Exploring Inmates' Perceptions, Attitudes, and Behavior: Implications for Theories of Crime[*]

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Abstract

We examine the perceptions and behavior of prison inmates, revealing insights that challenge existing theories of criminal behavior. Using comprehensive surveys, we contrast 816 Czech inmates' perceptions of sanction risks, interpersonal and institutional trust, impulsivity, and beliefs about post-release reintegration with those of the general population. Our findings reveal that inmates perceive higher risks of sanctions but are not more accurate about these risks. They have lower trust in other inmates, lower trust in the justice system, and exhibit less impulsivity than non-inmates. We observed limited evolution of responses for individuals surveyed twice, one year apart. Impulsivity and a diminished perception of the risk of sanctions are positively associated with misbehavior among inmates in prison. These results partly support theories of procedural justice and homo œconomicus but challenge the notion of criminal brotherhood.

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1 Introduction

The complexities of criminal behavior and its impact on societal well-being make it imperative to understand the motivations and perceptions of criminals. This study probes the minds of inmates, uncovering insights that challenge traditional theories of criminal behavior. We scrutinize four prevailing theories: homo œconomicus, which considers the rational response to incentives (Becker, 1968); criminal brotherhood, arguing that criminals adhere to distinct norms and form extra bonds (Clemmer, 1940); procedural justice theory, emphasizing the importance of trust in institutions (Tyler, 2003); and behavioral theories, highlighting impulsive tendencies (e.g., Nagin and Pogarsky, 2004). Despite extensive research, gaps remain in understanding how these theories manifest among incarcerated individuals. Our study aims to bridge this gap by exploring the perceptions and behavior of Czech inmates. Utilizing a comprehensive survey approach, we juxtapose the perceptions of 816 inmates across 15 Czech prisons against those of 1,254 members of the general population and 310 students (all males), creating a rich dataset for comparative analysis. Furthermore, we track the development of the studied behavior over time by surveying participants twice, one year apart.

We explore three unique features of the dataset. First, we are the first to compare the leading theories in a unified framework and provide a complex view on inmates' perceptions, attitudes, and behavior in dimensions motivated by theories of criminal behavior. Second, since a subset of participants were surveyed twice, a year apart, we can explore the time variation and estimate the effect of an additional year of incarceration on inmates' perceptions, attitudes, and behavior. We pioneer doing so on such a rich set of measures related to criminal behavior. Third, we rely on measures of inmates' misbehavior in prison as a proxy for criminal behavior and compute its correlation with the collected measures. In particular, we use the dataset to estimate (i) the **inmate gap**, i.e., how inmates and representatives of the general population differ in dimensions related to the existing theories; (ii) the **evolution of the inmate gap** in perception, attitude, and behavior during a year in prison; and (iii) the correlation between inmates' perceptions and their **(mis)behavior in prisons**.

The homo œconomicus theory postulates that criminals are rational and engage in criminal activities based on assessment of expected gains and costs. Central to this theory is the perception of criminal sanctions. To study the inmates' perception of the risk of criminal sanctions, we presented them with vignettes depicting several representative crimes and elicited respondents' perceptions of the probability of arrest or incarceration and the average duration of incarceration for each vignette. We find that inmates consistently estimated risks of criminal sanctions at all stages of the criminal justice process to

be higher than did non-inmates. However, when cross-referencing these perceptions with official statistics, inmates' assessments are no more accurate than those of non-inmates, even for crimes matching their convictions. Moreover, knowledge does not improve over time among inmates surveyed twice. Interestingly, we observe a negative correlation between inmates' perceived risk of sanctions and their misconduct within the prison. This pattern suggests that, despite being based on wrong perceptions of risk, the prediction of the homo œconomicus theory that crime decreases with sanctions seems validated in our context.

