Exploring Inmates' Perceptions: Evidence from Czech Prisons [*]

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Abstract

We assess theories of criminal behavior using a large survey of Czech inmates. We measure perceived risk of sanctions, trust, social preferences, risk, and beliefs about post-release reintegration. We compare inmates' responses to those of the general population and students. We find that inmates tend to overestimate the risks of sanctions and have lower trust, both towards the justice system and the general population. They are also more generous, more risk-averse, and more optimistic about the position of just-released inmates in society. Perceived risk of sanctions, risk aversion, and reduced criminal identity are associated with less misbehavior in prison. These results are partly consistent with homo economicus theories of criminal behavior, theories linking criminal behavior to criminal identity, and behavioral extensions of homo economicus. Procedural justice theory would explain inmates' lower trust in the justice system but not the lack of correlation between trust and misbehavior.

1 Introduction

Crime and recidivism impose substantial costs on society. Understanding the causes of criminal behavior has been a long-standing agenda in the social sciences. Classical theories posit that criminality stems from genetic inheritance or mental illness. Contemporary theories link criminal behavior to (i) criminal identity (Cohn et al., 2015); (ii) homo œconomicus theory, which postulates that criminals rationally respond to incentives and compare expected benefits against the expected punishment (Becker, 1968)[1]; (iii) extensions of homo œconomicus theory, which suggest that criminals tend to be excessively risk-seeking and impatient (e.g., Epper et al., 2022; Åkerlund et al., 2016, respectively); and (iv) procedural justice theory, according to which criminal behavior is motivated by distrust in public institutions (Tyler, 2003; Mazerolle et al., 2013; Chen, 2017). Identifying the dominant motives behind criminal actions can directly inform criminal policies and interventions.

In this paper, we build on existing theories of criminal behavior and collect several measures of inmates' perceptions, preferences, and behavior. We then completed the data collection by surveying the general population and students. The final dataset consists of 816 male inmates from 15 Czech prisons, with 338 inmates being surveyed two years later, 1,254 males of the general population, and 310 male students from which 243 were surveyed twice. We use the dataset to (i) compare how inmates and non-inmates differ in dimensions related to the existing theories; (ii) study the evolution of inmates' perception and behavior over a year in prison; and (iii) test which measured dimensions correlate with inmates' (mis)behavior in prisons.

First, for a variety of vignettes, inmates perceive a greater risk of criminal sanction at every stage of the criminal justice system – probability of arrest, probability of incarceration, and length of incarceration. Inmates perceive 0.5 standard deviations (SD) greater risks than non-inmates. However, we find no evidence that inmates' perceptions of these risks of criminal sanctions are more accurate than the perceptions of non-inmates. Even inmates incarcerated for the offenses depicted in the vignettes do not have a more accurate understanding of the risks than the general population.

Our next set of results examines social preferences. We find mixed evidence supporting the concept of a criminal identity among inmates. On the one hand, we observe that inmates are more generous to other inmates than to the general public. On the other

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[1]Many scholars tested the implications of the homo œconomicus theory empirically. Among others, see Mastrobuoni and Pinotti (2015); Deshpande and Mueller-Smith (2022) for the effect of adverse outside options on crime, Draca et al. (2011); Blesse and Diegmann (2022) for the effect of the probability of an arrest on crime, and Kessler and Levitt (1999); Lee and McCrary (2017); Drago et al. (2009) for the effect of severity of punishment on crimes. Chalfin and McCrary (2017) reviews the economic literature on criminal deterrence.

hand, inmates do not appear to place greater trust in their fellow inmates. In fact, their expectations regarding the behavior of other participants indicate a relatively higher level of trust in the general population.

Inmates show less trust in the justice system compared to the general population by a margin of 0.6 SD. The effect is robust across two declarative questions regarding participants' trust in information provided by a justice system representative and participants' perception of fairness of the justice system. This lack of trust is not directed towards all public institutions, as we find no difference in trust levels in the healthcare system.

Surprisingly, we find no difference in risk preferences. Moreover, inmates appear to be more patient, exhibit less negative reciprocity, and demonstrate greater positive reciprocity. Finally, inmates tend to be more optimistic about ex-inmates' prospects.

Our third set of analyses examines the attitudes, beliefs, and preferences as they evolve over time within prison. We find that inmates' mindsets remain largely constant from one year to the next, with two exceptions. First, inmates adjusted upwards their perceptions about the risk of an arrest in the vignette scenarios. These perceptions already overestimated the true risk of arrest and, measured one year later, were even more overestimated. Second, inmates became less optimistic about ex-inmates' prospects. Notably, an additional year in prison did not result in a stronger criminal identity.

Our final set of analyses explores the link between misbehavior and attitudes, beliefs, and preferences. We find that inmates who perceive a greater risk of arrest, incarceration, and long sentences as a result of crime also behave better. We also find that inmates who are relatively more generous to other inmates as compared to the general population are more likely to misbehave. Risk-seeking preferences correlate with worse behavior.

2   Czech Prison System

Czechia is among the EU countries with the highest inmate population, boasting an incarceration rate nearly double the EU average.

As of 2022, the Czech incarceration rate stands at 174 inmates per 100,000 population. The high incarceration rate in the Czechia is primarily driven by significantly longer incarceration periods, averaging almost two years[2], rather than an excessive number of incarcerated offenders. The prison admission rate is lower than in most European countries; for instance, in 2021, it stood at 89 new entries per 100,000 population (Aebi et al., 2023). The average long incarceration period results from a common practice

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[2] For example, in Norway, Denmark, Sweden, Finland, Belgium, Germany, and the Netherlands, the average length of incarceration is around half a year; in France, Austria, and Hungary, it is around a year. The average incarceration is longer only in several European countries.

where judges impose one or multiple suspended sentences, which subsequently transform into relatively long imprisonment. Furthermore, this practice leads to many offenders receiving lengthy prison sentences, even for relatively minor offenses.

Similar to inmate populations in other countries, the Czech inmate population is predominantly male (92%), with a substantial proportion (approximately 65%) aged between 25 and 45 years. Educational attainment among male inmates is limited, with about half having not progressed beyond elementary education. Only a small percentage, approximately 2%, of male inmates have completed university education. Foreign inmates make up around 8% of the population, with the primary nationalities being Slovak, Ukrainian, and Vietnamese. For more detailed information about the characteristics of the Czech inmate population and our inmate samples, please refer to Table B1 in the appendix.

The Czech Republic has 25 prisons and 10 pretrial detention facilities.[3] Depending on the crime and the risk that an offender could attempt to escape the prison, judges impose sentences in facilities with enhanced security (only 4 prisons in the Czechia) or ordinary levels of security. In the latter case, the prison service assigns inmates to prison departments or programs with low-level, medium-level, or high-level security clearance. Most of the inmates (88%) are in medium-level and high-level security clearance. The assignment into security levels affects inmates' lives, such as work placement and visitation opportunities.

Inmates in our sample are, on average younger and sentenced to a longer incarceration than in the population of Czech male inmates for two main reasons. First, due to security concerns, we could not survey inmates in the enhanced security type of prisons, and second, in order to survey inmates twice a year apart, we intentionally over-sampled inmates with long sentences. In the sample of the general population, we intentionally oversampled younger and less-educated participants so that the sample is comparable to the sample of inmates.

3   Research Design

Survey design   The survey consists of several blocks of incentivized and non-incentivized tasks and questions.[4] First, motivated by the homo œconomicus theory, we elicited respondents' perceptions of the parameters of criminal policy, which determine the expected

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[3]Some inmates remain in pretrial detention facilities even after being convicted and receiving a sentence. Out of the 25 prisons, two are predominantly female.

[4]Full script of the survey is available in Appendix B1.2. Some tasks and questions were asked only in one of the waves, e.g., age, marital status, cognitive reflection test, and major changes over the last year.

punishment.[5] We provided respondents with brief vignettes and asked them about: (i) probabilities of an arrest in four typical crimes (motor vehicle theft, robbery, drug distribution, and murder); (ii) probabilities of incarceration conditional on conviction in motor vehicle theft, drug distribution, and murder cases; and (iii) the average prison time conditional on incarceration in the same three cases as in (ii). To assess the accuracy of respondents' perception, we compare their answers to police and court statistics.[6]

Second, the theory of criminal identity (criminal subculture) posits that criminals form a brotherhood and adhere to norms distinct from those of the general population. To examine potential bonds and ties among inmates, we engaged respondents in playing the trust game (TG) and a triple dictator game (DG), incentivized moral dilemmas frequently used to elicit one's prosocial behavior (Berg et al., 1995; Kahneman et al., 1986, respectively). Each respondent played each game twice, once with an inmate[7] and once with a non-inmate. We then use respondents' decisions to compare inmates' and non-inmates' attitudes (trust and willingness to share scarce resources) towards an inmate and a non-inmate. Furthermore, in the TG, we elicited and incentivized senders' expectations about the receiver's behavior when paired with an inmate and a non-inmate. After the rules were explained, but before participants made the actual decisions in the TG (the DG), they answered 5 (4) control questions, checking their understanding of the rules of the activity. We use the number of correct answers to measure participants' attention.

Third, to compare respondents' perceptions of procedural justice, we elicit respondents' trust in information provided by a representative of the judicial and healthcare systems and ask them whether the judicial and healthcare systems treat everyone equally. Fourth, to explore behavioral motives of criminal behavior, we invited respondents to invest in a lottery with a given endowment and collected several self-reported measures concerning respondents' patience, risk preferences, and positive and negative reciprocity. Fifth, to study respondents' optimism regarding the future prospects of a released man, we elicited their perceptions of the likelihood that two almost identical men who differ in their criminal history will succeed in several situations (finding a job, renting an apartment, making a new friend). Sixth, with the general population and in the second wave with inmates and students, participants took a cognitive reflection test consisting of 5 short questions with intuitive but wrong answers. The questions were adopted from

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[5]For a detailed discussion of the role of individual perceptions of criminal policy parameters in deterrence efforts, refer to Apel (2013).

[6]To minimize potential bias caused by underreporting in the official police statistics, we use offenses that are likely reported (e.g., for insurance purposes). The only exception is the drug cases which we do not use to assess respondents' accuracy. Court statistics do not suffer from underreporting.

[7]Inmates paired together were from different prisons and did not know each other, which we intentionally emphasized during the data collection.

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the existing literature (Frederick, 2005; Thomson and Oppenheimer, 2016; Toplak et al., 2014) and adjusted to the Czech context if necessary. Finally, we merge inmates' survey responses with several variables from the prison administrative dataset (e.g., criminal history, work attitude, acceptance of illegal behavior).

