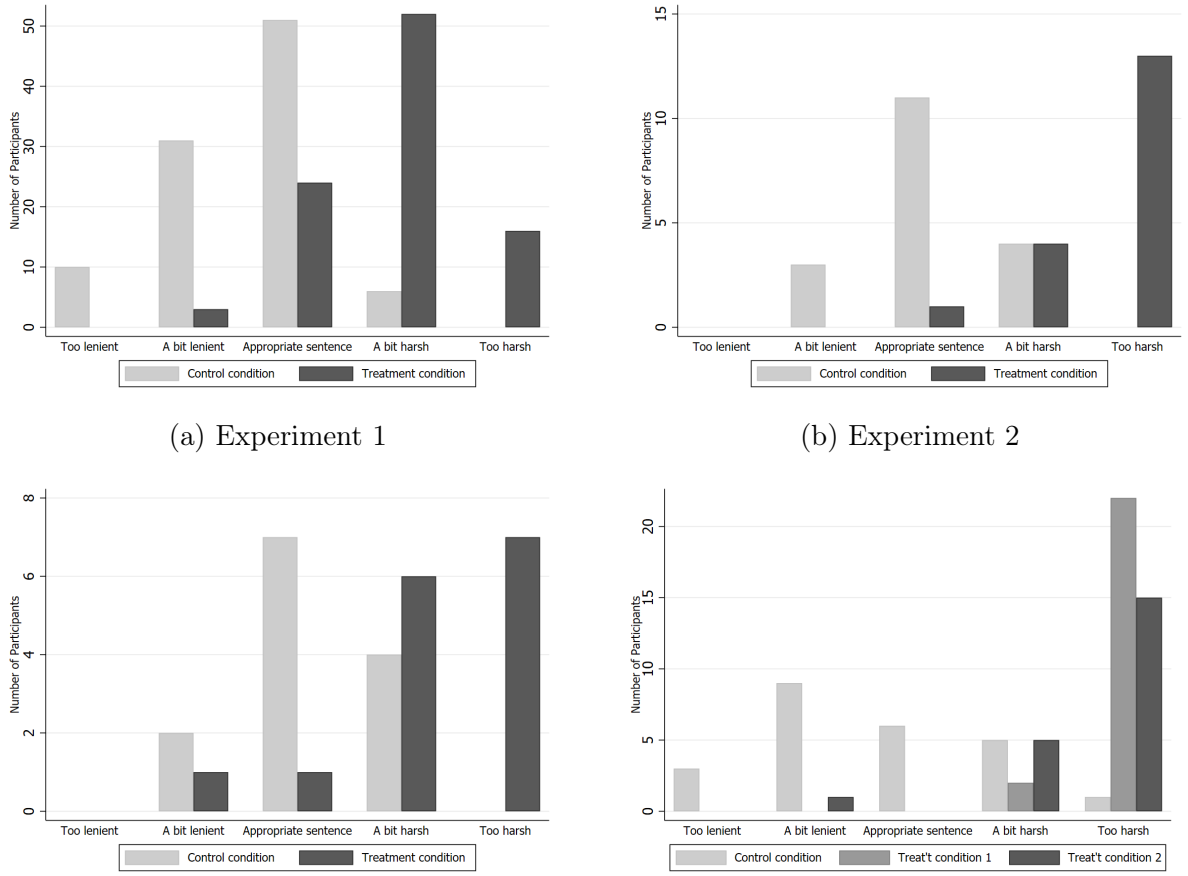
[7] Registration DOIs: 10.17605/OSF.IO/AXZ9W (Exp. 2), 10.17605/OSF.IO/MHK7T (Exp. 3), 10.17605/OSF.IO/JK8N9 (Exp. 1 and 4), and 10.17605/OSF.IO/S2QJN (Exp. 1).

[8] Application No. 80/2023.

[9] In Experiment 4, the median assessment lies at the boundary between *a bit lenient* and *appropriate sentence* options.

a bit harsh or *too harsh* across treatment conditions. Table A3 in Appendix A shows that assignment to the treatment condition increased the probability of perceiving the sentence as harsh by between 55 and 75 percentage points, depending on the experiment. The estimated effects are sizable and statistically significant at the 1% level.

Figure 2: **Perceived Harshness of Sentence Imposed in Initial Case**



(a) Experiment 1

(b) Experiment 2

(c) Experiment 3

(d) Experiment 4

Notes: The figures display participants' self-reported perceptions of the harshness of the sentence imposed by the judge in the initial case, by treatment condition, for each experiment. Panels (a)–(d) correspond to Experiments 1–4, respectively. Panel (d) shows that perceptions in both treatment conditions (T1 and T2) were particularly extreme, with most participants viewing the imposed sentence as too harsh.

4.2 Sentence Imposed in Subsequent Case

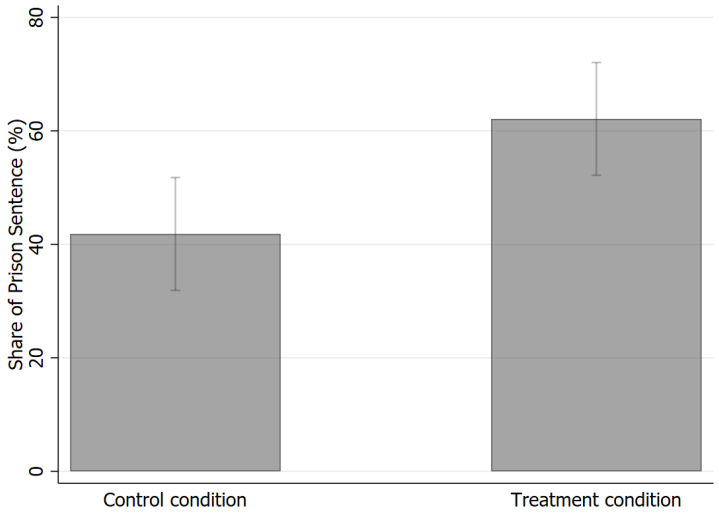
We next examine the effect of imposing an excessively harsh sentence in the previous case on sentencing decisions in the subsequent case, which is our primary outcome of interest.

Figure 3 plots the shares of imposed prison sentences in Experiment 1 and the histograms of imposed prison sentence lengths for Experiments 2–4, by treatment condition. Panel (a) shows that in Experiment 1, 42% of participants in the control group imposed a prison sentence, compared with 62% in the treatment group, implying a treatment effect of 20 percentage points (49%; t-test, p-value = 0.005). Figure A2 in Appendix A further indicates that, conditional on imposing a prison sentence, participants in the treatment group imposed sentences that were nearly two months longer on average, although the difference is not statistically significant (t-test, p-value = 0.129). The latter finding provides no evidence that participants offset a higher propensity to incarcerate by imposing shorter prison sentences, conditional on incarceration.

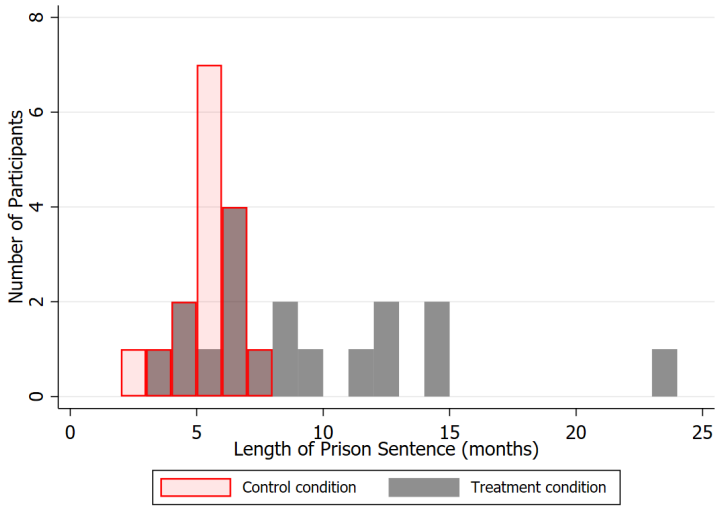
Panel (b) shows a clear shift towards longer sentence lengths under the treatment condition in Experiment 2. The median sentence increases from 5 months in the control condition to 7.5 months in the treatment condition—a 50% increase. Similarly, panel (c) shows that in Experiment 3 participants in the treatment condition imposed harsher sentences than in the control group. The median sentence length increased from 10 months to 18 months, representing an 80% increase.

Given the absence of a statistically significant difference in average sentence length between the T1 and T2 treatment groups in Experiment 4, we pool the observations and analyze them as a single treatment group. Consequently, the treatment group is twice as large as the control group. Panel (d) shows no statistically significant difference in the distribution of imposed sentences between the control and treatment groups.

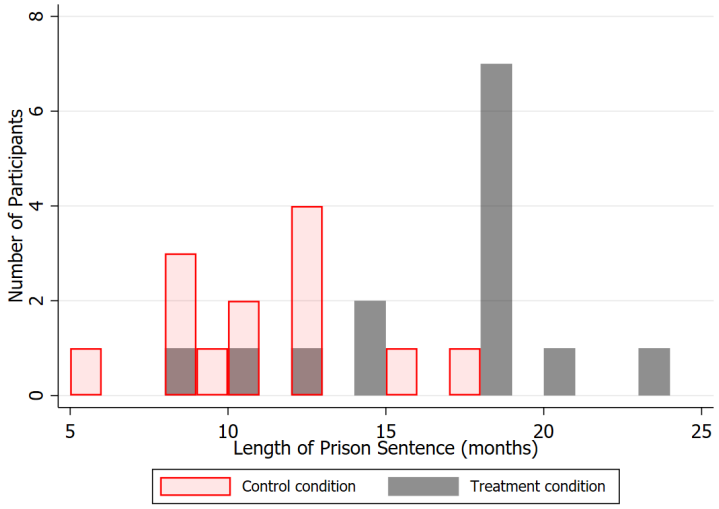
Figure 3: **Effect on Excessively Harsh Sentence on Subsequent Sentences**



(a) Experiment 1



(b) Experiment 2



(c) Experiment 3

(d) Experiment 4

Notes: Panel (a) shows the share of prison sentences imposed in Experiment 1 by treatment condition. Panels (b)–(d) display the distributions of prison sentence lengths in Experiments 2–4 by treatment condition.