The theory of criminal brotherhood posits that within the criminal world, a unique set of distinct norms, bonds, and preferences divergent from mainstream society emerges. To explore the notion of a "criminal brotherhood," we scrutinize social preferences among respondents. Respondents participated in incentivized trust and dictator games, moral dilemmas used to measure participants' trust towards another participant, and the pro-social behavior of the decision-makers. Contrary to the predictions,[1] our data reveals that inmates do not exhibit greater trust towards their fellow inmates than towards non-inmates. In fact, inmates tend to view non-inmates as significantly more trustworthy. Furthermore, our longitudinal analysis shows no evidence of such brotherhood intensifying during incarceration. Additionally, the strength of inmates' connections with each other does not appear to influence their behavior within the prison system. These insights challenge theories that link criminal behavior to the development of a criminal identity or a sense of brotherhood within the prison environment.

Shifting our focus from interpersonal dynamics to institutional perceptions, we investigate inmates' trust in the justice system compared to non-inmates. The investigation is motivated by the procedural justice theory, which posits that criminal behavior stems from a lack of trust in public institutions, notably justice system. Our findings show a pronounced distrust among inmates towards the justice system, an observation consistent across two key dimensions: their confidence in information disseminated by justice system representatives and their perception of the system's fairness. Interestingly, this skepticism seems specific to the justice system, as indicated by the absence of a similar distrust towards the public healthcare system. This distrust remains stable over time but does not correlate with inmates' conduct within prison walls. Then, while inmates' lack of trust towards the justice system aligns with the procedural justice theory, the capacity of the theory to explain inmates' misbehavior seems limited in our context.

Lastly, and contrary to the prevalent evidence explaining criminal behavior by behavioral motives (e.g., Epper et al., 2022; Åkerlund et al., 2016) , our study finds that inmates generally exhibit less impulsivity compared to non-inmates. This tendency is

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[1] All our hypotheses are presented in Table 1

primarily attributed to the inmates' lower levels of declared impatience. Additionally, inmates display a reduced tendency for negative reciprocity while demonstrating a higher propensity for positive reciprocity. We find no evidence of any evolution of those behavioral dimensions over time in prison. These findings present a contrast to earlier research that connected such behavioral motives more directly with criminal conduct. However, when focusing on misbehavior within the prison context, the pattern aligns with existing literature: more impulsive inmates tend to engage in greater misbehavior.

Our study concentrates on a specific segment of the criminal population: incarcerated individuals who have faced relatively severe sentences. Despite not fully representing the wider criminal population, this group is pivotal in understanding crime dynamics as they contribute significantly to the overall crime rate[2]. The prison environment is also central to numerous theories on the evolution of knowledge, criminal identity, and perception of state authority, making this study particularly relevant.

An extensive literature in multiple fields of social sciences explores predictions of the theories of crime[3], and a comprehensive summary is beyond the scope of this paper. However, in comparison to the previous research, this study innovates in several ways. First, it explores the predictions of *several* theories on the same individuals in a unified framework. Additionally, it contributes to the discourse on inmates' i) time and risk preferences (Eriksson et al., 2017; Shimotsukasa et al., 2019; Thiry, 2012; Ścigała et al., 2022; Åkerlund et al., 2016; Epper et al., 2022; Nagin and Pogarsky, 2004), ii) social preferences (Chmura et al., 2017; Nese et al., 2018; Birkeland et al., 2014; Gummerum and Hanoch, 2012; Khadjavi and Lange, 2013; Maggioni et al., 2018; Balafoutas et al., 2020), and iii) perceptions of the risk of criminal sanctions (Apel, 2013; Pogarsky et al., 2017; Apel, 2022; Barnum et al., 2021; Lochner, 2007; Matsueda et al., 2006; Chalfin and McCrary, 2017). Furthermore, it offers a rare glimpse into how these perceptions—measured by incentivized measures—evolve over time within the prison environment (Maggioni et al., 2018).