Implementation   Inmates' data were collected in two waves during in-person sessions in 15 Czech prisons, student data were collected in two waves either in a laboratory setting or online, and the general population was surveyed online and only once. In total, 816 inmates (338 in both waves, 151 only in the first wave, 327 only in the second wave), 310 students (243 in both waves, 67 only in the first wave), and 1,254 respondents from the general population completed the survey. All respondents are male, and the sample of the general population over-weights low-educated young men, so it resembles the inmate sample (and inmate population). We rewarded all respondents for their participation and incentivized them in several tasks. Students and the general population received financial compensation, and inmates received postage stamps, which serve as unofficial currency in the Czech prison system. See Appendix B1.2 for detailed information on data collection, sample selection, in-person sessions in prisons, and rewards.

4   Results

We report results to three research questions: (1) What are the differences between inmates and non-inmates in the studied dimensions? (2) How did the studied dimensions change over a year in prison between the two waves? (3) Which of the studied dimensions correlate with inmates' misbehavior in prison between the two waves? In each question, we rely on different sub-samples of the collected data. To ensure a comparable interpretation of the magnitude of the estimate effects, we normalize each variable such that the general population sample has a mean 0 and a standard deviation 1.

4.1   Difference between Inmates and Non-inmates

We begin by comparing the perceptions and behavioral responses of inmates with those of non-inmates, including both students and the general population.[8] For each outcome studied, we run a simple regression that controls for observed characteristics of respondents (age, education, and results from cognitive reflection tests) and inmate status. The

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[8]In the presented specification, we control for participants' results in the cognitive reflection test (CRT), which inmates and students did not take in the first wave. Therefore, we omit inmates and students surveyed only in the first wave from this exercise. For inmates and students surveyed twice, we use their decisions from their first sessions but control for their CRT results from the second wave. We assume that the CRT results are generally time-invariant.

coefficients of interest thus measure the difference between inmates and non-inmates in standard deviations of the general population.

Figure 1 plots coefficients that capture the differences between inmates and non-inmates across various outcomes.[9] The first block of results shows that inmates perceive the criminal policy as harsher than non-inmates. In all vignettes, inmates view the probability of arrest and incarceration as higher than non-inmates. Similarly, they also perceive the average length of incarceration to be longer. In nine of the cases, the effect is statistically significant at 1%. The effects tend to hover around 0.5 standard deviations, but the difference in perception regarding the average sentence length for a murder exceeds one standard deviation. There are no systematical differences between *experts*, inmates sentenced for the offense in question, and other inmates.[10]

Inmates' perception of parameters of criminal policy, however, is not systematically more precise than that of non-inmates.[11] While inmates tend to achieve a smaller mean error in the probability of an arrest, this is not the case for the probability of incarceration and the average sentence length. Surprisingly, not even *experts* seem to be knowledgeable about the parameters of the criminal policy. For more detailed information on expert offenders, see Figure A1 in the appendix.

In the trust game, inmates send more currency units than non-inmates by about 0.4 standard deviation regardless of the identity of the paired player.[12] Such behavior does not suggest a strong criminal identity among inmates. Furthermore, when asked how much they expect the other play would send them back if he had 6 (18) currency units, inmates believed inmates would return them substantially less than non-inmates, whereas non-inmates participants expect to receive roughly the same amount regardless the identity of the other player. The third panel in Figure 1 presents the results as a difference between inmates' and non-inmates' expectations in a given situation. It shows that inmates expect to receive by almost a standard deviation more than non-inmates in a situation when the participant is paired with a non-inmate who has 6 currency units (similarly for 18 units).

In the triple dictator game, inmates and non-inmates send the same amount when paired with non-inmates. When paired with an inmate, however, non-inmates (members of the general population) send less. Non-inmate participants thus behave less favorably

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[9]Figure A3 replicates Figure 1 using only the general population as the control group representing non-inmates.

[10]Our results thus differ from Lochner (2007), who found that individuals committing a particular crime tend to believe that their probability of getting caught is lower.

[11]We add to the findings of Apel (2013), who argue that the general population generally lacks a good understanding fo criminal policy parameters by showing that inmates generally do not perform well either.

[12]Our results are consistent with Chmura et al. (2013), who show that inmates do not share less than non-inmates in TG. If anything, inmates tend to be more generous.

Figure 1: **Differences in Responses Between Inmates and Non-inmates**
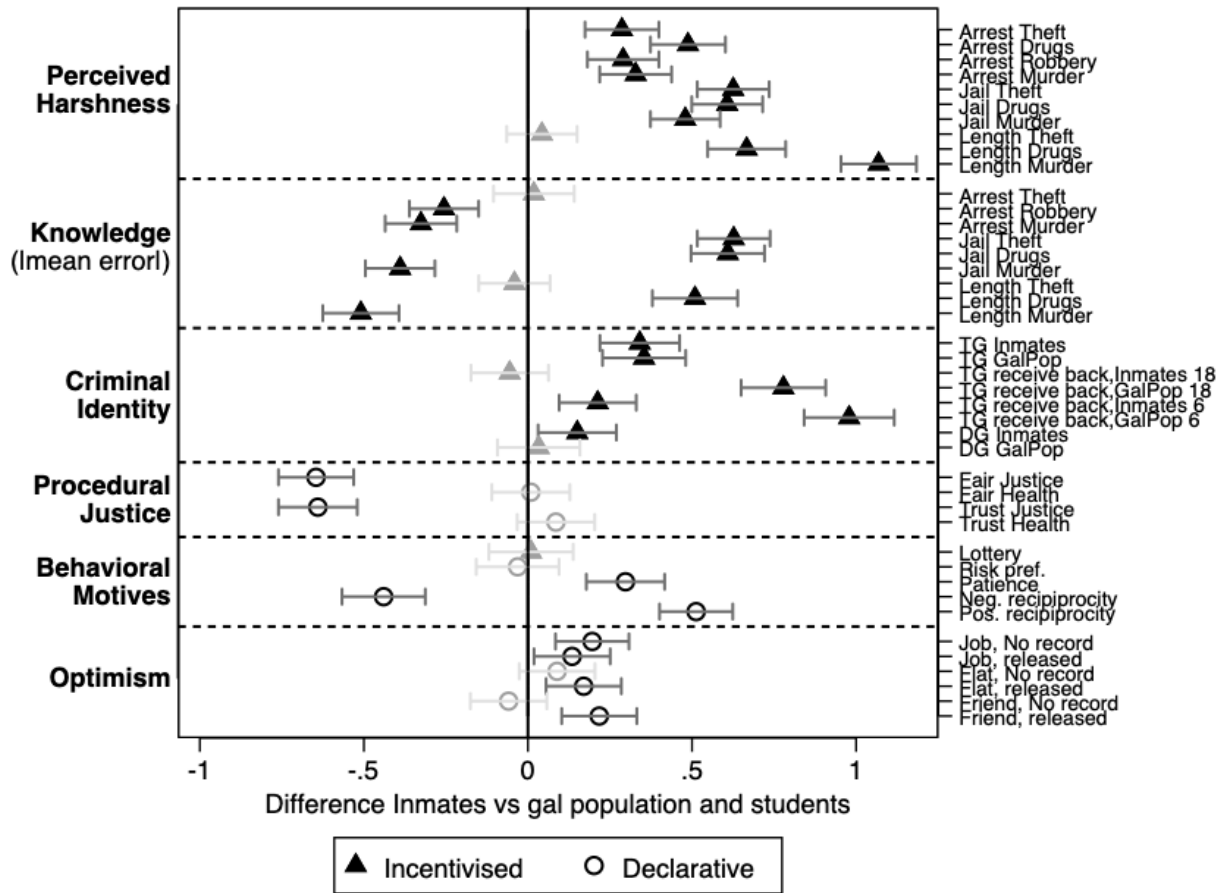
Notes: This figure shows differences in inmates' and non-inmates' perceptions and responses. Marks (triangles for incentivized and rings for declarative measures) represent coefficients of β from $y = \alpha + \beta\ Inmate + \gamma X + \varepsilon$, where $Inmate$ is an indicator for inmates, and X contains age, education, reflection cognitive tests. Each outcome y is normalized, so the general population sample has a mean of 0 and a standard deviation of 1. The sample contains members of the general population, observations from the first wave of inmates and students surveyed twice, and observations from the second wave of inmates surveyed in only the second wave. The dark shade represents statistically significant coefficients. 95% confidence intervals are plotted.

against inmates, while inmates do not discriminate and send the same amount to both types of receivers. As a result, inmates share with other inmates marginally more than non-inmates do. Overall, we do not find evidence supporting the existence of criminal identity among inmates which would manifest through more generous and more trusting attitude among inmates. Conversely, the expectation gap about how much the other player would send back in the trust game suggests that inmates' optimism regarding how others will treat them is a stronger motive than criminal identity.

Inmates and non-inmates demonstrate the same attitude towards the healthcare sys-

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tem, but inmates feel substantially worse about the justice system. As shown in the fourth panel in Figure 1, inmates trust significantly less information from a justice system representative and are more skeptical that the justice system treats everyone equally. The gap exceeds 0.5 standard deviations.[13]

The fifth panel shows measures that generally fall under behavioral motives. We do not find a difference in respondents' willingness to invest in a lottery.[14] Convincingly, the self-reported measure of risk preference suggests no difference between inmates and non-inmates. In another measure, inmates reported that they are more patient. While the self-reported measure of patience has been validated in various contexts (Falk et al., 2018; Bauer et al., 2020), since individuals compared themselves to other people, different reference groups may shift the groups' averages. Interestingly, inmates exhibit a lower level of negative and higher levels of positive reciprocity. This, again, may reflect the prison environment where inmates may benefit from good behavior and be disciplined for negative ones.

Finally, the last panel compares inmates' and non-inmates' optimism regarding the prospects of a released man. Our measure of optimism captures the perceived difference in the likelihood of a released man succeeding in a specific situation compared to a man with no criminal record. Both inmates and non-inmates believe that a man with no criminal record is more likely to succeed. Inmates generally view the position of released men at least as good as non-inmates. And they are particularly optimistic about the chances that a released man can become a friend with someone with no criminal history. The (weakly) higher optimism among inmates is consistent with inmates' expectation of receiving more postage stamps back from the general population in the trust game.

4.2 Evolution over Prison Time

We next study the evolution of inmates' perceptions over the year in prison. We compare changes in X inmates' and Y students' outcomes by running simple regressions with individual fixed effects and with normalized outcomes y:

$$y = \alpha_i + \beta \, Wave2 + \gamma \, Inmate * Wave2 + \varepsilon, \tag{1}$$

where α_i is an individual fixed effect, $Inmate$ is an indicator for inmates, $Wave2$ is an indicator for observations collected in the second wave. Figure 2 plots γ for studied outcomes.

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[13]This finding is consistent with Šoltés (2023) who shows that Czech individuals with more experience with the judicial system tend to hold a more negative attitude towards the justice system.

[14]Since many inmates have experienced issues with gambling and have attempted to steer clear of it, our framing could influence inmates' responses.