To estimate the treatment effect formally, we run a simple regression, specified as follows:

$$\texttt{Sentence}_i = \alpha + \beta \texttt{Treatment}_i + \varepsilon_i,$$

where `Sentence` captures the sentence decision in the subsequent case (a binary variable for a prison sentence in Experiment 1 and the length of incarceration in months for Experiments 2-4), `Treatment` is a binary variable that equals 1 for participants assigned to treatment conditions and 0 otherwise. We add other control variables in robustness specifications.

Table 3 reports the results from the above baseline specification. Column (1) shows that imposing a prison sentence, rather than a suspended prison sentence of the same length, in the initial case increases the probability of imposing a prison sentence in the subsequent case by 20 percentage points (49%). The effect is statistically significant at the 1% level.

The remaining columns report the results from Experiments 2–4, using the length of the prison sentence as the outcome of interest. Columns (2)–(4) report the treatment effects, measured in months, for each experiment separately. In Experiment 2, the treatment increases the average sentence length by 3.9 months. In Experiment 3, the treatment increases the average sentence length by 5.6 months. Finally, in Experiment 4, the estimated treatment effect is 1.4 months. The estimated effects in Experiments 2 and 3 are substantively large and statistically significant at the 1% level.[10]

Next, we pooled all observations from Experiments 2-4 to increase statistical power. We standardized the imposed sentence so that the average sentence in the control group in each experiment is zero and the standard deviation is 1. Having standardized observations, we estimate the average treatment effect quantified in standard deviations of the sentences imposed in the control group. The fifth column shows that the effect exceeds 1.05 standard deviations and is statistically significant at the 1% level.[11]

Because the treatment varies in magnitude across experiments (e.g., a change from 3

[10]In Experiment 3, one participant in the treatment group imposed the maximum possible amount of community service (300 hours) instead of a prison sentence. To demonstrate that this observation does not qualitatively affect our findings, we conducted a robustness check in which we recoded this sentence as a zero-month prison sentence, the most conservative assumption against our hypothesis, and re-estimated all specifications. Under this coding, the estimated average treatment effect in Experiment 3 declines to 4.51 months ($p = 0.022$). Note that any other assumption on how to map community sentence into prison sentence necessarily leads to a larger average treatment effect. The influence of this observation on the treatment effect on the pooled data from Experiments 1-3 is negligible.

[11]This specification assigns equal weight to each observation. Column (1) of Table A5 in Appendix A reports results from an alternative specification that assigns equal weight to each experiment. The estimated treatment effect is even larger.

Table 3: **Effect on Excessively Harsh Sentence on Subsequent Sentences**

	Prison Sentence	Length of Prison Sentence				
	=1	Months			SD	
	(1)	(2)	(3)	(4)	(5)	(6)
Treat.	0.203***	3.861***	5.593***	1.381	1.057***	0.615***
	(0.071)	(1.308)	(1.477)	(2.218)	(0.334)	(0.141)
Cons.	0.418***	5.000***	10.692***	26.375***	-0.000	-0.171
	(0.050)	(0.952)	(1.064)	(1.791)	(0.257)	(0.242)
N	193	34	27	69	130	130
Exper.	1	2	3	4	pooled	norm'ed treat.

Notes: This table summarizes the main results. Column (1) reports the results for Experiment 1, in which the outcome variable is an indicator for imposing a prison sentence in the subsequent case. The coefficient on *Treat.* is therefore interpreted as the causal effect of imposing a prison sentence in the initial case on the probability of imposing a prison sentence in the subsequent case. Columns (2)–(4) report the treatment effects for Experiments 2–4, measured in months of imprisonment. Columns (5) and (6) present the effect estimated on a pooled data across these three experiments, expressed in standard deviations. Sentence lengths are standardized within each experiment so that the control group has a mean of zero and a standard deviation of one. Column (6) reports the results using the normalized treatment definition, in which the treatment coefficient corresponds to doubling the sentence relative to the control group. Standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

to 12 months is not directly comparable to a change from 8 to 22 months), pooling the experiments yields a treatment effect with no straightforward interpretation. Two alternative interpretations are therefore more informative. First, participants' self-reported assessment of the appropriateness of the sentence in the initial case allows the effect to be interpreted as a response to a shift in the median assessment of the sentence from an *appropriate sentence* to *too harsh* (or *a bit harsh* in Experiment 3). Although this interpretation relies on relatively weak assumptions, it does not provide a quantifiable measure of the treatment effect.

Second, each treatment can be normalized relative to the sentence imposed in the respective control condition. This allows the treatment effect to be interpreted as the effect of imposing a prison sentence that is, for example, twice as long as the sentence imposed in the control condition. One can think of this approach as estimating the effect of a given treatment intensity. In Experiment 2, the normalized treatment intensity is 3 ($\frac{12-3}{3}$); in Experiment 3, it is 1.75; and in Experiment 4, it is 2. Under this interpretation, the estimates imply that doubling the length of the prison sentence in the prior case increases the length of the prison sentence imposed in the subsequent case by 0.6 standard deviations. This interpretation relies on a linearity assumption between treatment intensity and the treatment effect.

Tables A4 and A5 in Appendix A report robustness estimates from alternative specifications for the prison-sentence decision and the length of the prison sentence, respectively. Across a series of regressions, we show that our results are robust to using a weighted sample of observations, excluding outliers, controlling for participants' characteristics, and accounting for their beliefs regarding the role of sentencing following a previously harsh sentence, as measured after the experiment. Controlling for additional variables even increases the effect on the likelihood of imposing a prison sentence in Experiment 1 by approximately 4 percentage points. The results extending Experiment 1 further show that participants who indicated that they would have imposed a prison sentence in the initial case were 30 percentage points more likely to impose a prison sentence in the subsequent case as well, providing evidence for the internal validity of the data.

A potential concern is that our results are driven purely by an anchoring effect. To address this concern, we replicated and extended Experiment 2 with Dutch law students, introducing several additional treatment conditions in which the offenders in Cases A and B were different individuals. This design allows us to isolate the anchoring effect by eliminating the mechanism associated with the same offender appearing in both cases. The results show that, although an anchoring effect is present—leading to longer sentences following a harsher prior sentence—the effect of a previously harsh sentence imposed on the same offender is substantially larger. Furthermore, the existing literature comparing students and sentencing professionals suggests that, if anything, sentencing professionals are less susceptible to behavioral biases and cognitive limitations within their area of expertise (Holste and Spamann, 2023; Spamann and Klöhn, 2024). We provide additional details and report the full results in Appendix B.

4.3 Role of Attitudes on Previous Sentences at Sentencing

To provide evidence on the potential mechanism underlying the treatment effect, we examine which participants are most responsive to the treatment. To do so, we rely on two self-reported measures that capture participants' attitudes toward imposing harsher sentences following a previously imposed prison sentence. Specifically, participants were asked to indicate the extent to which they agreed with two normative statements on a four-point scale.[12]

The first measure captures the extent to which participants agree that a previously long prison sentence should, in the event of recidivism, lead to a longer subsequent sentence because such an offender has a low likelihood of rehabilitation and should therefore be isolated from society. The second measure captures agreement with the view that it is

[12]Responses were recorded on a four-point scale: completely agree, rather agree, rather disagree, and completely disagree.

more appropriate to impose a prison sentence on an offender who has previously been incarcerated than on an otherwise similar offender with no prior incarceration. Figures A3a and A3b in Appendix A present the distribution of responses among participants.

Both measures capture participants' willingness to impose harsher punishment following a previously harsh sentence. However, the latter measure concerns the appropriateness of incarceration specifically, whereas the former relates to sentence severity more broadly. For each measure, we split the sample according to whether respondents agree or disagree with the statement and estimate regressions including an interaction term between the treatment status and the agreement indicator. A limitation of this analysis is that these measures were collected only in Experiments 1 and 4.

Table 4 reports the results. Columns (1) and (2) present heterogeneous treatment effects on the probability of incarceration estimated using data from Experiment 1. The results reveal substantial heterogeneity that is consistent with respondents' stated attitudes. Participants who agree that a previously long sentence should lead to a longer sentence in the event of recidivism account for almost the entire treatment effect. Among these respondents, the treatment increases the probability of incarceration by nearly 40 percentage points. In contrast, among respondents who do not agree with this view, the estimated effect is only 3 percentage points and statistically indistinguishable from zero.

A similar pattern emerges for the second measure. Respondents who consider imprisonment more appropriate for offenders who have previously served a prison sentence exhibit a substantially larger treatment effect than those who do not share this view. The estimated treatment effect is 21 percentage points among the former group, compared with 5.5 percentage points among the latter. Although this difference is sizable—nearly a fourfold increase—the interaction effect remains statistically insignificant.

The last two columns of Table 4 report analogous results for Experiment 4. Although the average treatment effect in Experiment 4 is not statistically significant, as discussed in the previous section, splitting respondents according to their agreement with the two normative statements again reveals meaningful differences across groups. Admittedly, none of the subgroup estimates is statistically significant, likely due to the limited sample size (65 and 67 observations, respectively). Nevertheless, the differences in the estimated treatment effects between respondents with differing attitudes amount to 0.24 and 0.83 standard deviations, respectively.

We interpret these results as suggestive evidence that the effect is primarily driven by sentencing professionals who believe that imposing a harsher sentence may be appropriate in a similar situation. However, several considerations warrant caution. The sample size is relatively small, resulting in limited statistical power, and the attitudinal measures were elicited only after respondents had made their sentencing decisions. We therefore

Table 4: **Heterogeneous Effects: Role of Attitudes**

	Prison Sentence =1		Length of Prison Sentence SD	
	(1)	(2)	(3)	(4)
Treatment	0.027	0.055	0.059	-0.497
	(0.111)	(0.156)	(0.382)	(0.486)
Harsher Sent. After Recidivism (= 1)	-0.039		-0.009	
	(0.118)		(0.427)	
Treat. × Harsher Sentence	0.394**		0.244	
	(0.164)		(0.532)	
Prison After Prev. Prison (= 1)		0.122		-0.098
		(0.123)		(0.464)
Treat. × Prison		0.158		0.833
		(0.185)		(0.568)
Constant	0.405***	0.320***	-0.044	0.073
	(0.079)	(0.098)	(0.321)	(0.402)
N	137	139	65	67
Experiment	Experiment 1		Experiment 4	

Notes: This table examines heterogeneity in the treatment effect by participants' attitudes toward the appropriateness of harsher sentencing under two circumstances. Columns (1) and (3) divide participants according to whether they agree that a prior long prison sentence should lead to a longer sentence in the event of recidivism. Columns (2) and (4) divide participants according to whether they agree that imposing a prison sentence is more appropriate for an offender with a prior incarceration history than for an otherwise identical offender with no prior incarceration history. Columns (1) and (2) are based on participants from Experiment 1 and report treatment effects on the probability of imposing a prison sentence. Columns (3) and (4) use participants from Experiment 4 and report treatment effects on prison sentence length. Note that the samples of participants from Experiment 1 and 4 partially overlap. Standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

view these findings as suggestive rather than conclusive. At the same time, we do not find any other robust and consistent evidence of a heterogeneous effect pointing to alternative mechanisms.