What sets our study apart is the extensive data collection, including innovative measures of revealed preferences and knowledge of the risk of sanctions through incentivized tasks complemented by administrative data. This approach allows for a comprehensive

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[2]Former inmates account for around 15% of all recorded crimes in England (Newton et al., 2019) and in the US (Rosenfeld et al., 2005)

[3]On the homo œconomicus theory see, for example, 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, Kessler and Levitt (1999); Lee and McCrary (2017); Drago et al. (2009); for the effect of severity of punishment on crimes, and, Chalfin and McCrary (2017); for a general review of the literature on deterrence. For the criminal brotherhood theory, see, e.g., Walters (2003); Cohn et al. (2015). On procedural justice, see, for example, Mazerolle et al. (2013); Chen (2017) or recent reviews by Nagin and Telep (2017); Donner et al. (2015). Lastly, on behavioral explanations, see, e.g., recent research by Epper et al. (2022); Åkerlund et al. (2016)

comparison of inmates and non-inmates across multiple dimensions within a cohesive framework. Our findings not only challenge and refine existing theories but also have significant implications for developing more effective criminal justice policies and interventions. A better understanding of the nuanced shifts in perceptions and preferences among inmates over time allows us to tailor rehabilitation programs and policies to address the root causes of criminal behavior, ultimately contributing to a reduction in recidivism and a more effective criminal justice system.

2   Czech Prison System

As of 2022, the Czech incarceration rate stands at 174 inmates per 100,000 population, nearly double the EU average. The high incarceration rate is primarily driven by significantly longer incarceration periods, averaging almost two years[4], 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 results from a common practice whereby judges initially impose one or multiple suspended sentences, which subsequently transform into relatively long imprisonment (Drápal, 2023).

The Czech inmate population is predominantly male (92%), and relatively young with 65% of inmates aged between 25 and 45 years. Educational attainment is limited, with about half having not progressed beyond elementary education. Foreign inmates make up around 8% of the population. Individuals are mainly incarcerated for theft (26%), drugs (10%), and robbery (8%). For more details about the inmate population and our samples, please refer to Table OA6 in Appendix OA1.3.

Depending on the crime and the risk of attempted escape, judges sentence inmates to incarceration in an enhanced security prison (4 in Czechia) or ordinary security prison.[5] In the latter case, the prison service assigns inmates to departments or programs with low-level, medium-level, or high-level security clearance. The assignment affects inmates' lives, such as work placement and visitation opportunities. Almost 90% of all inmates are in medium-level or high-level security clearance.

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[4]The average incarceration is shorter in most European countries. 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 (Aebi et al., 2023).

[5]The Czech Republic has 25 prisons and 10 pretrial detention facilities. Some inmates remain in pretrial detention facilities even after being convicted and receiving a sentence. Two of the 25 prisons are predominantly female (Mäsiarová, 2022).

3 Research Design

3.1 Survey

Design Our survey methodology encompasses both incentivized and non-incentivized tasks and questions[6], catering to four theories of criminal behavior. The detailed survey script is provided in Appendix OA1.3, noting that while inmates were surveyed twice, certain elements, such as age and marital status, were queried only once.

A. Homo œconomicus: We first gauge participants' knowledge of the risk of criminal sanctions. Participants responded to vignettes about four crimes—motor vehicle theft, robbery, drug distribution, and murder—and estimated the likelihood of arrest, incarceration upon conviction, and length of incarceration for each. We cross-referenced these responses with official police and court statistics to evaluate the accuracy of their knowledge, offering rewards for close approximations.[7] This stage also explores the perceived indirect costs of incarceration, such as the challenges ex-inmates face in finding jobs and forming social connections.

B. Criminal Brotherhood: To examine the theory of criminal brotherhood, we employed the trust game (TG) (Berg et al., 1995) and the triple dictator game (DG) (Kahneman et al., 1986) to measure trust and prosocial behavior among participants. Participants played each game twice, once with an inmate[8] and once with a non-inmate, the order being randomly determined. The games were incentivized and preceded by control questions to ensure participants understood the rules.