An additional year in prison did not alter inmates' perceptions in the majority dimensions. Two interesting null results are worth discussing. First, although criminal history is a regular conversation topic among inmates, they did not become more knowledgeable about the parameters of the criminal justice system. In the only dimension in which inmates update their perception significantly - the probability of an arrest in the theft case, they updated it in the wrong direction. The average belief about the probability of an arrest in the first wave is 56.5%, and in the second wave, it is 61.4%[15], while our calculation based on the police data yields 35%. A lack of learning about the parameters of the criminal justice system suggests inmates' disinterest in crucial parameters for a decision they may likely face in the future or scarcity of truthful and credible information.[16]

Second, perhaps even more interestingly, we do not see any evolution in our measure of criminal identity. An additional year neither strengthened nor weakened the criminal ties. [17] The average number of units sent in the second wave in both the trust and dictator games was virtually identical as in the first wave. The same holds for inmates' expectations regarding how many units the other plays will return to them in the trust game.

The fourth panel of Figure 2 suggests a marginal increase in trust in the justice systems. However, the effect disappears if taken as a difference between the level of trust in the justice and healthcare systems, which serves as control institutions. Inmates became less optimistic about the situation of a released man. After an additional year in prison, compared to students, inmates viewed the prospects of a man with no criminal record relatively more optimistic and also became less optimistic about the situation of released man. Note that the change is primarily driven by the increase in optimism among students, who in the second wave, became more optimistic about inmates' prospects.

Depending on the time already served, the impact of an additional year in prison may vary; while in the beginning of the sentence additional year may be a formative experience, in the advanced stages of incarceration, an additional year may not affect inmates much. Furthermore, as inmates may want to detach themselves from their past and prepare for reintegration into civil life, the effect can even be the opposite.

The effect of the additional year may also vary depending on the circumstances and conditions of the sentence. All inmates in our sample had limited contact with their family and friends, were restricted in free movement, were exposed to an environment with other

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[15]The statistics are unconditional averages among 340 inmates who participated in both waves.

[16]Our results contrast existing literature learning among offenders (Philippe, 2023; Dušek and Traxler, 2021; Anwar and Loughran, 2011). Compared to the existing literature, which studies the effect of interaction with law enforcement, in our case, participants are not exposed to exogenous information (trial nor sanctions). Their learning depends on their information acquisition.

[17]We note that this does not preclude new or stronger relationships or friendships among inmates in prison.

Figure 2: **Evolution of Inmates' Perceptions of Prison Time**
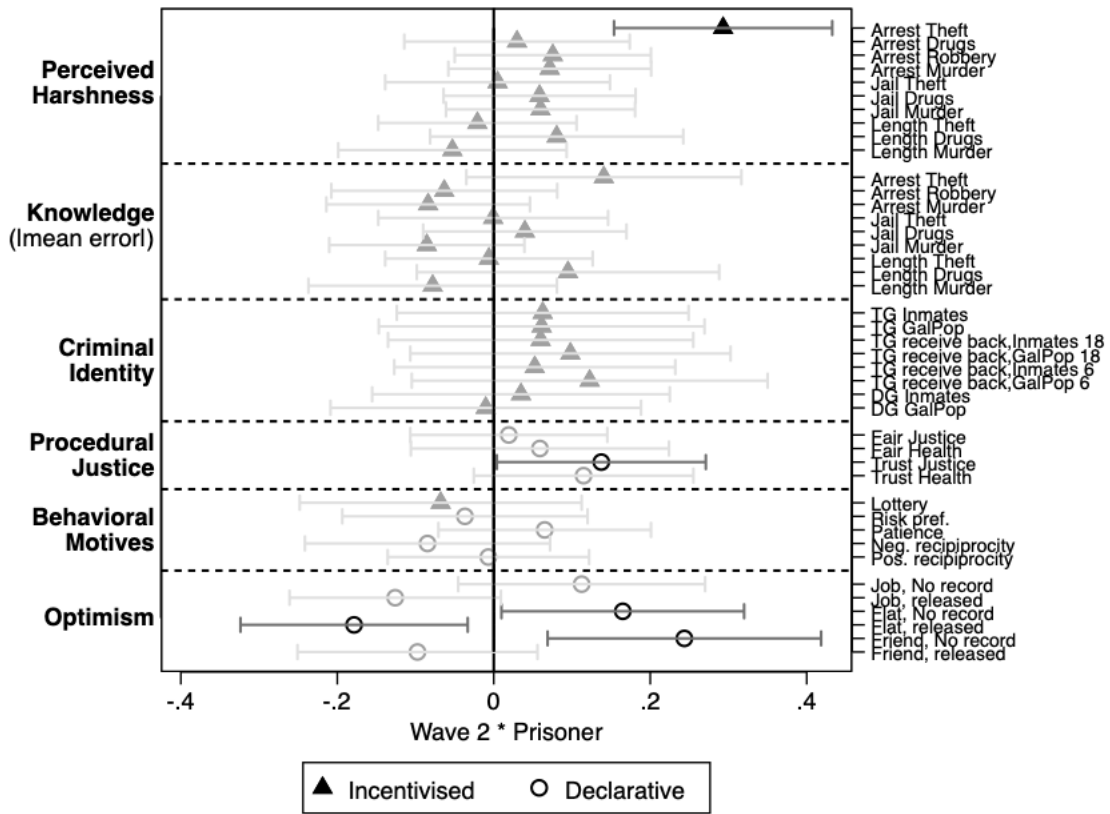
Notes: This figure plots γ coefficients from $perception = \alpha_i + \beta Wave2 + \gamma Inmate * Wave2 + \varepsilon$, $Wave2$ is a dummy variable that equals to 1 for observations from the second wave and $Inmate$ is a dummy variable that equals to 1 for inmates and 0 for students. Each outcome y is normalized, so the sample of the general population has a mean of 0 and a standard deviation of 1. The dark shade represents statistically significant coefficients. 95% confidence intervals are plotted.

criminals, and had limited access to information. The extent of these restrictions (job opportunity, restriction on movement within the prison, visits) vary depending on the security levels.

4.3 Correlation of Perception with Inmates' (Mis)behavior

In the final exercise, we reverse the logic of the previous exercise and use our collected measures to understand inmates' (mis)behavior. In particular, we zoom in on a sample of inmates and study which dimensions of our measures correlate with inmates' (mis)behavior in prison between the first and the second wave. We rely on three distinct measures of inmates' (mis)behavior: a professional assessment of inmates' behavior on a scale of 1 (the best behavior) to 5 (the worst behavior) provided by psychologists and/or social workers, the number of disciplinary penalties, and the number of rewards. [18]

We run a simple regression for each measure of perception collected in the first wave

$$(mis)behavior\_wave2 = \alpha_p + \beta perception\_wave1 + \varepsilon, \qquad (2)$$

where α_p is prison (professional staff) fixed effects, $(mis)behavior\_wave2$ stands for one of the measures of (mis)behavior. The outcome measures and the explanatory outcomes are normalized such that the average is 0 and the standard deviation is 1 for inmates in the corresponding wave.

Figure 3 plots β with its confidence intervals for each regression using the normalized professional staff's assessment of inmates' behavior as the outcome. Three interesting patterns emerge. First, those who perceive the parameters of criminal justice as harsher (higher probability of arrest and incarceration) tend to behave better. Second, less discriminatory behavior in the DG correlates with better behavior.[19] Third, more risky preferences correlate with worse behavior.

Figures A7 and A8 in the appendix plot correlation coefficients between our measures and disciplinary rewards and penalties, respectively. Inmates who perceive the parameters of the criminal justice as harsher are less likely to be given disciplinary penalties. More risk-loving inmates are less likely to receive disciplinary rewards.

Overall, the dimensions of behavior that have been identified to correlate with criminal behavior (impulsivity, perception of harsher criminal justice system) seem to be relevant only among inmates on their misbehavior.

5 Conclusion

Inmates and non-inmates differ in two main dimensions. First, inmates perceive the parameters of the criminal justice system as harsher than non-inmates. Our sample does not speak for all criminals, but rather those who have been caught and incarcerated and

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[18]See Table B2 for descriptive statistics and correlational coefficients between the measures.
[19]Negative reciprocity correlates negatively with behavior.

Figure 3: **Correlation between Perception and (Mis)behavior in Prison**
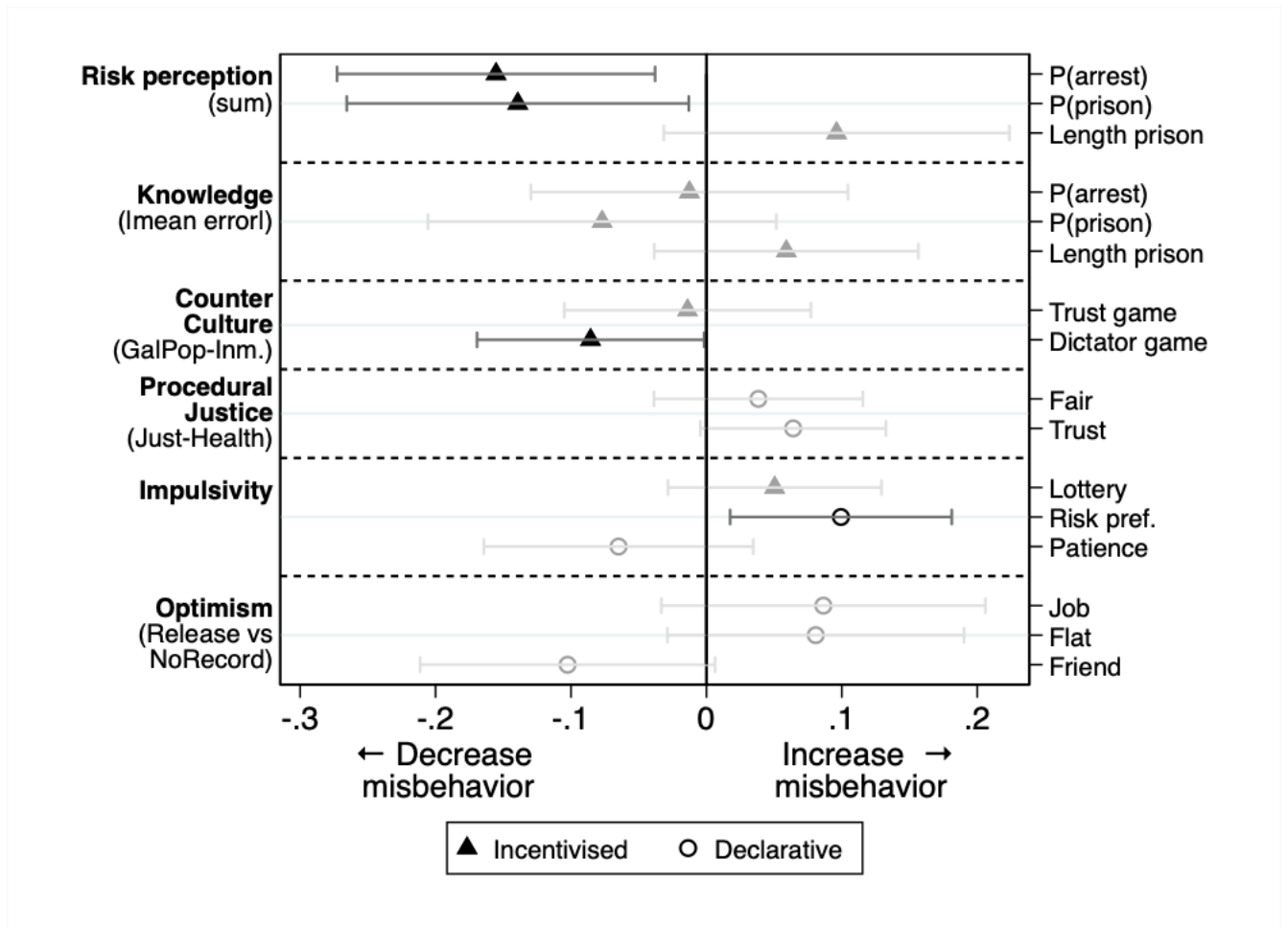
Notes: This figure shows how our measures correlate with inmates' behavior between the first and second waves, according to social workers'/psychologists' assessments. The lower the grade, the better the behavior.

thus their personal experience may contribute to their excessive perception. However, given the share of crime committed by recidivists, the perception of excessive harshness does not prevent one from committing a crime.