5 Discussion and Concluding Remark

We study the consequences of a previous harsh sentence, warranted or not, for subsequent sentencing decisions. We first examine the question theoretically and show that most current sentencing rationales imply that an initially harsh sentence, even if unwarranted, should lead to a harsher subsequent sentence. This prediction is driven primarily by the rationales of incapacitation and specific deterrence, while retributive theories generally imply that previous sentences should play no or only a limited role in subsequent sentencing decisions. The effect is further reinforced by behavioral factors such as anchoring and institutional deference. An excessively harsh initial sentence can lead to a more lenient subsequent sentence only if judges deliberately compensate for the earlier excessive harshness, a response that is inconsistent with all sentencing rationales.

We then provide compelling experimental evidence that sentencing professionals are more likely to impose harsher sentences on offenders who previously received an excessively harsh sentence than on otherwise identical offenders whose prior sentence was in the normal range. We document this effect both on the probability of imposing a prison sentence and on the length of the prison sentence imposed. We further provide suggestive evidence that the effect is driven by sentencing professionals who believe that a harsher sentence is appropriate when a previous sentence has failed to deter recidivism and that imprisonment is more appropriate for offenders who have previously been incarcerated.

Experiment 1, which has the greatest statistical power, yields a clear and substantial effect: the probability of incarceration increases by 20 percentage points and shows that the previous excessively harsh sentence affects a subsequent sentence even after 3.5 year of leading a law-abiding life. The remaining three experiments examine the effect on prison sentence length across three different case vignettes and two judicial systems. Experiments 2 and 3 yield statistically significant estimates indicating that a previously imposed excessively harsh prison sentence leads to a harsher subsequent prison sentence. In Experiment 4, however, we do not find an effect of comparable magnitude. We propose several possible explanations for this difference. First, in Experiment 4, the initial and subsequent cases involve different types of offenses—drug distribution in the initial case and fraud in the subsequent case. This discontinuity in the offender's criminal history may weaken sentencing professionals' inclination to impose a harsher sentence in the later case. Second, relative to the applicable sentencing range, the subsequent offense in

Experiment 4 is more serious than those in Experiments 2 and 3. Sentencing professionals may therefore place greater weight on the severity of the current offense and less weight on the offender's personal characteristics or prior sentencing history, reducing the influence of the earlier sentencing decision. Third, we cannot rule out the possibility that the absence of a detectable effect is simply due to statistical noise. Unfortunately, our experimental design does not allow us to distinguish among these explanations. Importantly, even in Experiment 4, participants seem to differ in the responsiveness to the treatment condition depending on their beliefs about an appropriate sentence after a previously harsh sentence.

Experiment 4 did not yield statistically significant differences between the two alternative justifications provided by the judge in the initial case (T1 and T2). This suggests that the initial judge's reasoning is unlikely to play a major role in the documented effect. At the same time, given the relatively weak treatment manipulation and limited statistical power, we cannot exclude the possibility of a smaller treatment effect.

Our findings convincingly rule out the alternative hypothesis that sentencing professionals compensate for a previously unreasonable harsh sentence by imposing a more lenient sentence in a subsequent case. The experimental design explicitly allowed for such behavior. In particular, support for this hypothesis would require sentences in the treatment group to be more lenient than those imposed in the control group. We observe no such pattern in any of the experiments. This remains true even among participants who explicitly state that they would be willing to compensate for a previously unwarranted harsh sentence by imposing a more lenient subsequent sentence, providing additional evidence against this mechanism (see Tables A4 and A5 in Appendix A).

Although our findings stem from experimental variation, we believe, they exhibit strong external relevance. This is primarily due to our use of sentencing professionals drawn from two criminal justice systems that differ substantially in criminal codes, sentencing rules, and established practices. The validity of our findings is further strengthened by the careful calibration of the experimental vignettes and treatment conditions, as confirmed by sentencing professionals' own perceptions. Moreover, the presence of prosecutorial sentencing guidelines in the Dutch setting further enhances the validity of the experimental design.

We identify a relatively large effect despite two features of the experimental setting that arguably attenuate cumulative disadvantage but are largely absent in real-world sentencing. First, respondents received more information about the initial case including prosecutors' recommended sentence than they would observe in a real-life setting. This effectively weakened the role of the previous sentence as a signal of the offender's or the offense's otherwise unobserved characteristics. In turn, this could suppress the tendency to impose a harsher sentence in the treatment group.

Second, the effect emerges despite participants' awareness of the excessive harshness of the sentence in the initial case, as confirmed by our manipulation check. Together with the observed heterogeneity in responses, this suggests that the effect is not driven by misperception or unconscious biases in sentencing practices. Rather, it reflects a conscious decision by sentencing professionals, shaped by their attitudes toward the role of previous sentences at sentencing.

Our findings have important implications for how sentencing disparities should be understood. Variation in judicial harshness is not a one-time shock in an offender's criminal career; rather, initial disparities in treatment are likely to have long-term consequences. The severity of an initial sentence is propagated and amplified through subsequent judicial decisions, creating a cumulative disadvantage of judicial harshness at sentencing. While cumulative disadvantage in the criminal justice system has previously been documented in the context of plea bargaining and trial penalties (Kurlychek and Johnson, 2019), our findings offer a more direct and striking illustration of its magnitude, one that is likely present in criminal justice systems across the world.

Our findings are closely related to the literature examining the effects of pretrial detention on subsequent sentencing. Similar to a harsh prior sentence, pretrial detention also increases the severity of subsequent sentences, particularly the likelihood of incarceration (Leslie and Pope, 2017; Koppel et al., 2024; St. Louis, 2024). Harsh prior sentences and pretrial detention also share a common doctrinal foundation for these effects. Retributive theories would deny or limit the relevance of both prior sentence and pretrial detention, whereas consequentialist theories may justify taking them into account. Both lines of research therefore suggest that sentencing disparities should not be viewed as a static problem but rather as one that can generate cumulative disadvantage over time.

The problem may be particularly concerning when the initial harsher sentences reflect bias against specific groups of offenders, such as the racial disparities in sentencing that have been extensively documented in the United States and in England and Wales (Tuttle, 2026; Pina-Sánchez et al., 2025). These findings underscore the need for renewed attention to policies and institutional safeguards designed to limit unwarranted sentencing disparities.

Our results also have implications for the empirical sentencing scholarship, which has largely overlooked the role of previously imposed sentences. Even conditional on an offender's criminal history, prior sentencing decisions appear to play a substantial role in shaping subsequent sentences. Ignoring this mechanism in empirical analyses may therefore lead to misleading conclusions about sentencing behavior and the determinants of judicial decision-making.

We believe that our results open several avenues for future research. First, it would

be reassuring to document the causal effect of an excessively harsh sentence on the subsequent sentence beyond experimental settings using observational data. Second, a natural next step is to engage with the underlying mechanisms in greater depth. Our suggestive evidence indicates that the effect is concentrated among sentencing professionals who view harsher sentences as more appropriate. Exploring these mechanisms further and identifying interventions capable of changing such beliefs could provide a promising avenue for mitigating cumulative disadvantage. Third, an additional direction for future research is to study the mirrored effect: the consequences of exceptionally lenient prior sentences. Although our survey evidence suggests that sentencing professionals tend to reject the idea of increasing current sentences to compensate for overly lenient prior ones, it remains possible that they impose more lenient sentences following an unreasonably lenient earlier sentence. Generally, sentencing scholarship needs to better understand the dynamics of sentencing disparities and the extent to which its vicious cycle can be disrupted.

References

Abrams, D. S., Bertrand, M., and Mullainathan, S. (2012). Do Judges Vary in Their Treatment of Race? *The Journal of Legal Studies*, 41(2):347–383.

Anderson, J. M., Kling, J. R., and Stith, K. (1999). Measuring Interjudge Sentencing Disparity: Before and After the Federal Sentencing Guidelines. *The Journal of Law and Economics*, 42(S1):271–308.

Arnold, D., Dobbie, W., and Hull, P. (2022). Measuring Racial Discrimination in Bail Decisions. *American Economic Review*, 112(9):2992–3038.

Bushway, S. D. and Morrison Piehl, A. (2001). Judging Judicial Discretion: Legal Factors and Racial Discrimination in Sentencing. *Law & Society Review*, 35(4):733–764.

Bystranowski, P., Janik, B., Próchnicki, M., and Skórska, P. (2021). Anchoring Effect in Legal Decision-Making: A Meta-Analysis. *Law and Human Behavior*, 45(1):1.

Crow, M. S. and Johnson, K. A. (2008). Race, Ethnicity, and Habitual-Offender Sentencing: A Multilevel Analysis of Individual and Contextual Threat. *Criminal Justice Policy Review*.

Drápal, J. (2020). Sentencing Disparities in the Czech Republic: Empirical Evidence from Post-communist Europe. *European Journal of Criminology*, 17(2):151–174.

Drápal, J., Krajewski, K., and Tripković, M. (2026). *Suspended Prison Sentences: Elusive Punishment in Central and Eastern Europe*. Taylor & Francis.

Drápal, J. and Šoltés, M. (2024). Sentencing Decisions Around Quantity Thresholds: Theory and Experiment. *Journal of Experimental Criminology*, 20(4):1323–1367.

Emerson, R. M. (1983). Holistic effects in social control decision-making. *Law & Society Review*, 17(3):425–455.