Inmates' perception of the harsh criminal justice system is not supported by a deeper knowledge of the criminal justice system. While in some partial questions such probability of an arrest their perception tends to be more accurate, we do not find any evidence that they would outperform the non-inmates overall. We further show that as their access to information is limited, they do not learn about the system over their prison time. Given the limited knowledge about the parameters of the criminal justice system, it is questionable whether the more severe punishment can have an ex-ante deterrence effect on criminal behavior.

Second, inmates perceive a substantial distrust of the judicial system.

Interestingly, inmates do not seem to differ in their attitudes towards other inmates. Using standard approaches such as trust and dictator games, we find no evidence that inmates form criminal identities and behave more favourably and trust other inmates more. In fact, they tend to be more generous towards everyone. If anything, our results suggest inmates trust other inmates even less than they trust others. That is consistent with documented inmates' optimism over their prospects after release when they view their chances to success as less unfavorable than non-inmates.

References

AEBI, M. F., E. COCCO, AND L. MOLNAR (2023): "SPACE I - 2022 – Council of Europe Annual Penal Statistics," Tech. rep., Council of Europe and University of Lausanne.

ÅKERLUND, D., B. H. GOLSTEYN, H. GRÖNQVIST, AND L. LINDAHL (2016): "Time Discounting and Criminal Behavior," *Proceedings of the National Academy of Sciences*, 113, 6160–6165.

ANWAR, S. AND T. A. LOUGHRAN (2011): "Testing a Bayesian Learning Theory of Deterrence among Serious Juvenile Offenders," *Criminology*, 49, 667–698.

APEL, R. (2013): "Sanctions, Perceptions, and Crime: Implications for Criminal Deterrence," *Journal of Quantitative Criminology*, 29, 67–101.

BAUER, M., J. CHYTILOVÁ, AND E. MIGUEL (2020): "Using Survey Questions to Measure Preferences: Lessons from an Experimental Validation in Kenya," *European Economic Review*, 127, 103493.

BECKER, G. S. (1968): "Crime and Punishment: An Economic Approach," in *The Economic Dimensions of Crime*, Springer, 13–68.

BERG, J., J. DICKHAUT, AND K. MCCABE (1995): "Trust, Reciprocity, and Social History," *Games and Economic Behavior*, 10, 122–142.

BLESSE, S. AND A. DIEGMANN (2022): "The place-based effects of police stations on crime: Evidence from station closures," *Journal of Public Economics*, 207, 104605.

CHALFIN, A. AND J. MCCRARY (2017): "Criminal Deterrence: A Review of the Literature," *Journal of Economic Literature*, 55, 5–48.

CHEN, D. L. (2017): "The Deterrent Effect of the Death Penalty? Evidence From British Commutations During World War I," Unpublished Manuscript.

CHMURA, T., C. ENGEL, AND M. ENGLERTH (2013): "Selfishness as a Potential Cause of Crime-A Prison Experiment," *MPI Collective Goods Preprint*.

COHN, A., M. A. MARÉCHAL, AND T. NOLL (2015): "Bad Boys: How Criminal Identity Salience Affects Rule Violation," *The Review of Economic Studies*, 82, 1289–1308.

DESHPANDE, M. AND M. MUELLER-SMITH (2022): "Does Welfare Prevent Crime? the Criminal Justice Outcomes of Youth Removed from SSI," *The Quarterly Journal of Economics*, 137, 2263–2307.

DRACA, M., S. MACHIN, AND R. WITT (2011): "Panic on the Streets of London: Police, Crime, and the July 2005 Terror Attacks," *American Economic Review*, 101, 2157–81.

DRAGO, F., R. GALBIATI, AND P. VERTOVA (2009): "The Deterrent Effects of Prison: Evidence From a Natural Experiment," *Journal of Political Economy*, 117, 257–280.

DUŠEK, L. AND C. TRAXLER (2021): "Learning from Law Enforcement," *Journal of the European Economic Association*, 20, 739–777.

EPPER, T., E. FEHR, K. B. HVIDBERG, C. T. KREINER, S. LETH-PETERSEN, AND G. NYTOFT RASMUSSEN (2022): "Preferences Predict Who Commits Crime Among Young Men," *Proceedings of the National Academy of Sciences*, 119, e2112645119.

FALK, A., A. BECKER, T. DOHMEN, B. ENKE, D. HUFFMAN, AND U. SUNDE (2018): "Global Evidence on Economic Preferences," *The Quarterly Journal of Economics*, 133, 1645–1692.

FREDERICK, S. (2005): "Cognitive reflection and decision making," *Journal of Economic perspectives*, 19, 25–42.

KAHNEMAN, D., J. L. KNETSCH, AND R. H. THALER (1986): "Fairness as a Constraint on Profit Seeking: Entitlements in the Market," *American Economic Review*, 76, 728–741.

KESSLER, D. AND S. D. LEVITT (1999): "Using Sentence Enhancements to Distinguish Between Deterrence and Incapacitation," *The Journal of Law and Economics*, 42, 343–364.

LEE, D. S. AND J. MCCRARY (2017): "The Deterrence Effect of Prison: Dynamic Theory and Evidence," Unpublished Manuscript.

LOCHNER, L. (2007): "Individual Perceptions of the Criminal Justice System," *American Economic Review*, 97, 444–460.

MASTROBUONI, G. AND P. PINOTTI (2015): "Legal Status and the Criminal Activity of Immigrants," *American Economic Journal: Applied Economics*, 7, 175–206.

MAZEROLLE, L., E. ANTROBUS, S. BENNETT, AND T. R. TYLER (2013): "Shaping Citizen Perceptions of Police Legitimacy: A Randomized Field Trial of Procedural Justice," *Criminology*, 51, 33–63.

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PHILIPPE, A. (2023): "Learning by Offending: How Do Criminals Learn About Criminal Law?" *American Economic Journal: Economic Policy.*

THOMSON, K. S. AND D. M. OPPENHEIMER (2016): "Investigating an alternate form of the cognitive reflection test," *Judgment and Decision making*, 11, 99–113.

TOPLAK, M. E., R. F. WEST, AND K. E. STANOVICH (2014): "Assessing miserly information processing: An expansion of the Cognitive Reflection Test," *Thinking & reasoning*, 20, 147–168.

TYLER, T. R. (2003): "Procedural Justice, Legitimacy, and the Effective Rule of Law," *Crime and Justice*, 30, 283–357.

ŠOLTÉS, M. (2023): "Consequences of Inconvenient Information: Evidence from Sentencing Disparities," *Economica*, 90, 1307–1334.
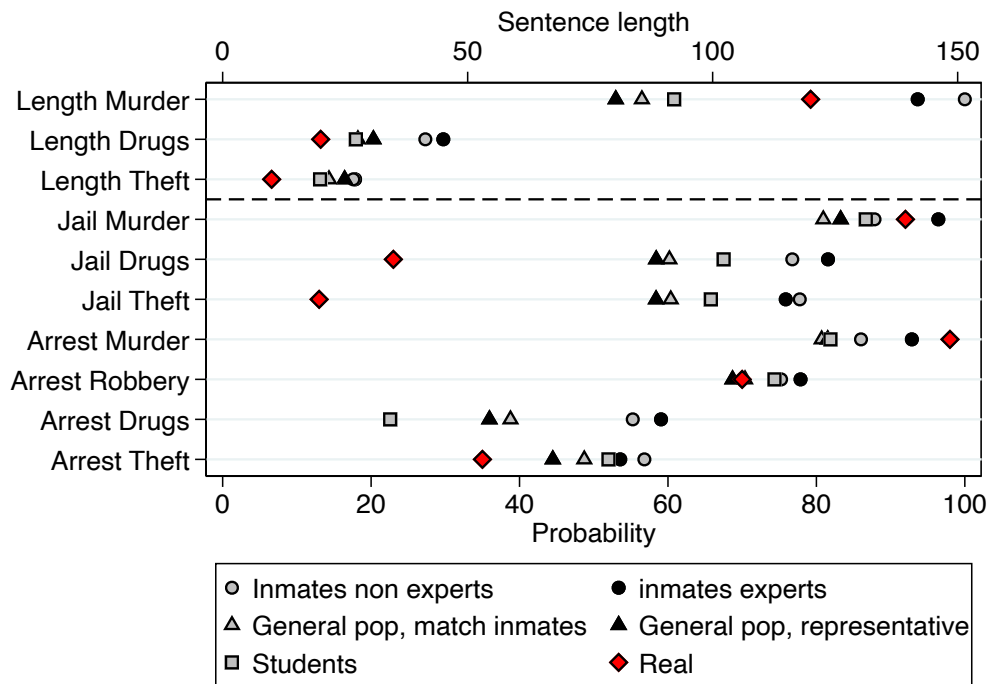
A1 Appendix

A1.1 Additional Results

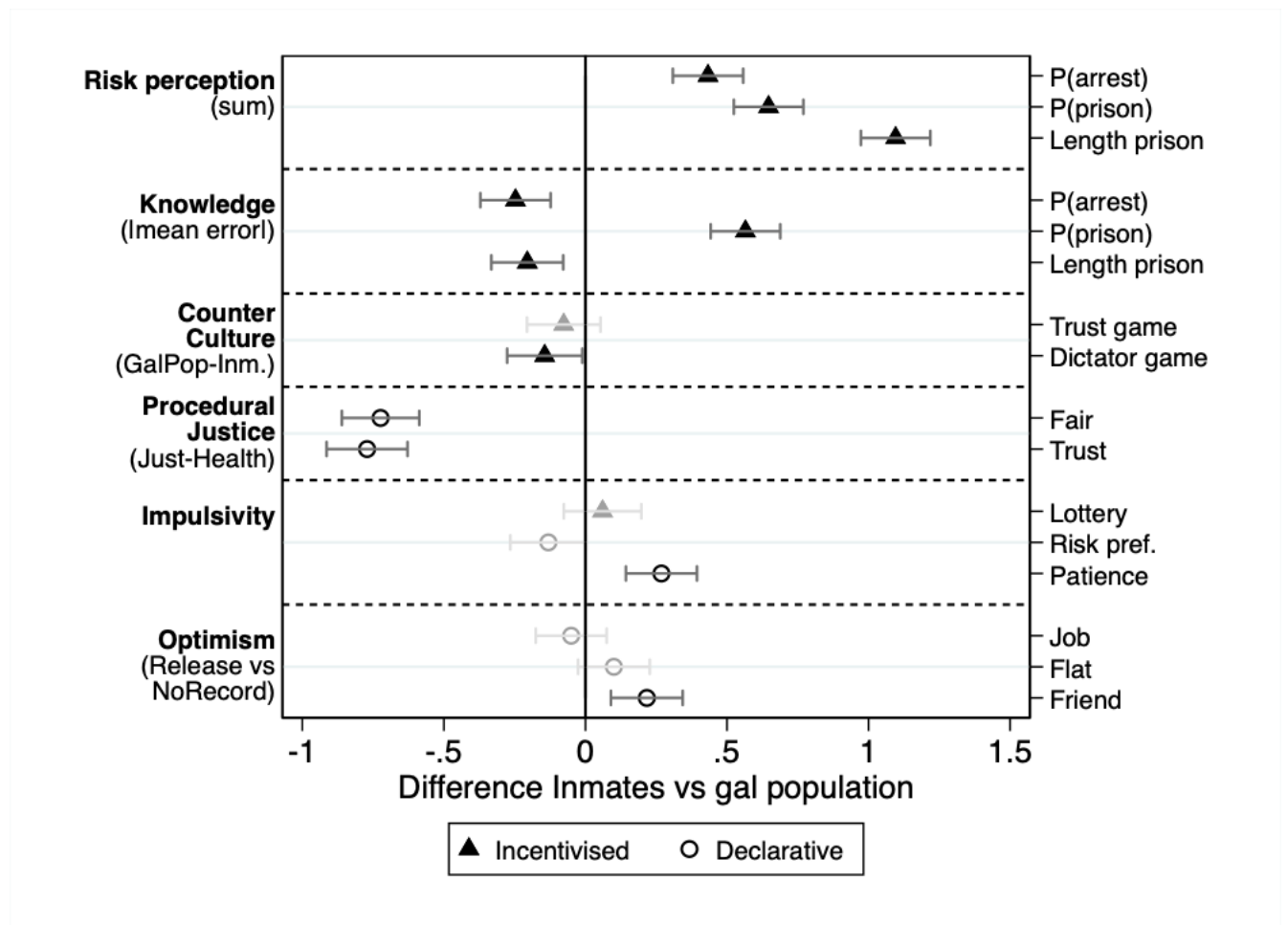Figure A1: **Perceived Harshness and Knowledge by Specialists**
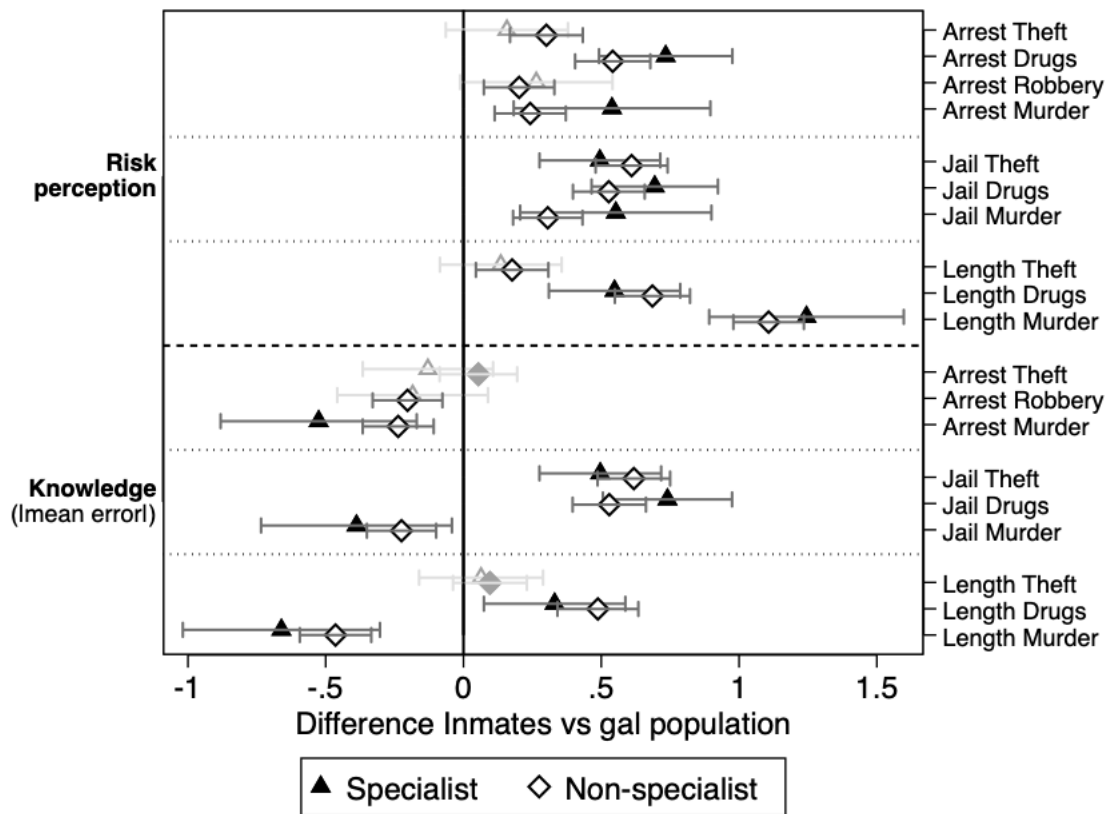
Notes: This figure zooms on perceived harshness and knowledge about the parameters of the criminal justice system and shows that expert specialist - offenders sentenced for the type of crime in question - do not form different perceptions than other inmates. Only offenders incarcerated for murder seem to be more knowledgeable about murder cases, however, due to a lack of power, the effects are not statistically significant.

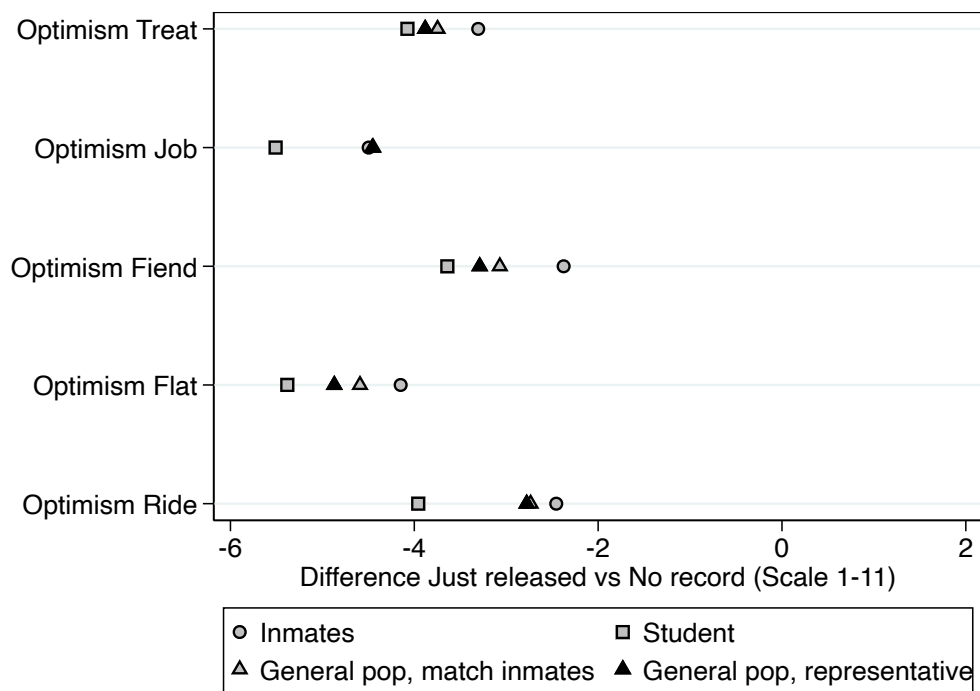Figure A2: **Perceived and Real Parameters of Criminal Justice**

Figure A3: **Inmates vs. General Population: Differences in Responses by Dimensions**
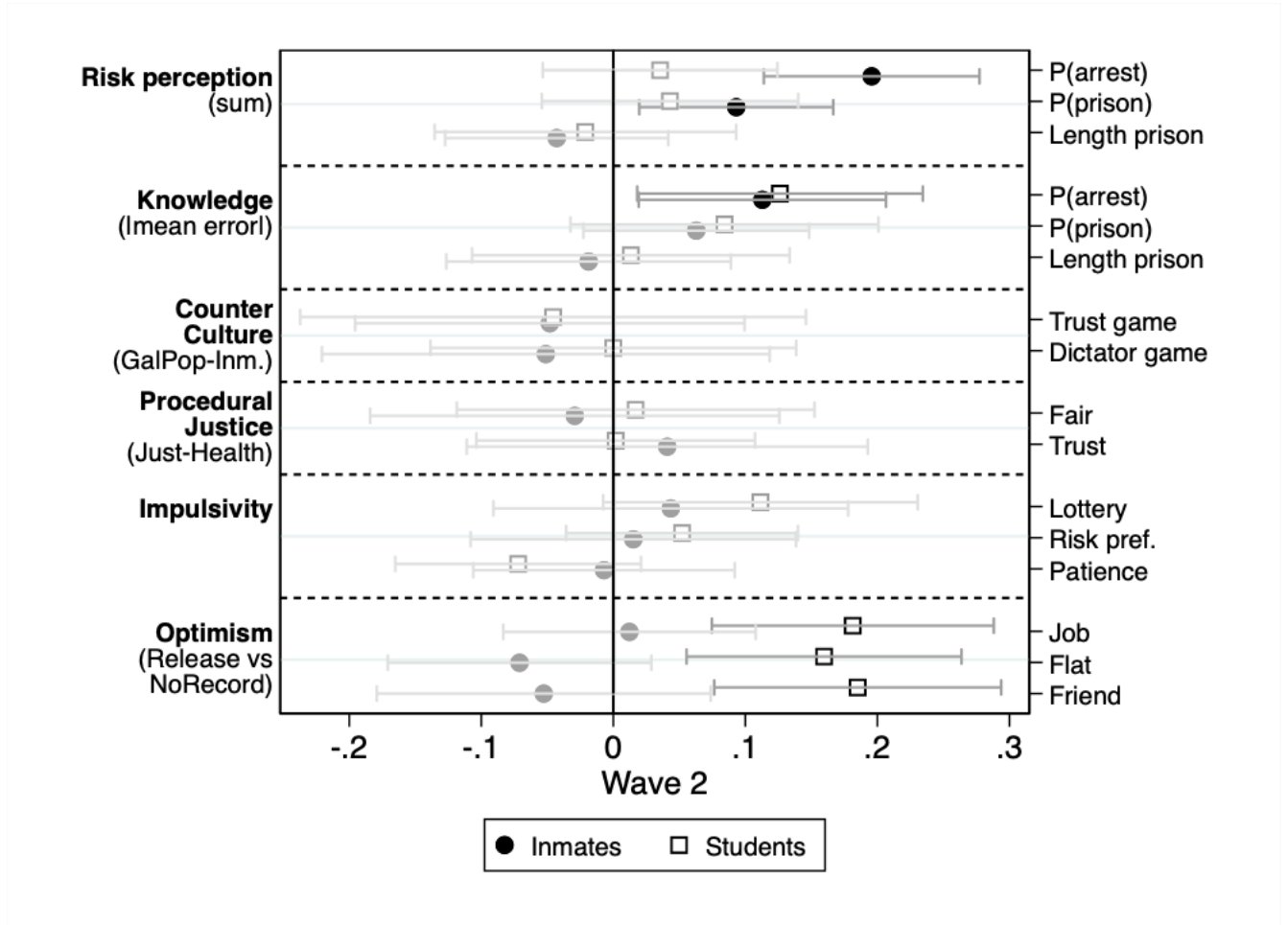

Notes: This figure replicates Figure **??** using only the general population as a control group.