Englich, B., Mussweiler, T., and Strack, F. (2006). Playing Dice With Criminal Sentences: The Influence of Irrelevant Anchors on Experts' Judicial Decision Making. *Personality and Social Psychology Bulletin*, 32(2):188–200.

Frase, R. S. (2004). Limiting retributivism. In Tonry, M., editor, *The Future of Imprisonment*. Oxford University Press.

Frase, R. S. (2012). *Just Sentencing*. Oxford University Press, Oxford.

Frase, R. S. and Roberts, J. V. (2019). *Paying for the Past: The Case Against Prior Record Sentence Enhancements*. Oxford University Press.

Holste, L. and Spamann, H. (2023). Experimental Investigations of Judicial Decision-Making. *The Cambridge Handbook of Experimental Jurisprudence (forthcoming 2023)*.

Johnson, B. D. (2003). Racial and Ethnic Disparities in Sentencing Departures Across Modes of Conviction. *Criminology*, 41(2):449–490.

Kaiser, N. and Leibetseder, I. (2026). Sentencing Practice and Specific Deterrence: Unveiling Relevant Factors in Decision-Making Behavior in Austrian Criminal Proceedings. *Archives of Criminology*, XLVII(2):23–45.

Kang, K. and Silveira, B. S. (2021). Understanding Disparities in Punishment: Regulator Preferences and Expertise. *Journal of Political Economy*, 129(10):2947–2992.

Koppel, S., Bergin, T., Ropac, R., Randolph, I., and Joseph, H. (2024). Examining the causal effect of pretrial detention on case outcomes: A judge fixed effect instrumental variable approach. *Journal of Experimental Criminology*, 20(2):439–456.

Kurlychek, M. C. and Johnson, B. D. (2019). Cumulative Disadvantage in the American Criminal Justice System. *Annual Review of Criminology*, 2(1):291–319.

Leibovitch, A. (2016a). Punishing on a Curve. *Nw. UL Rev.*, 111:1205.

Leibovitch, A. (2016b). Relative Judgments. *The Journal of Legal Studies*, 45(2):281–330.

Leslie, E. and Pope, N. G. (2017). The unintended impact of pretrial detention on case outcomes: Evidence from new york city arraignments. *The Journal of Law and Economics*, 60(3):529–557.

Loeffler, C. E. and Nagin, D. S. (2022). The Impact of Incarceration on Recidivism. *Annual Review of Criminology*, 5(1).

Lynch, M. and Bertenthal, A. (2016). The calculus of the record: Criminal history in the making of us federal sentencing guidelines. *Theoretical Criminology*, 20(2):145–164.

Mamak, K., Dudek, J., Koniewski, M., and Kwiatkowski, D. (2022). A Failed Attempt to Radically Reduce Inter-Court Sentencing Disparities by Legislation: Empirical Evidence from Poland. *European Journal of Criminology*, 19(5):1165–1187.

Merton, R. K. (1968). The matthew effect in science: The reward and communication systems of science are considered. *Science*, 159(3810):56–63.

Petrich, D. M., Pratt, T. C., Jonson, C. L., and Cullen, F. T. (2021). Custodial sanctions and reoffending: A meta-analytic review. *Crime and Justice*, 50:353–424.

Pina-Sánchez, J., Hamilton, M., and Tennant, P. W. (2025). Estimating discrimination in sentencing: Distinguishing between good and bad controls. *European Journal of Empirical Legal Studies*, 2(3).

Pina-Sánchez, J. and Linacre, R. (2013). Sentence Consistency in England and Wales: Evidence from the Crown Court Sentencing Survey. *The British Journal of Criminology*, 53(6):1118–1138.

Roberts, J. and von Hirsch, A. (2010). *Previous Convictions at Sentencing: Theoretical and Applied Perspectives*. Studies in Penal Theory and Penal Ethics. Bloomsbury Academic.

Scott, R. W. (2010). Inter-Judge Sentencing Disparity After Booker: A First Look. *Stan. L. Rev.*, 63:1.

Spamann, H. and Klöhn, L. (2024). Can Law Students Replace Judges in Experiments of Judicial Decision-Making? *Journal of Law & Empirical Analysis*, 1(1):149–161.

Spohn, C. and Welch, S. (1987). The Effect of Prior Record in Sentencing Research: An Examination of the Assumption That Any Measure Is Adequate. *Justice Quarterly*, 4(2):287–302.

Sporer, S. L. and Goodman-Delahunty, J. (2009). Disparities in Sentencing Decisions. *Social Psychology of Punishment of Crime*, pages 379–401.

St. Louis, S. (2024). The pretrial detention penalty: A systematic review and meta-analysis of pretrial detention and case outcomes. *Justice Quarterly*, 41(3):347–370.

Tonry, M. (2019). Fifty years of american sentencing reform: Nine lessons. *Crime and Justice*, 48(1):1–34.

Tuttle, C. (2026). Racial disparities in federal sentencing: Evidence from drug mandatory minimums. *Review of Economic Studies*, page rdag037.

Tversky, A. and Kahneman, D. (1974). Judgment Under Uncertainty: Heuristics and Biases: Biases in Judgments Reveal Some Heuristics of Thinking Under Uncertainty. *science*, 185(4157):1124–1131.

van Wingerden, S. G. C. (2014). *Sentencing in the Netherlands: Taking Risk-Related Offender Characteristics Into Account*. Eleven International Publishing.

Vigorita, M. S. (2001). Prior Offense Type and the Probability of Incarceration: The Importance of Current Offense Type and Sentencing Jurisdiction. *Journal of Contemporary Criminal Justice*, 17(2):167–193.

von Hirsch, A. (2010). *Proportionality and the Progressive Loss of Mitigation: Some Further Reflections*, page 1–16. Hart Publishing, Oxford and Portland, OR.

von Hirsch, A. (2017). *Deserved Criminal Sentences: An Overview*. Hart Publishing, Oxford.

Wermink, H., Johnson, B. D., Nieuwbeerta, P., and de Keijser, J. W. (2015). Expanding the scope of sentencing research: Determinants of juvenile and adult punishment in the netherlands. *European Journal of Criminology*, 12(6):739–768.

Yang, C. S. (2014). Have interjudge sentencing disparities increased in an advisory guidelines regime-evidence from booker. *NYUL Rev.*, 89:1268.

Zaibert, L., Roberts, J. V., and Ryberg, J., editors (2025). *Responding to the Culpable State: Is Sentence Mitigation Appropriate?* Hart Publishing, 1 edition.

Zur, T. and Leibovitch, A. (2025). Decision Cascades. *Available at SSRN 6669320*.

A Appendix - Additional Results

Table A1: **Overview of Main Data Collection Events**

Period	Experiment	Jurisdiction
Sep 2023–Mar 2024	Exp. 2	Netherlands
March 2024	Exp. 3	Czechia
November 2024	Exp. 4 and Exp. 1	Czechia
May 2025	Exp. 1	Czechia
January 2026	Exp. 1	Czechia

Notes: This table summarizes all data collection events for the main study.

Table A2: **Descriptive Statistics of the Sample**

	Control Condition	Treatment Condition	t-test (p-value)
Experiment 1			
Share of Male	0.51	0.47	0.665
Share of Judges	0.18	0.15	0.636
Share of Prosecutors	0.52	0.57	0.506
N	97	95	.
Experiment 2			
Share of Male	0.36	0.29	0.648
Share of Judges	0.47	0.33	0.399
Share of Prosecutors	0.47	0.66	0.248
N	19	17	.
Experiment 3			
Share of Male	0.46	0.33	0.507
Share of Judges	0.38	0.40	0.937
Share of Prosecutors	0.15	0.20	0.761
N	13	15	.
Experiment 4			
Share of Male	0.67	0.69	0.853
Share of Judges	0.00	0.02	0.469
Share of Prosecutors	0.92	0.93	0.803
N	24	45	.

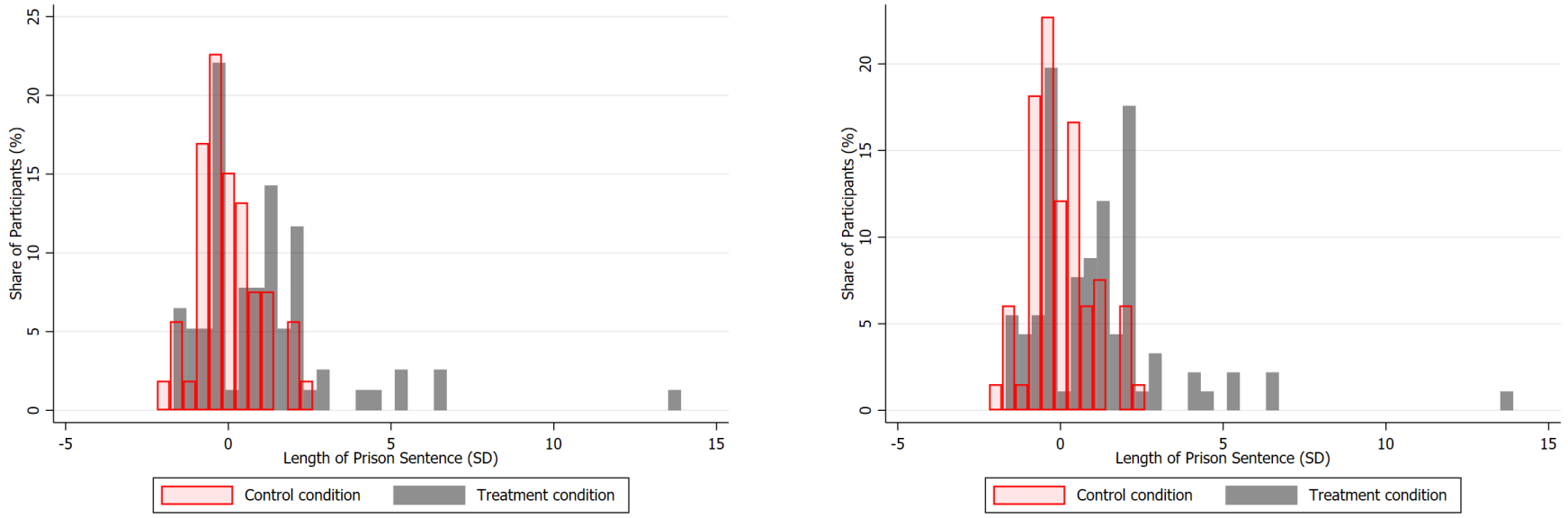
Notes: This table reports the gender and occupational composition of participants by experiment and treatment status. Participants not classified as judges or public prosecutors are law clerks. The final column reports p-values from tests of equality of means between the control and treatment groups. In Experiment 4, the treatment group includes participants assigned to either Treatment 1 or Treatment 2.

Table A3: **Effect of Experimental Manipulation**
Experiments 1-4

	High Perceived Harshness (= 1 for *a bit harsh* or *too harsh*)			
	(1)	(2)	(3)	(4)
Treatment	0.655***	0.722***	0.559***	
	(0.052)	(0.115)	(0.158)	
Treatment 1				0.750***
				(0.083)
Treatment 2				0.702***
				(0.086)
Constant	0.061*	0.222***	0.308**	0.250***
	(0.037)	(0.081)	(0.115)	(0.059)
N	193	36	28	69

Notes: This table shows the effect of the experimental manipulation on the probability that the participant will perceive the sentence imposed in the initial case as *a bit harsh* or *too harsh*. The effect of the manipulation is sizable, exceeding 55 percentage points in all four experiments. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure A1: **Histogram of Standardized Length of Prison Sentences (SD)**
Experiments 2-4

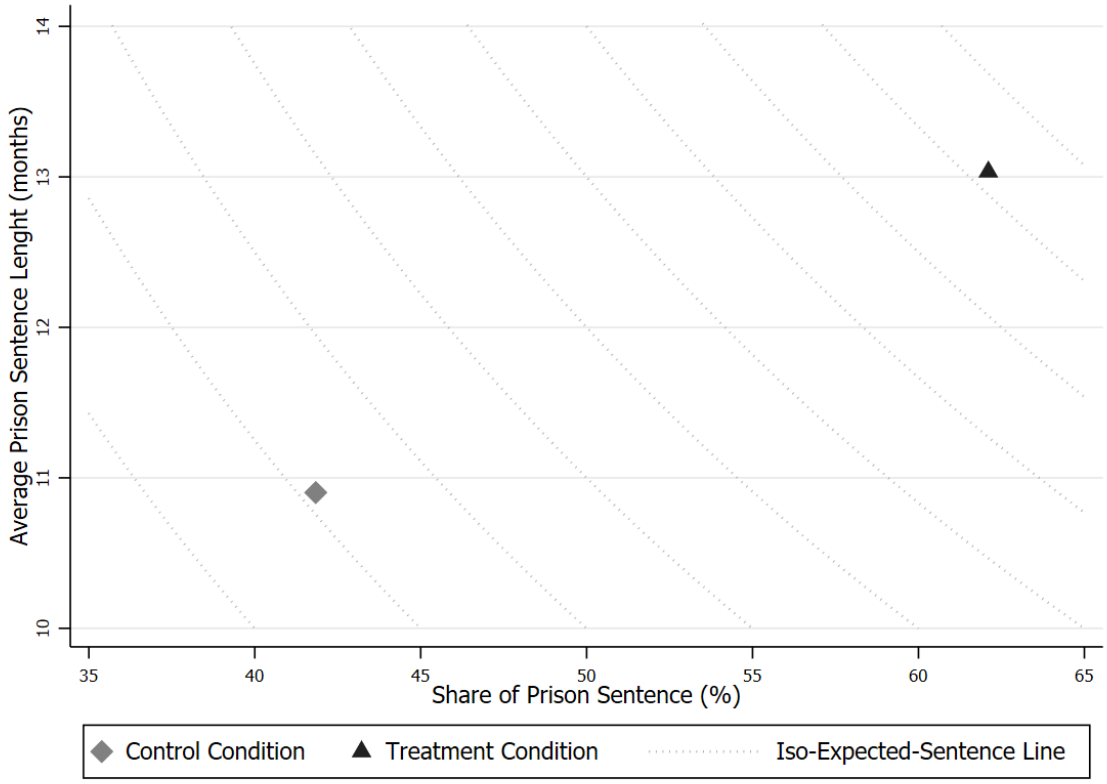


(a) Unweighted Sample

(b) Weighted Sample

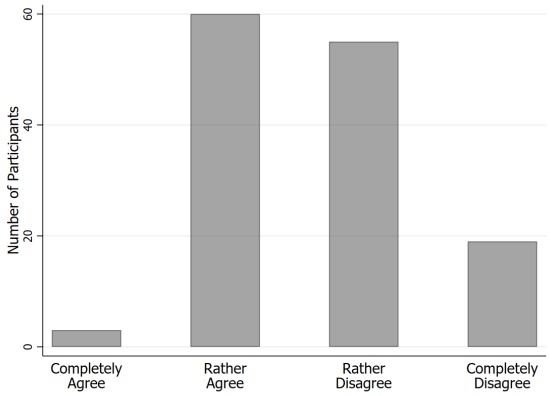
Notes: These figures show histograms of standardized sentences imposed in Experiments 2-4 under the control and the treatment conditions. The x-axis is in the standard deviation of the control group. Panel (a) shows the histogram for the unweighted sample, where each observation collected has the same weight. Panel (b) shows a histogram using a weighted sample, where each experiment has the same weight.

Figure A2: **Expected Prison Sentence Length**
Experiment 1

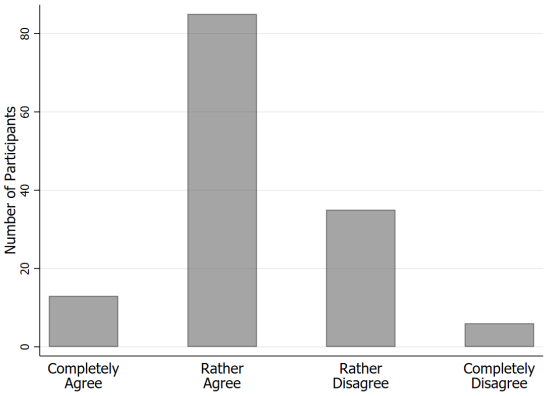


Notes: This figure shows the expected prison sentence length in Experiment 1. The expected prison sentence length, $\mathbb{E}[\text{PSL}] = \Pr(\text{Prison Sentence} = 1) \times \mathbb{E}[\text{Sentence Length} \mid \text{Prison Sentence} = 1]$, captures the average prison sentence length, accounting both for the probability of imposing a prison sentence and for the length of the sentence conditional on imprisonment. This measure simplifies comparisons of sentencing harshness by summarizing outcomes in a single, univariate metric. The horizontal axis shows the probability of a prison sentence, while the vertical axis shows the average sentence length (in months) among those sentenced to prison. The figure therefore provides a clear graphical decomposition of the expected prison sentence length into an extensive margin (the decision to imprison) and an intensive margin (the sentence length conditional on imprisonment). In addition, the iso-expected-sentence lines represent all combinations of imprisonment probabilities and sentence lengths that yield the same expected prison sentence length. Iso-lines farther from the origin correspond to harsher sentencing outcomes. Participants in the treatment group were more likely to impose a prison sentence (by about 20 percentage points), and, conditional on imposing a prison sentence, they imposed sentences that were on average about two months longer.

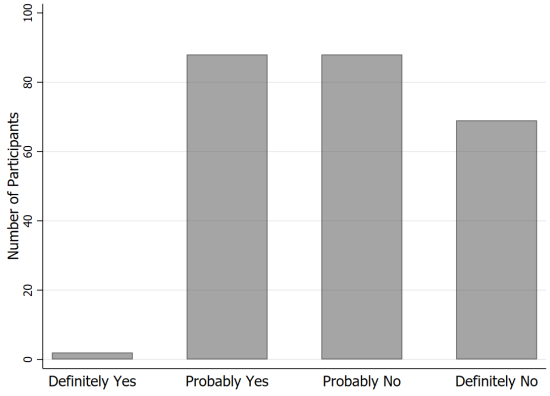
Figure A3: **Attitudinal Measures**



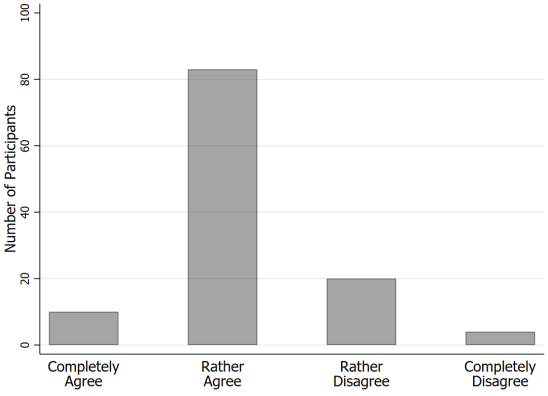
(a) Harsher Sentence After Recidivism



(b) Prison After Previous Prison Sentence



(c) Compensate Previously Severe Sentence



(d) Previous Harsher Sentence as Signal

Notes: Panel (a) shows the extent to which participants agree with the statement that a previous long prison sentence should, in the case of recidivism, lead to longer subsequent imprisonment, as such an offender has a low chance of rehabilitation and should be isolated from society. Panel (b) shows the extent to which participants agree with the statement that imposing a prison sentence is more appropriate for defendants who have been previously incarcerated than for those who have not. Panel (c) shows responses to a question asking whether, in their real-life cases, respondents would impose (or recommend) a more lenient sentence to compensate for a previously excessively harsh sentence. Panel (d) shows the extent to which participants interpret a previously harsher sentence as a signal that the previous judge observed and incorporated into the sentence information not detectable from the criminal record (e.g., the problematic character of the convicted person).