Figure A4: **Optimism: Differences in Perceived Likelihood of Success**

Notes: This figure shows the differences in the perceived likelihood of a released man and a man with no criminal record succeeding in specific situations. The negative value implies that all groups view a man with no criminal record as more likely to succeed or to be treated nicely. *General pop, match inmates* is a sample of the general population weighted so it corresponds to the sample of inmates based on age and education level, *General pop, representative* is a sample of the general population weighted so it corresponds to the representative sample of Czech male population between the age of 18 and 65 y.o. Only observations from the first wave were used.

Figure A5: **Evolution Over Time: Inmates vs Students**

Notes: This figure replicates Figure **??** for inmates and students separately.

Figure A6: **Evolution Over Prison Time: Perception of Parameters of Criminal Justice**
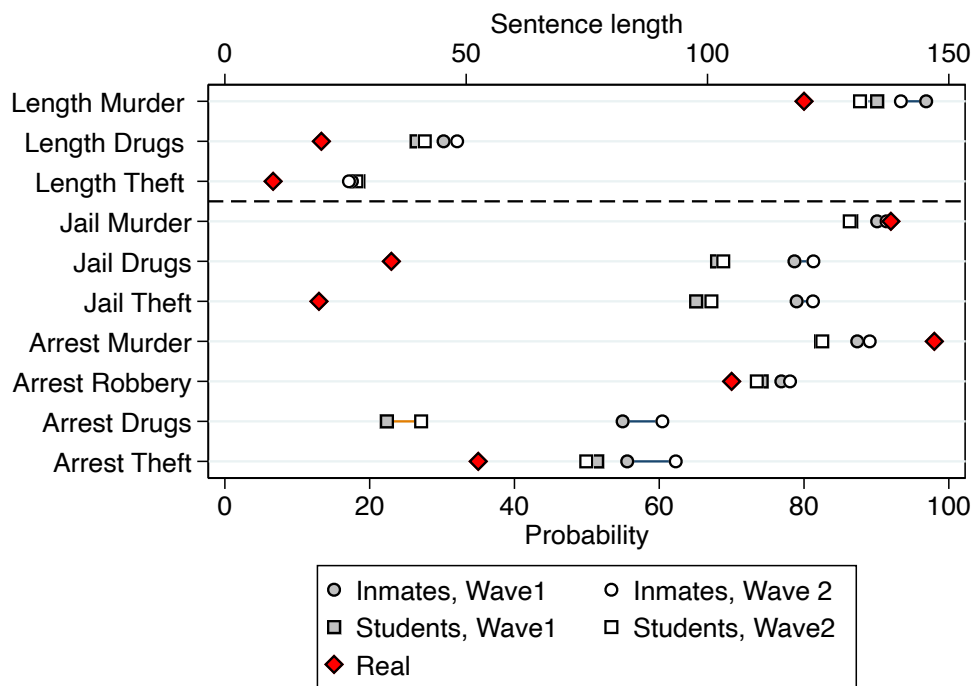
Notes: This figure shows evolution in perception of criminal justice parameters between wave 1 and wave 2 for inamtes and students. who is included? only those who are in both waves? or everyone in the first wave, everyone in the second wave?

Figure A7: (Mis)behavior in Prison: Disciplinary rewards
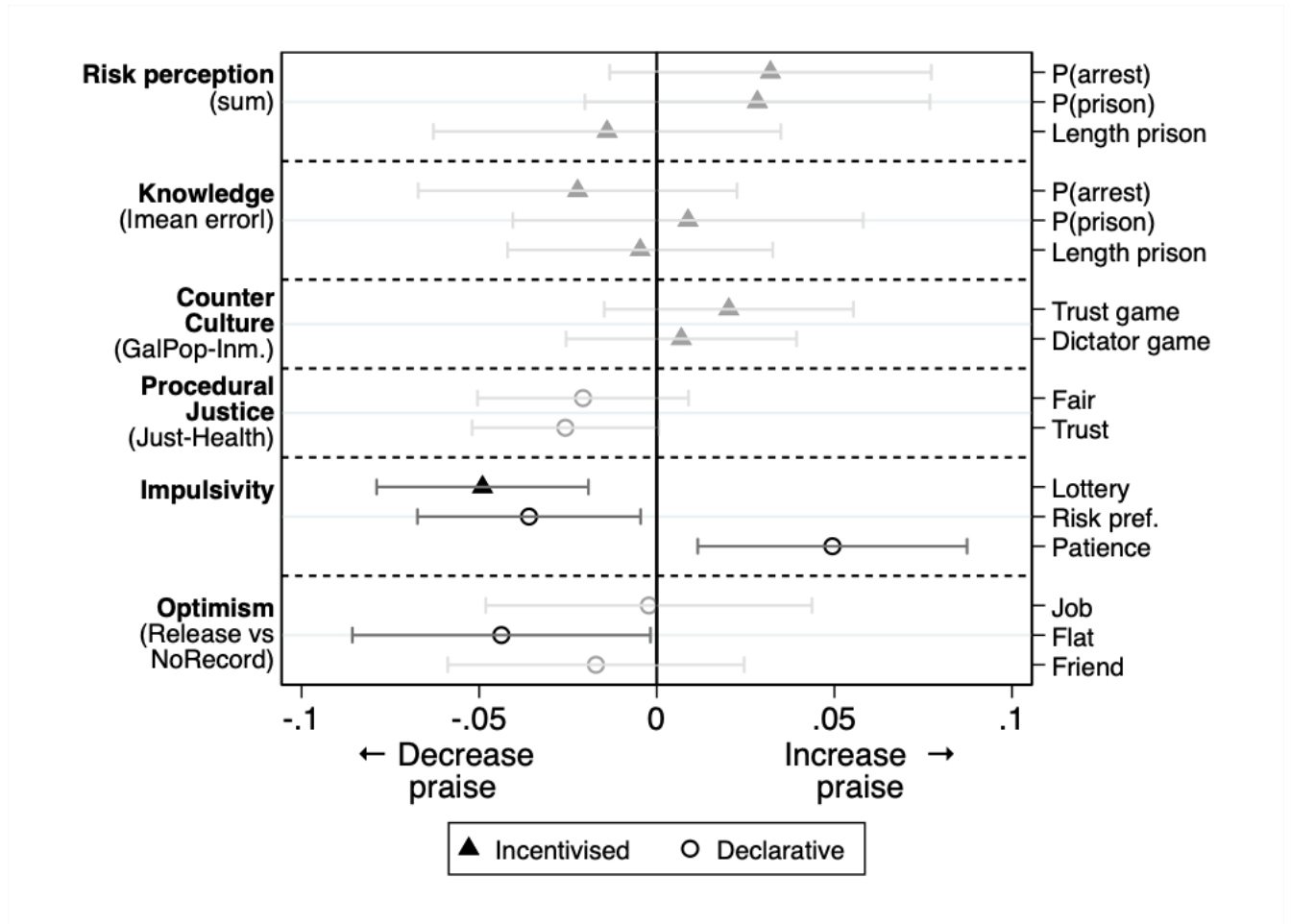
Notes: The outcome variable is an indicator whether an inmate received disciplinary reward at least once or not.

Figure A8: **(Mis)behavior in Prison: Disciplinary penalties**
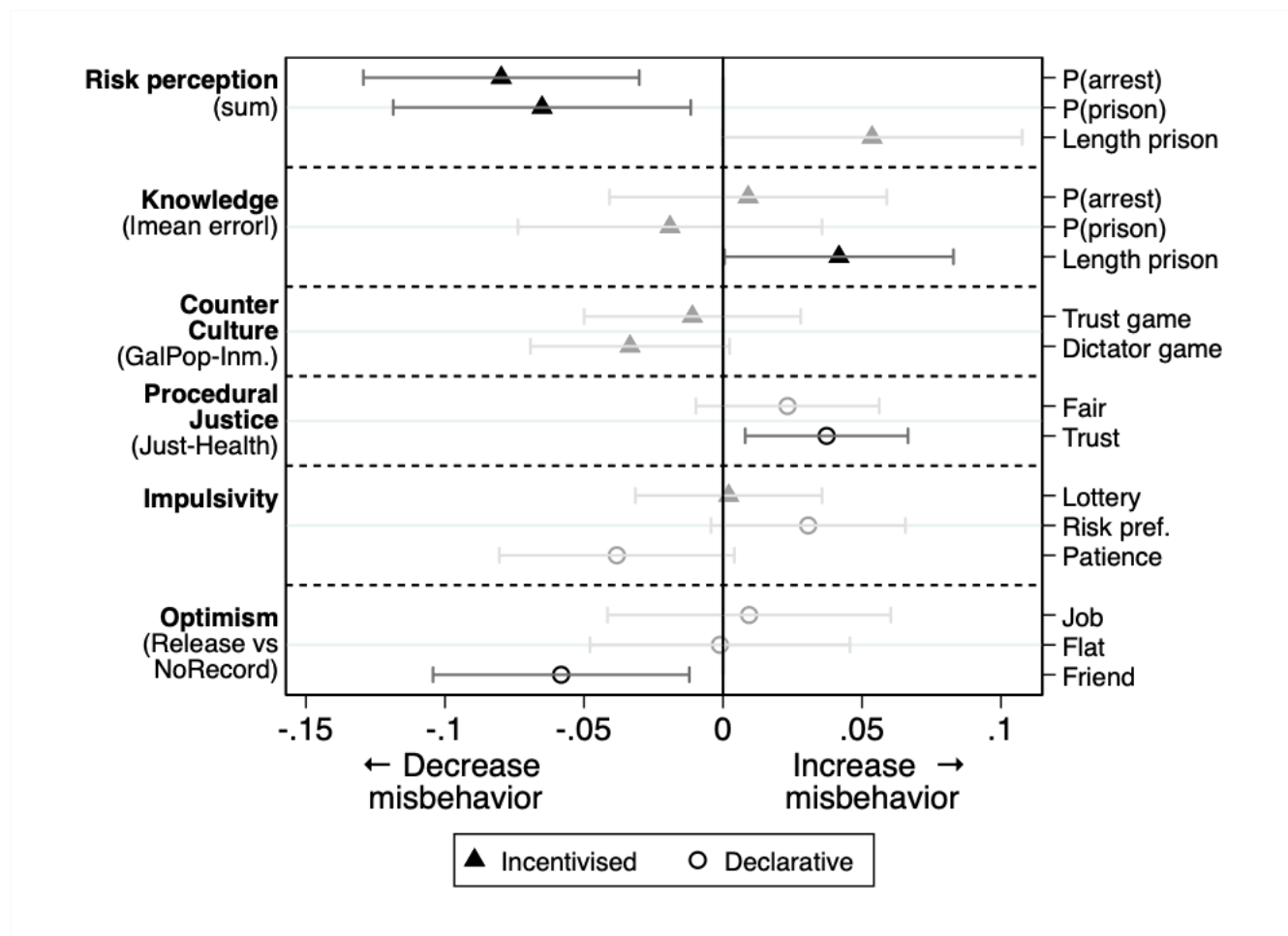
Notes: The outcome variable is an indicator whether an inmate received disciplinary penalty at least once or not.