Table A4: **Effect of Previously Harsh Sentence: Prison Sentence**
Experiment 1

	Prison Sentence (= 1)	
	(1)	(2)
Treatment	0.239***	0.246***
	(0.070)	(0.093)
Prison sentence in the initial case	0.281***	0.316***
	(0.079)	(0.104)
Comp. Too-Lenient Prev. Sentence (Base = Probably Yes)		
Probably No	0.139	0.027
	(0.102)	(0.129)
Definitely No	0.092	0.083
	(0.111)	(0.142)
Comp. Too-Severe Prev. Sentence (Base = Definitely Yes)		
Probably Yes	-0.531	-0.414
	(0.343)	(0.479)
Probably No	-0.560	-0.394
	(0.343)	(0.480)
Definitely No	-0.438	-0.407
	(0.347)	(0.488)
Prison After Prev. Prison (Base = Completely Agree)		
Rather Agree		0.028
		(0.162)
Rather disagree		-0.155
		(0.176)
Completely Disagree		-0.392
		(0.366)
Constant	0.745**	0.628
	(0.351)	(0.516)
N	185	107

Notes: This table reports the estimated effect of a previously harsh sentence on the probability of imposing a prison sentence, controlling for a comprehensive set of self-reported attitudinal variables. *Comp. Too-Lenient Prev. Sentence* refers to participants' stated willingness to compensate for a previously too-lenient sentence by imposing a harsher sentence. Note that no participants reported that they would definitely do so. *Comp. Too-Severe Prev. Sentence* refers to participants' stated willingness to compensate in the opposite situation; that is, when they believe the previous sentence was too harsh. Finally, *Prison After Prev. Prison* refers to the extent to which participants agree with the statement that imposing a prison sentence is more appropriate for defendants who have previously been incarcerated than for those who have not. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: **Effect of Previously Harsh Sentence: Length of Prison Sentence** Experiments 2-4

	Length of Prison Sentence (SD)				
	(1)	(2)	(3)	(4)	(5)
Treatment	1.448***	0.744***	0.894***	1.179***	1.519***
	(0.351)	(0.266)	(0.143)	(0.323)	(0.336)
Compensate Too-Lenient Previous Sentence (Baseline = Probably Yes)					
Probably No				-0.730	-1.086*
				(0.508)	(0.552)
Definitely No				-0.780	-1.044*
				(0.530)	(0.568)
Compensate Too-Severe Previous Sentence (Baseline = Definitely Yes)					
Probably Yes				1.687	1.874
				(1.805)	(2.386)
Probably No				1.661	1.796
				(1.807)	(2.387)
Definitely No				1.629	1.761
				(1.835)	(2.411)
Prison Sentence in the initial case (Baseline = Alternative Sentence)					
Yes, below median				0.953**	1.233***
				(0.427)	(0.439)
Yes, above median				1.066**	1.267**
				(0.504)	(0.637)
Experiment (Baseline = Experiment 1)					
Experiment 2				-0.327	-0.263
				(0.480)	(0.432)
Experiment 3				-1.336***	-1.285**
				(0.490)	(0.546)
Constant	0.000	-0.007	-1.049	-1.364	
	(0.265)	(0.206)	(1.988)	(2.545)	
Sample	Weighted	No Outliers	Weighted	.	Weighted
Treatment	.	.	Normalized	.	.
N	130	127	130	126	126

Notes: This table shows results from several robustness regressions using the standardized length of a prison sentence imposed by participants in experiments 1-3. The outcome variable is in the SDs of the control group. The first column shows results from the weighted sample. The second column shows results without outliers, where outliers are defined as observations that are below the lower inner fence: Q1 - 1.5*IQ or above the upper inner fence: Q3 + 1.5*IQ, where IQ is the interquartile range (Q3 - Q1). The third column uses the normalized treatment and reports results for a weighted sample. The fourth and fifth columns replicate the baseline specification, controlling for other characteristics using unweighted and weighted samples, respectively. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B Appendix - Effect of Previous Excessively Harsh Sentence vs Anchoring Effect

The anchoring effect (Tversky and Kahneman, 1974; Englich et al., 2006) is a well-documented cognitive bias whereby exposure to an initial value—often a number—unrelated to the task at hand systematically influences subsequent judgments and decisions. For instance, individuals may recommend longer prison sentences after being exposed to higher numerical anchors, even when those numbers are arbitrary. A mechanism consistent with the anchoring effect is present in our setting and could point to similar results as the identified main treatment effect (henceforth main effect). Specifically, participants in the treatment group are exposed to a higher sentencing anchor than those in the control group, potentially leading them to recommend longer sentences as a result.

We now present evidence that disentangles the overall treatment effect into two components: the main effect and the anchoring effect. To do so, we replicate and extend the original Dutch experiment using a sample of Dutch law and criminology students. Incoming first-year university students were asked to participate in a survey experiment in their first week of studies during introductory lectures in September 2023. The experiment includes eight treatment arms (four per each Experiment), in half of them the prosecutor recommending in the initial case a 3 month-long prison sentence and in the rest 180 hours of community service. In half of the experimental conditions, we replicate the original design in which both crimes in initial and subsequent cases are committed by the same offender. In the remaining conditions, the crime in the subsequent case is attributed to a different offender than in the initial case. All other case details—including the criminal history of the offender in the subsequent case—are held constant across conditions. Table B1 describes the conditions.

The difference in the imposed sentences in treatment arms A_1 and A_2 can be attributed to both the main effect and the anchoring effect, whereas the difference in imposed sentences in treatment arms A_3 and A_4, where the offender in the subsequent case is a different offender than in the initial case, the main effect is muted and the overall effect is attributed solely to the anchoring effect. Therefore, these two exercises allow us to decompose the overall effect into the part that is attributed to the anchoring effect and the part that corresponds to the main effect.

$$\Delta^A = \underbrace{(A_2 - A_1)}_{\text{main and anchoring effects}} - \underbrace{(A_4 - A_3)}_{\text{only anchoring effect}} = \underbrace{A_2 + A_3 - A_1 - A_4}_{\text{main effect}} \quad (1)$$

We implement it in a regression as follows:

Table B1: **Main vs Anchoring Effect**

Label	Pros. Recommendation	Sentence (C/T group)	Offender A	Offender B
Experiment A				
A_1	180 hours of CS	180 hours of CS (C)	Mark	Mark
A_2	180 hours of CS	12 months prison (T)	Mark	Mark
A_3	180 hours of CS	180 hours of CS (C)	Mark	Eric
A_4	180 hours of CS	12 months prison (T)	Mark	Eric
Experiment B				
B_1	3 months prison	3 months prison (C)	Mark	Mark
B_2	3 months prison	12 months prison (T)	Mark	Mark
B_3	3 months prison	3 months prison (C)	Mark	Eric
B_4	3 months prison	12 months prison (T)	Mark	Eric

Notes: This table describes 8 experimental conditions, four for each Experiment. Conditions A_1 (B_1) and A_3 (B_3) work as control conditions; the judge in the initial case imposes the same sentence, as recommended by public prosecutors. Conditions A_2 (B_2) and A_4 (B_4) correspond to treatment groups, as the judge in the initial case imposed a harsher sentence than recommended. In conditions A_3 (B_3) and A_4 (B_4), crime in the subsequent case was committed by Eric, instead of Mark as in all other instances.

$$\texttt{Sentence} = \alpha + \gamma_1 \texttt{Excessively Harsh Sentence} + \gamma_2 \texttt{Same Offender} + \\ + \beta \texttt{Excessively Harsh Sentence} \times \texttt{Same Offender} + \varepsilon, \tag{2}$$

where, `Excessively Harsh Sentence` equals 1 for observations from conditions A_2 and A_4, and 0 otherwise. The variable `Same Offender` equals 1 for observations from A_1 and A_2, and 0 otherwise. Under this specification, the coefficient β identifies the main effect, controlling for the anchoring effect. An analogous specification is applied to Experiment B.

Table B2 presents the estimates from regression 2. Column 1 reports results for Experiment A, Column 2 for Experiment B, and Columns 3 and 4 pool both Experiments. The first row contains the coefficients of primary interest. It shows that the main effect—controlling for the anchoring effect—remains substantial and, in magnitude, exceeds the anchoring effect, which is captured by the `Excessively Harsh Sentence` variable. In this setting, the main effect accounts for a significantly larger share of the overall treatment effect than the anchoring mechanism.

The prevailing consensus in the literature is that students and sentencing professionals are not comparable samples for laboratory and vignette experiments, primarily when the research question relates to sentencing; students' and sentencing professionals' responses

Table B2: **Ripple vs Anchoring Effect**

	Prison Sentence Length (months)			
	(1)	(2)	(3)	(4)
Harsher Sentence X Same Offender	10.884**	8.369***	9.555***	9.531***
	(4.632)	(2.577)	(2.641)	(2.644)
Harsher Sentence	2.421	6.071***	4.327**	4.340**
	(3.320)	(1.777)	(1.857)	(1.859)
Same Offender	-1.314	1.219	0.018	0.044
	(3.267)	(1.812)	(1.857)	(1.861)
Constant	10.419***	8.312***	9.284***	9.443***
	(2.390)	(1.231)	(1.311)	(1.447)
N	282	282	564	564
Experiment	A	B	both	both
Experiment FE	.	.	.	Yes

Notes: This table shows results from regression 2 estimated on Experiments A, B, and both Experiments in the last two columns. Columns 3 and 4 differ in whether the Experiment fixed effects are applied. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

differ (Spamann and Klöhn, 2024; Holste and Spamann, 2023). This setting likely belongs to such a class of experiments, and it is reasonable to expect that sentencing professionals, both judges and public prosecutors, would be less prone to behavioral and cognitive biases in the domain of their expertise, recommending and imposing sentences. Therefore, we take the estimates of students as an upper bar of the potential impact of an anchoring effect.

C Appendix - Transcript of Experiments

C.1 Experiment 2: Dutch Participants

Beginning of the Experiment

Introduction

We would like to ask for your cooperation in a short investigation into punishments for crimes. You can participate anonymously. Completing this questionnaire takes about 5 minutes. We would like to ask you to carefully read the two accompanying descriptions of a criminal case. Imagine that you are the judge in these cases: which punishment do you think is most appropriate?

This research is carried out by prof.dr. J.W. de Keijser and dr.mr. S.G.C van Wingerden (Leiden University).

Next Screen

Case 1

On July 18, 2022, Harry and Liesbeth van Dam returned home from their holiday in Spain. Upon arriving at their home in The Hague, they immediately noticed that the door had been forced open. During their absence, the house had been broken into. Several items, including a laptop and an iPad, were missing. Harry and Liesbeth promptly called the police and reported the burglary.

The police launched an investigation and quickly tracked down the burglar. Mark B. (23 years old) had broken open the lock on the back door of the house during the night of July 15–16 and fled with the stolen items. He had noticed the large amount of mail in the mailbox, which suggested that no one had been home for a while, and assumed the house would be an easy target. The police successfully apprehended Mark B. within a few weeks.