B1 Appendix

B1.1 Participants

We combine two waves of inmate data (survey and administrative data), two waves of student data, and a survey with the general population. All respondents are male.

Inmates In the first wave (fall 2021), we collected data from 489 (466 + 23 in a pilot session) inmates from 15 Czech prisons. The selection of participating inmates proceeded in two steps. First, the Prison Service of the Czech Republic pre-selected suitable male prisons based on their assessment of safety concerns and available facilities. Second, we instructed prison psychologists and/or social workers in each of the selected prisons to identify and invite inmates who are expected to be incarcerated for at least a year after the first data collection.

In the second wave (fall 2022), we visited the same 15 prisons, and we surveyed 338 (70%) inmates from the first wave.[20] Additionally, we surveyed 327 new inmates. The new inmates were not expected to remain incarcerated for the next 12 months. Consequently, the sample of new inmates in the second wave may include inmates with shorter prison sentences. We disregard female inmates, as they account only for 5% of the inmate population.

In terms of security level, our sample resembles inmate population quite well. Two thirds of surveyed inmates (73% in the first wave and 55% from those surveyed only in the second wave) come from high-level security clearance department of prison, which corresponds to 64% in the inmates population. The remaining third (26% in the first wave and 44 % from those survey only in the second wave) come from the middle-level security clearance department of prison, which is more than 24% in inmate population. We could not survey any inmates from an enhanced security prison (7% in inmate population), because we were not allowed to visit such prisons. Finally, from the low-level security clearance, we surveyed only one inmates in the first wave and three in the second wave. See Table **??** for more details.

Surveys were organized as pen&paper sessions in small groups (median size of 19 inmates, see figure B1 for the distribution of the number of inmates per session) under the supervision of one of the experimenters and usually 2 research assistants. At the beginning of each session, inmates were informed about the session and asked to sign an informed consent form. The signed informed consent forms remained in prisons as

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[20]10% inmates were released, 9% were moved to a different prison which we did not visit or were moved to prison we just have visited, 5% were not available on that day (sick, work), and 3% were not interested, 2% were moved to higher security level.

evidence that inmates participated voluntarily. The session consists of several blocks of activities. Each activity was first explained to everyone, then completed. Prison guards were hardly ever present, while psychologists and/or social workers were present in roughly half of the sessions. We matched inmates' answers from the survey with additional variables from the prison administrative dataset.

Figure B1: **Inmates per Session**
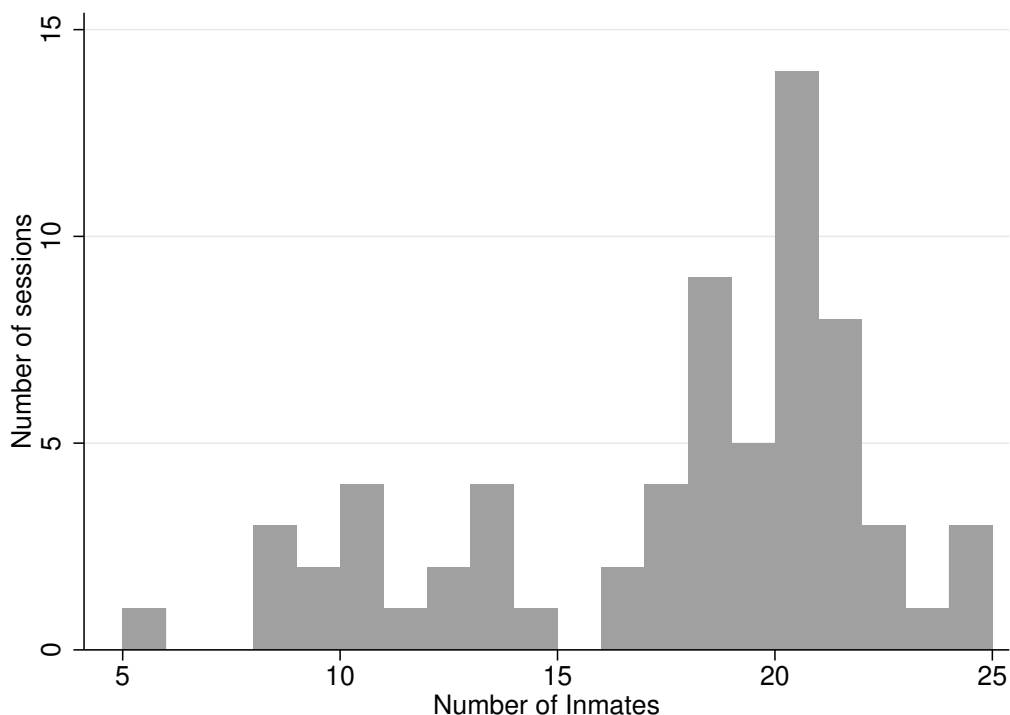
Notes: We organized 67 sessions (30 in the first wave, 37 in the second wave). The average number of inmates per session is 17.2, and the median is 19.

Participating inmates were guaranteed to receive 3 postage stamps (each of a value of 19 CZK, ca €0.8) as a participation fee.[21] They could earn additional postage stamps as a reward for their answers in several activities. The average pay for a 90-minute session, including the participation fee, was almost 14 postage stamps (265 CZK, ca €11).

Students In the first wave, we surveyed 310 male students, from which 243 (78%) also participated in the second wave. Students were recruited through the Laboratory of Experimental Economics, Prague School of Economics and Business and Masaryk University Experimental Economics Laboratory. Students participated either in person

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[21]Apart from the instrumental value of being used to send letters, postage stamps serve as currency in Czech prisons. For example, inmates reported that they could buy a pack of tobacco for 13 postage stamps, on average.

Figure B2: **Number of Postage Stamps**
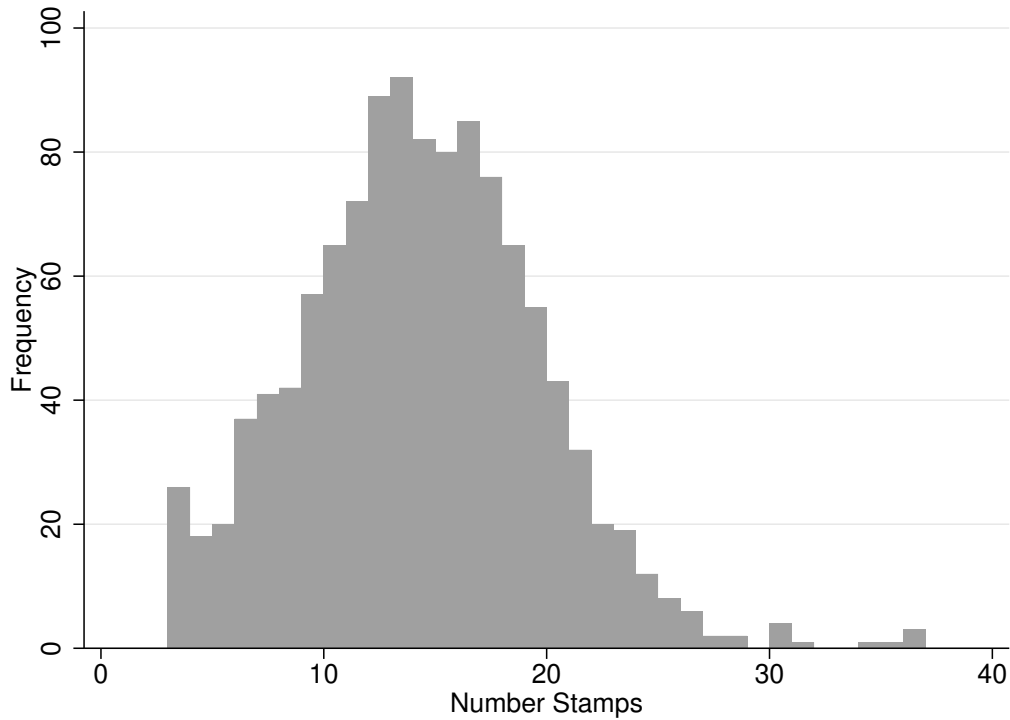
Notes: Inmates were rewarded with postage stamps (1 stamp = 19 CZK, ca €0.8). Everyone received at least 3 postage stamps as a show-up fee. The average number of postage stamps was 13.8, and the median value 14. The maximum number of postage stamps was 37, which we handed out on three occasions.

in an experimental laboratory in Prague or online. Respondents who participated in person were compensated CZK 100 in the first wave and CZK 200 in the second wave. Students were informed that the show-up fee would double in the second wave before their participation in the first wave. Respondents who participated online were compensated less (the show-up fee was CZK 50 in the first wave and 100 CZK in the second wave). Furthermore, students could earn additional rewards, which were the same for online and in-person participation. The average reward among all students was CZK 133.

General Population In cooperation with two data-collecting agencies (Data Collect and Median), we conduct an online survey with 1,254 respondents from the general population. Respondents were members of regular panels administrated by the corresponding agencies. The show-up was administrated by the data-collecting agencies and corresponded to their standard practices. Compared to the representative sample of the Czech male adult population, our sample overweights young, less-educated respondents and thus better corresponds to the sample of inmates. The incentives were set lower for

the general population. The average payoff without the show-up fee was CZK 48.