During police interrogation, Mark B. confesses to the home burglary. He states that he sold the stolen items because he needed money to support his gambling addiction. However, all the money has since been spent. Mark B. is being prosecuted by the Public Prosecution Service for burglary. He has already been convicted twice in the past two years for home burglary. For these offenses, he received a fine and community service. He paid the fine and completed the community service.

Following the sentencing guidelines of the Public Prosecution Service, the Public Prosecutor recommends a prison sentence of 3 months for the burglary at Harry and Liesbeth's house.

Question 1 Imagine that you are the judge in this case. What sentence would you impose? You may choose only one type of punishment.

☐ Community service of [type the number of hours imposed] hours.

☐ Prison sentence of [type the number of months imposed] months.

Next Screen

Only for **Control Condition**

The judge presiding over this case sentenced Mark to 3 months in prison.

Question 2 C What do you think about the imposed sentence?

☐ I consider the imposed sentence too lenient.

☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

Only For **Treatment Condition**

The judge presiding over this case sentenced Mark to 12 months in prison.

Question 2 T What do you think about the imposed sentence?

☐ I consider the imposed sentence too lenient.

☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

You will now proceed to Case 2. After this point, you will no longer be able to modify your answers to Case 1.

Next Screen

Case 2

A year after completing his sentence, Mark B. committed another home burglary. This time, he broke a window at Lia and Johan Bakker's house in The Hague. When they returned home from a weekend away, they discovered that several items, including a TV and a photo camera, had been stolen. They immediately reported the burglary to the police.

The police launched an investigation and successfully tracked down Mark B. again. During police interrogation, Mark confessed to this burglary.

Mark B. is now being prosecuted by the Public Prosecution Service for burglary. He has been convicted three times for home burglary in the past three years.

Question 3 Imagine that you are the judge in this case. What sentence would you impose on Mark? You may choose only one type of punishment.

☐ Community service of [type the number of hours imposed] hours.

☐ Prison sentence [type the number of months imposed] months.

Next Screen

Additional Questions

Question 4 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too lenient. Would you impose a harsher sentence this time to compensate for the previous sentence that was too lenient?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

Question 5 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too harsh. Would you impose a more lenient sentence this time to compensate for the previous sentence that was too harsh?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

Next Screen

Finally, would you like to answer the following general questions about yourself?

Question 6 What is your gender?

☐ Male

☐ Female

☐ Non-binary

☐ I don't want to say

Question 7 What is your age (in years)? [Type a number]

Question 8 Where do you work?

☐ Prosecution

☐ Judge

☐ Other

Thank you very much for participating in the study. If you would like to be kept informed of the outcome of the survey, you can enter your email address below:

End of the Experiment

C.2 Experiment 3: Czech Participants

Beginning of the Experiment

Introduction

We kindly ask for your cooperation in a short survey regarding the imposition of sentences. Your responses are completely anonymous. Completing this questionnaire will take approximately 5 minutes. First, we will ask you a few general questions, and then we will present two brief descriptions of criminal offenses and ask you what sentence you would impose.

This research is supervised by Dr. Jakub Drápal from the Faculty of Law, Charles University and the Institute of State and Law of the Czech Academy of Sciences, Dr. Michal Šoltés from the Faculty of Law, Charles University, Prof. J.W. de Keijser, and Dr. S.G.C van Wingerden, from Leiden University.

Next Screen

Information About Participants

Question 1 What is your occupation?

- ☐ Judge
- ☐ Public Prosecutor
- ☐ Assistant Judge
- ☐ Other

Question 2 What is your gender?

- ☐ Male
- ☐ Female
- ☐ I don't want to say

Question 3 How many years have you been practicing your profession? [Type a number]

Next Screen

We kindly ask you to read the two attached descriptions of actions carefully. Imagine that you are a judge deciding on the imposition of a sentence: what sentence would you impose?

Next Screen

Case 1 Karel and Alžběta Dus returned from their vacation in Spain on July 25, 2021. Upon arriving at their home in Beroun, they discovered that the back door of their house had been pried open. During their absence, a burglary occurred, and the couple lost several items, including a laptop and an iPad (the total value of the stolen items was CZK 18,000, and the damage to the door amounted to CZK 5,000). Karel and Alžběta immediately called the police and reported the burglary.

The police launched an investigation and tracked down the thief within a few weeks. Marek Novák (born May 14, 1998) had pried open the lock on the back door of the house during the night of July 15-16 and disappeared with the loot. He had noticed a large amount of mail in the mailbox, which led him to believe that no one had been home for a while and that the house would be an easy target.

During police questioning, Marek Novák confessed to the burglary (and later pleaded guilty in court). He stated that he had sold the stolen items because he needed money to satisfy his gambling addiction. However, he lost all the money gambling.

In the past two years, Marek Novák had been convicted twice for burglary and invasion of privacy (Sections 178(2) and 205(1)(b) of the Criminal Code). He was initially sentenced to a fine, which he paid, and to 200 hours of community service, of which he completed 150 hours.

You are to impose a sentence for Section 178(2) and 205(2) of the Criminal Code (both offenses with a sentencing rate of 0.5-3 years).

The public prosecutor, in their closing argument, proposed that the court impose a prison sentence of 8 months.

Question 4 Imagine you are the judge in this case. What sentence would you impose? You may only choose one type of punishment.

☐ Community service of [type the number of hours imposed] hours.

☐ Prison sentence of [type the number of months imposed] months.

Next Screen

Only for **Control Condition**

In the presented case, the judge imposed a prison sentence of 8 months.

Question 5 C What do you think about the imposed sentence?

☐ I consider the imposed sentence too lenient.

☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

Only for **Treatment Condition**

In the presented case, the judge imposed a prison sentence of 22 months.

Question 5 T What do you think about the imposed sentence?

☐ I consider the imposed sentence too lenient.

☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

Case 2 Marek Novák, the perpetrator from the first case, committed another burglary a year after completing his prison sentence. This time, he broke a window at the home of Tereza and Pavel Kolínský in Beroun. When they returned home from a weekend trip, they discovered that several items, including a television and a camera (total value of CZK 22,000, with damage to the window amounting to CZK 3,000), had been stolen. Tereza and Pavel reported the burglary to the police, who launched an investigation and

suspected that Marek Novák might be involved. During police questioning, Marek Novák admitted to burglarizing the Kolínský home and pleaded guilty during court proceedings.

Marek Novák has been convicted three times in the past five years for burglary and invasion of privacy (Sections 178(2) and 205(1)(b) of the Criminal Code).

Question 6 You are to impose a sentence for violations of Sections 178(2) and 205(1)(b) of the Criminal Code (both offenses carrying a sentencing range of 0.5-3 years). What sentence will you impose? You may only choose one type of punishment.

☐ Community service of [type the number of hours imposed] hours.

☐ Prison sentence of [type the number of months imposed] months.

Next Screen

Additional Questions

Question 7 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too lenient. Would you impose a harsher sentence this time to compensate for the previous sentence that was too lenient?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

Question 8 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too harsh. Would you impose a more lenient sentence this time to compensate for the previous sentence that was too harsh?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

End of the Experiment

C.3 Experiments 1 & 4: Czech Participants

Beginning of the Experiment

Introduction

We kindly ask for your cooperation in a short research study concerning the proposal and imposition of sentences. Your responses are and will remain completely anonymous. Completing this questionnaire will take approximately 10 minutes. First, we will present brief descriptions of criminal activities committed by two offenders and ask you to propose a sentence. Then, we will ask you several follow-up questions.

The implementation of this research is supervised by Dr. Jakub Drápal (PF UK and ISL AS), Dr. Michal Šoltés (PF UK), Prof. J.W. de Keijser and Dr. S.G.C van Wingerden (both Leiden University).

The research team can be contacted at drapalja@prf.cuni.cz or soltesm@prf.cuni.cz. By clicking the "Next" button, you agree to participate in the study voluntarily.

Next Screen

Information About Participants

Question 1 What is your occupation?

- ☐ Public Prosecutor
- ☐ Clerk
- ☐ Other

Question 2 What is your gender?

- ☐ Male
- ☐ Female
- ☐ I don't want to say

Question 3 How many years have you been practicing your profession? [Type a number]

Next Screen

We would like to ask you to read the attached descriptions of the acts carefully. All the presented acts have been proven beyond reasonable doubt. We want to know what punishment you would propose as a public prosecutor.

Next Screen

Experiment 3

Case 1 Karel Barton (born 1994, unemployed and childless) was offering methamphetamine to waiting passengers at the Stodůlky metro station on March 10, 2022, at 11:30 p.m. One of the passengers called the police. An amount equivalent to a single dose of methamphetamine (95 mg of the active substance, methamphetamine) was found on Karel Barton. He pleaded guilty and stated that he was attempting to resell the methamphetamine to earn money to buy another dose, but he refused to disclose from whom he had purchased it.

Karel Bartoň has already been sentenced three times, twice for drug-related offenses:

1) In February 2017, he was sentenced under section 283(1) of the Criminal Code to a suspended prison sentence of 1 year with a trial period of two years.

2) Three-quarters of a year after his first conviction, he was sentenced for further criminal activity under section 283(2)(b) of the Criminal Code to a prison sentence of two years and ordered to serve the suspended prison sentence from 2017. After serving 1.5 years, he was conditionally released in April 2019.

3) Five months later, he was sentenced under section 205(1) of the Criminal Procedure Code to a prison sentence of 8 months. He was also ordered to serve the remainder of the previous sentence. He served the entire prison term and was released in November 2021.

Question 4 In April 2022, you are to recommend a sentence for the offense under section 283(2)(b) of the Criminal Code (sentencing range of 2-10 years). What type and length of punishment would you propose as the main one? Choose one type of sentence.

☐ Incarceration of [type the number of months imposed] months.

☐ Suspended prison sentence of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.

- ☐ Suspended prison sentence with supervision of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.
- ☐ Home arrest of [type the number of months imposed] months.
- ☐ Community service of [type the number of hours imposed] hours.
- ☐ Fine of CZK [type the amount of CZK].

Next Screen

Only For **Control Condition**

In the presented case, the public prosecutor, in their closing argument, proposed that the court impose a prison sentence of 2 years.