B1.2   Survey Tasks and Data

Trust and Dictator Games   In the first block, participants played the trust and the dictator games (TG and DG) in the position of a sender. [22] Each participant played each game twice, once with a receiver currently in a Czech prison[23] (an inmate) and once with a receiver who was someone from the general population who had never been incarcerated (a non-inmate). In each game, the participants knew the receiver's prison status (inmate vs. non-inmate) and that he was an adult male living in the Czech Republic.

In all four combinations of TG and DG games, senders start with 7 currency units (postage stamps for inmates), and they decide how many units (postage stamps) to send to the receiver. In the dictator game, the receiver receives triple the units sent, and the game ends. In the trust game, the receiver receives triple the units sent and decides how many to send back. He can choose to send back any number of units, including none. The amount sent back is not multiplied. We recorded the number of units sent and elicited the senders' beliefs regarding the receiver's expectations and the senders' beliefs about what the receiver would do should he have 6 and 18 units.

Perception of Parameters of Criminal Justice   We introduced several brief vignettes, each describing 100 individuals (offenders) who: (a) committed a particular crime; (b) were convicted for a particular crime. Participants were then asked how many of the 100 individuals (offenders) were fought (a) and how many of them were incarcerated (as opposed to an alternative type of sentence), and among those incarcerated (b), what was the average length of prison time in months (b). We asked about three types of crime: theft, robbery, and murder. For these nine questions, we compare participants' responses to statistics calculated using the official data from the police and courts in 2017-2019 (the last 3-year window before the Covid-19 pandemic). For any guess close to the correct value (+/- 5), the participant received three currency units.

(1) For every 100 people who commit motor vehicle theft, how many are arrested on average?

(2) For every 100 people who commit armed robbery, how many are arrested on average?

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[22]Prior to conducting the sessions, we ran pilot sessions both with students as well as with inmates where we elicited the decisions and expectations in the position of a receiver in a strategy method. These decisions were used for payment calculations.

[23]When a participant was an inmate, we highlighted that the receiver in the game was an inmate from a different Czech prison.

(3) For every 100 people who commit murder, how many are arrested on average?

(4) For every 100 people who sell (distribute) drugs, how many are arrested on average (Question with no reward)

(5) Imagine 100 people who have been sentenced several times (3-5) and are found guilty of the least serious form of theft (damage of 10-50k).

    (a) On average, how many of these 100 people will be incarcerated?
    (b) What is the average incarceration sentence?

(6) Imagine 100 people who have already been sentenced several times (3-5) and are found guilty of small-scale production and other disposal of narcotics, i.e. the least serious form of this crime.

    (a) On average, how many of these 100 people will be incarcerated?
    (b) What is the average incarceration sentence?

(7) Imagine 100 people who have never been sentenced before and are now found guilty of murder.

    (a) On average, how many of these 100 people will be incarcerated?
    (b) What is the average incarceration sentence?

Lottery Participants were given an endowment of five currency units and asked to decide how much to invest in a lottery. Participants in the lottery had a 50% chance of winning and tripling the invested amount and a 50% chance of losing the invested amount. They could choose any integer between 0 and 5.

Cognitive Reflection Test Participants were given a list of five questions of the cognitive reflection test. They received a reward of three currency units for each correct answer. Inmates and students had this task only in the second wave.

(1) If you overtake the racer in third place during the race, what place will you be in?

(2) One of the addends is 15. The second one is 20 greater. Determine the sum of these two addends.

(3) If it takes 10 workers 10 minutes to produce 10 components, how long will it take 100 workers to produce 100 components?

(4) A dog drinks a bowl of water in 6 hours. A cat drinks a bowl of water in 12 hours. How long would it take for them to drink one bowl of water together?

(5) A drum and a stick together cost CZK 220. The drum costs CZK 200 more than the stick. How much does the stick cost?

Questionnaire 1   The first questionnaire asked participants about their perception of the prospects of former inmates (also inmates, if reasonable) and non-inmates in several different situations. All the questions use a scale of 1-11. The last two questions did not ask about their former co-inmate if the participant was a non-inmate.

(1) How likely do you think a recently released man [a man with no criminal record] will be able to rent an apartment?

(2) How likely do you think that a recently released man [a man with no criminal record] will become friends with a man with no criminal record?

(3) How likely do you think it is that a recently released man [a man with no criminal record] will find a new job?

(4) How likely do you think someone will give a recently released man [a man with no criminal record] a ride in their car in an emergency situation?

(5) How do you think people will generally behave towards these people? [a recently released man / a man with no criminal record/ man in prison]

(6) How much do you personally trust the following types of people? [a recently released man / a man with no criminal record/ your former co-inmate]

(7) How much would you personally want the following types of people as your neighbors after their release? [a recently released man / a man with no criminal record/ your former co-inmate]

Questionnaire 2   The second questionnaire asked participants various questions related to procedural justice and behavioral motives theories of crime. Non-inmate participants were not asked some of the questions (5, 10, 11, 14) or were asked modified questions (12,13). All questions used a 1-11 scale.

(1) In general, would you say that the healthcare system treats everyone equally?

(2) In general, would you say that information from healthcare professionals (doctors, nurses) can be trusted?

(3) In general, would you say that the justice system treats everyone equally?

(4) In general, would you say that information from people in the justice system (judges, prosecutors) can be trusted?

(5) Would you say the law enforcement agencies were fair in your case?

(6) When someone shows me kindness, I am ready to return it.

(7) Would you say that, compared to others, you are a patient person?

(8) To what extent are you willing to punish someone who treats you unfairly, even if it may have consequences for you?

(9) To what extent are you generally willing or unwilling to take risks?

(10) How likely do you think you will have a steady job in the first year after your release?

(11) How likely do you think you will have adequate and stable housing in the first year after your release?

(12) How likely do you think you will vote in the first 5 years after your release?

(13) How likely do you think you will participate in a protest against the government in the first 5 years after your release?

(14) Would you say that your sentence is more lenient or harsher than you expected before the start of your trial?

(15) How worried are you that you will not have enough money in the future?

(16) How worried are you that you will become a victim of harassment or violence?

(17) To what extent do you agree with the statement "I believe in God."

Questionnaires 3 and 4 Questionnaire 3 asked basic personal questions such as participants' age, education, marital status, and criminal history if applicable. Finally, inmates and students who participated in two waves were given questionnaire 4, which asked about what has changed over the year on a scale: significantly less, less, the same, more, significantly more. Questions for students were modified, so they do not refer to life in prison.

(1) Compared to last year, I am working:

(2) Compared to last year, my relationships with fellow inmates are:

(3) Compared to last year, my relationships with family and friends outside of prison are (for example, based on the number of visits and letters):

(4) Compared to last year, my interest in current affairs (such as following the news) is:

(5) Compared to last year, I am thinking about my release from prison and my return to normal life:

(6) Compared to last year, I participate in activities within the prison (clubs, therapy, rehabilitation programs):

Inmates' administrative data Psychologists/social workers provided us with information from the prison database. Variables (1) - (9) for every first encounter with an inmate and (10) - (12) only for inmates participating in the second wave of data collection.

(1) The most serious criminal offense (the paragraph with the longest upper limit of the current sentence)

(2) The total number of criminal offenses for which the prisoner is currently serving a sentence

(3) The total number of entries in the copy of the Register of Criminal Records of individuals

(4) Identification with the criminal subculture, including extremist groups

(5) Acceptance of illegal behavior

(6) Lack of interest in regular work

(7) Difficulties in respecting authority

(8) Contacts with individuals with a criminal history

(9) Membership in a socially maladjusted group.

(10) Psychologists/social workers' professional evaluation of inmates' behavior on a scale from 1 to 5

(11) The number of disciplinary penalties

(12) The number of disciplinary rewards

Measures of (Mis)behavior in Prison In collaboration with psychologists and/or social workers in individual prisons we collected three measures of inmates' (mis)behavier between the two waves. First, for each prison, either psychologist or social workers provided us with his/her professional assessment of inmates behavior. They were instructed to give each inmates a grade between 1 (the best behavior) and 5 (the worst behavior). We rely on 1 to 5 scale, because that the scale used in educational system in the Czech republic for decades and people are familiar with it.

We further collected the number of disciplinary penalties and the number of disciplinary rewards an inmate received in the period between the two waves. These records are part of the inmates' profile and affect their lives during the imprisonment. Table B2 shows descriptive statistics for each measures and the correlation coefficients. The professional assessment is correlated with the both remaining measures. In fact, just the number of rewards and penalty explain more than half of the variation in professional assessment ($R^2 = 0.57$) and together with prison (psychologists) fixed effects, they explain two thirds of the variation ($R^2 = 0.66$).

Table B1: **Inmates: Our samples and Czech inmate population**

	First Wave	Only in Second Wave	Unique Inmates in Sample	Inmate Population
Male (%)	100	100	100	92
Education Level (%) (male only)				
Elementary or less	41	41	41	51
Highschool	55	55	55	47
College or more	4	4	4	2
Age Structure (male only)				
less than 25 yo	10	11	10	6
25-30 yo	19	21	20	14
30-35 yo	22	21	22	18
35-40 yo	20	20	20	18
40-45 yo	13	13	13	15
45-50 yo	9	9	9	13
50-55 yo	5	4	5	8
more than 55 yo	3	1	2	9
Crime Category (%)				
Theft	21	28	24	26
Robbery	14	6	11	8
Drugs	18	13	15	10
Murder	8	2	5	4
Fraud	5	5	5	4
Length of Incarceration (%)				
Less than 1 y.	1	7	3	20
1-2 y.	5	21	11	22
2-3 y.	16	18	17	16
3-5 y.	32	30	31	17
5-7 y.	20	12	17	9
7-10 y.	14	7	12	7
More than 10 y.	12	5	9	8
Security level (%)				
Enhanced security	0	0	0	7
High-level	73	55	66	64
Medium-level	26	44	33	24
Low-level	0	1	0	4
N	489	327	816	.

Notes: This table compares our samples' and Czech inmate population's characteristics. The inmate population corresponds to all (male) convicted (pretrial custody excluded) inmates in all types of security prisons. When applicable the population statistics corresponds to male inmate population. Type of crime is directly comparable: while for the inmate population the figure shows anyone who has been convicted for that type of crime, for our sample it measures only the crime was the most serious one. Age corresponds to the age at the time of the first wave collection, unless the inmate was involved only in the second wave.

Table B2: **Measures of Inmates' (Mis)behavior**

	Descriptive statistics					Correlation		
	N	Mean	Std. Dev.	Min	Max	Assessment	Rewards	Penalty
Assessment	340	1.81	1.10	1	5	1	.	.
Rewards	339	0.41	1.00	0	8	0.72	1	.
Penalty	339	2.59	3.50	0	39	-0.27	-0.11	1

Notes: This table shows descriptive statistics about the three measures of inmates' (mis)behavior (professional assessment, disciplinary rewards, and disciplinary penalty) and pairwise correlation coefficients.