The District Court sentenced Karel Barton to **a prison sentence of 2 years**. When considering the type and length of the sentence, the court (as stated in the judgment's reasoning) based its decision on the general provisions of the Criminal Code regarding the determination of criminal sanctions, their proportionality, and the procedure for imposing them (§§ 37 to 39 of the Criminal Code).

Question 5 C What do you think about the imposed sentence?

- ☐ I consider the imposed sentence too lenient.
- ☐ I consider the imposed sentence a bit lenient.
- ☐ I consider the imposed sentence an appropriate sentence .
- ☐ I consider the imposed sentence to be relatively a bit harsh.
- ☐ I consider the imposed sentence to be too harsh.

Next Screen

Only For **Treatment 1 Condition**

In the presented case, the public prosecutor, in their closing argument, proposed that the court impose a prison sentence of 2 years.

The District Court sentenced Karel Barton to a **prison sentence of 6 years**. When considering the type and length of the sentence, the court (as stated in the judgment's reasoning) based its decision on the general provisions of the Criminal Code regarding the determination of criminal sanctions, their proportionality, and the procedure for imposing them (§§ 37 to 39 of the Criminal Code).

Question 5 T1 What do you think about the imposed sentence?

- ☐ I consider the imposed sentence too lenient.
- ☐ I consider the imposed sentence a bit lenient.
- ☐ I consider the imposed sentence an appropriate sentence .
- ☐ I consider the imposed sentence to be relatively a bit harsh.
- ☐ I consider the imposed sentence to be too harsh.

Next Screen

Only For **Treatment 2 Condition**

In the presented case, the public prosecutor, in their closing argument, proposed that the court impose a prison sentence of 2 years.

The District Court sentenced Karel Barton to a **prison sentence of 6 years**. When considering the type and length of the sentence, the court justified its decision by stating that, according to the case law of appellate courts, repeat offenders should be sentenced to at least half of the sentencing range, with the six-year sentence being at the midpoint of this range.

Question 5 T2 What do you think about the imposed sentence?

- ☐ I consider the imposed sentence too lenient.
- ☐ I consider the imposed sentence a bit lenient.
- ☐ I consider the imposed sentence an appropriate sentence .
- ☐ I consider the imposed sentence to be relatively a bit harsh.
- ☐ I consider the imposed sentence to be too harsh.

Next Screen

Case 2 Karel Barton, the perpetrator from the previous screen, served his entire prison sentence, and six months after his release—on September 5, 2024—he committed fraud by selling a nearly new Škoda Superb vehicle. He had borrowed the car from a rental company, removed the rental company stickers, and replaced the license plates with those from his vehicle. He told his former high school classmate, Petr Introvič, that his step-father had suddenly passed away and that he needed to sell the car quickly to help his mother pay off a mortgage. Offering the car at a very low price (CZK 260,000) for a quick sale, they agreed that Petr would pay half of the amount (CZK 130,000) upon receiving

the car and the other half after the successful transfer of ownership.

Petr paid the first half of the amount but accepted Karel's claim that "the law abolished" the need for small [ID size] and large [A4 size] vehicle registration certificates, which Karel did not provide. However, when Petr attempted to transfer ownership of the car, he realized he had been defrauded and reported the matter to the police. In the meantime, Karel had spent the money in a gambling establishment.

You are proposing a punishment for the crime of fraud under Section 209(3) of the Criminal Code (sentencing range of 1-5 years).

Question 6 The Chief public prosecutor instructed you to propose a prison sentence, leaving the determination of its length entirely at your discretion. What length of prison sentence will you recommend? [type the number of months]

The End of Experiment 3

Experiment 1

Case 1 Jakub Matějka (born 1985, entrepreneur, divorced, father of two children aged 12 and 14) sold counterfeit tickets for the Colours of Ostrava music festival in the autumn of 2018. For this purpose, he created a dedicated website, www.colours.digital, where he claimed that to promote cryptocurrency payments, tickets could be purchased at a significant discount (CZK 990 for a four-day ticket) during the first wave of paid with Bitcoin. He advertised this promotion through posters with QR codes and banner ads.

In this way, he sold 146 tickets to 84 victims, causing a total damage of CZK 144,540. In January 2020, a trial was held. Jakub Matějka admitted to his actions only during the trial, stating that he regretted his conduct and would attempt to compensate for the damages.

Jakub Matějka has already been convicted of fraud twice:

1) In May 2017 (2016 in the treatment condition), he was convicted under Section 209(1) of the Criminal Code. He received a suspended prison sentence of 10 months with a trial period of 2 years, along with a fine of CZK 30,000, which he promptly paid.

2) Six months into the operational period, he committed another fraud, for which he was sentenced under Section 209(2) of the Criminal Code to 250 hours of community service and a fine of CZK 40,000. He paid the fine and completed the community service before the public hearing regarding the previously imposed suspended sentence. Since the second conviction was expunged, the court ruled that he successfully complied with the probation conditions of the earlier suspended sentence.

Question 7 In your closing argument, you are to recommend a sentence for the offense of fraud under Section 209(3) of the Criminal Code (sentencing range of 1-5 years). What type and extent of punishment would you propose as the main one? Choose one type of sentence.

- ☐ Incarceration of [type the number of months imposed] months.
- ☐ Suspended prison sentence of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.
- ☐ Suspended prison sentence with supervision of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.
- ☐ Home arrest of [type the number of months imposed] months.
- ☐ Community service of [type the number of hours imposed] hours.
- ☐ Fine of CZK [type the amount of CZK].

Next Screen

Only For **Control Condition**

In the presented case, the public prosecutor, in their closing argument, proposed that the court impose a suspended prison sentence of 2 years with supervision with a trial period of 3 years and a fine of CZK 60,000.

The District Court sentenced Jakub Matějka to a suspended sentence of 2 years of imprisonment under supervision with an operational period of 3 years and a fine of CZK 60,000.

Question 8 C What do you think about the imposed sentence?

- ☐ I consider the imposed sentence too lenient.
- ☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

Only For **Treatment Condition**

In the presented case, the public prosecutor, in their closing argument, proposed that the court impose a suspended prison sentence of 2 years with supervision with a trial period of 3 years and a fine of CZK 60,000.

The District Court sentenced Jakub Matějka to a **prison sentence of 2 years** and a fine of CZK 60,000.

Question 8 T What do you think about the imposed sentence?

☐ I consider the imposed sentence too lenient.

☐ I consider the imposed sentence a bit lenient.

☐ I consider the imposed sentence an appropriate sentence .

☐ I consider the imposed sentence to be relatively a bit harsh.

☐ I consider the imposed sentence to be too harsh.

Next Screen

Only For **Control Condition**

Case 2 Jakub Matějka, the perpetrator of the crime from the previous screen, successfully completed a three-year operational period of a suspended sentence under supervision. Six months after the end of the operational period, in August 2024, he committed another fraud. He offered to send spare parts for vintage vehicles on the website www.bazos.cz, which he neither sent nor intended to send from the outset (he did not own them and made no effort to acquire them). This caused damage amounting to CZK 26,540 to eight victims. From the beginning of the investigation, he admitted to the criminal activity, pleaded guilty during the main trial, compensated the victims for the damages before the trial, and sent them letters of apology.

Question 9 C The Chief Public Prosecutor has not provided any instructions regarding the proposed punishment. What type and extent of sanction will you propose in your closing argument for the fraud committed under Section 209(1) of the Criminal Code (sentencing range of 0-2 years)? Choose one type of main sentence.

- ☐ Incarceration of [type the number of months imposed] months.
- ☐ Suspended prison sentence of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.
- ☐ Suspended prison sentence with supervision of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.
- ☐ Home arrest of [type the number of months imposed] months.
- ☐ Community service of [type the number of hours imposed] hours.
- ☐ Fine of CZK [type the amount of CZK].

Next Screen

Only For **Treatment Condition**

Case 2 Jakub Matějka, the perpetrator of the crime in the previous screen, was conditionally released after serving one year of imprisonment, with a operational period of three years, during which he successfully complied. Six months after the end of the operational period, in August 2024, he committed another fraud. He offered to send spare parts for vintage vehicles on the website www.bazos.cz, which he neither sent nor intended to send from the outset (he did not own them and made no effort to acquire them). This caused damage amounting to CZK 26,540 to eight victims. From the beginning of the investigation, he admitted to the criminal activity, pleaded guilty during the main trial, compensated the victims for the damages before the trial, and sent them letters of apology.

Question 9 T Your supervisor has not provided any instructions regarding the proposed punishment. What type and extent of sanction will you propose in your closing argument for the fraud committed under Section 209, Paragraph 1 of the Criminal Code (sentencing range of 0-2 years)? Choose one type of main sentence.

- ☐ Incarceration of [type the number of months imposed] months.
- ☐ Suspended prison sentence of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.

☐ Suspended prison sentence with supervision of [type the number of months imposed] months with [type the number of months of trail period] months of trial period.

☐ Home arrest of [type the number of months imposed] months.

☐ Community service of [type the number of hours imposed] hours.

☐ Fine of CZK [type the amount of CZK].

Next Screen

Additional Questions

Question 10 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too lenient. Would you impose a harsher sentence this time to compensate for the previous sentence that was too lenient?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

Question 11 Imagine you are the judge and have to impose a sentence on an offender who has received a sentence in a previous conviction that you consider too harsh. Would you impose a more lenient sentence this time to compensate for the previous sentence that was too harsh?

☐ Definitely yes

☐ Probably yes

☐ Probably not

☐ Definitely not

☐ Don't know/No opinion

Question 12 To what extent do you agree with the following statement? I view a previously imposed harsher sentence as a signal that the previous judge observed and reflected in the sentence facts that are not detectable from the criminal record (e.g., the problematic character of the convicted person).

☐ Definitely Yes

☐ Probably yes

☐ Don't know

☐ Probably no

☐ Definitely No

Question 13 To what extent do you agree with the following statement? A previous long prison sentence should, in the case of recidivism, lead to a longer imprisonment, as such an offender has a low chance of rehabilitation and should be isolated from society.

☐ Definitely Yes

☐ Probably yes

☐ Don't know

☐ Probably no

☐ Definitely No

Question 14 To what extent do you agree with the following statement? If the convicted person has already served a prison sentence, it is more appropriate to impose a prison sentence than if s/he has not yet been imprisoned before.

☐ Completely Agree

☐ Rather Agree

☐ Don't know

☐ Rather Disagree

☐ Completely Disagree