C. Procedural Justice: We elicited participants' trust in information provided by a representative of the judicial and healthcare systems, along with their views on whether the judicial and healthcare systems treat everyone equally. The healthcare system represents a neutral public institution, not involved directly or indirectly in the criminal justice system.

D. Behavioral Motives: To gauge risk preferences, participants were invited to participate in an incentivized lottery investment task adopted from Gneezy and Potters (1997). We also collected self-reported data on patience, risk preferences, and both positive and negative reciprocity.

In addition to the main survey components, participants took a cognitive reflection test consisting of questions adapted to the Czech context (Frederick, 2005; Thomson

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[6]Non-incentivized measures were adopted from Falk et al. (2018), validated in various contexts (Falk et al., 2018; Bauer et al., 2020)

[7]Note that we do not evaluate the accuracy of the predicting probability of being arrested for drug consumption as the real number is unknown. Yet, it is still informative for comparisons of the perceived risk of sanctions.

[8]All inmate pairings being with inmates from different prisons.

and Oppenheimer, 2016; Toplak et al., 2014). Lastly, inmates' survey responses were integrated with administrative data and information provided by social workers, including records of misbehavior and criminal history. This comprehensive approach allowed for a nuanced understanding of the behavioral and psychological traits of inmates versus non-inmates.

Implementation   Data collection from inmates occurred in two waves through in-person sessions across 15 Czech prisons during the summers of 2021 and 2022. Consistent with existing studies (e.g., Eriksson et al., 2017; Khadjavi and Lange, 2013; Chmura et al., 2017; Balafoutas et al., 2020; Birkeland et al., 2014), our inmate sample is not representative of the entire prison population for three main reasons.

First, due to safety concerns, we did not survey inmates in enhanced security prisons. Second, to survey inmates twice, we intentionally over-sampled inmates with long sentences in the first wave. Third, because inmates are a vulnerable group, their participation in any study must be entirely voluntary, and they cannot be compelled to participate. This voluntary participation may induce selection bias if the decision to participate correlates with other factors.

Despite differing selection criteria and variations in observable variables (e.g., length of sentence, type of crime), responses of inmates surveyed in the first and second waves are statistically indistinguishable. Therefore, we believe our results are valid for a significant portion of the inmate population. See Appendix A1.2 for a detailed description of the selection process of participating inmates.

Certain tasks and questions may be susceptible to social desirability bias. As in previous studies with inmates, participants were assured of strict confidentiality to minimize such concerns (Eriksson et al., 2017). Additionally, responses potentially sensitive to social desirability bias, such as trust in the justice system or the amount of postage sent in the TG and DG, were consistent between sessions overseen by prison guards and psychologists and sessions held with no prison staff, where social desirability is likely less pronounced. This consistency suggests that social desirability bias was likely minimal.

Student data were gathered in two waves in a laboratory setting or via online platforms. The general population, surveyed solely online, participated in only one wave. We intentionally over-sampled younger and less-educated participants to make the sample more comparable to the sample of inmates.

Our final dataset includes responses from 816 inmates (338 participated in both waves, 151 in the first wave only, and 327 in the second wave only), 310 students (243 in both waves, 67 in the first wave only), and 1,254 general population participants. All respondents were male, and to align more closely with the inmate sample in terms of demo-

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graphics, we intentionally oversampled low-educated young men in the general population sample.

To incentivize participation, we offered rewards for all participants. Students and the general population participants received monetary compensation, while inmates were compensated with postage stamps, a widely accepted form of currency within the Czech prison system. Appendix OA1.3 contains detailed information about data collection procedures, sample selection criteria, the logistics of the in-person prison sessions, and the reward system.

3.2 Empirical Analysis

Our analysis systematically addresses four theories of criminal behavior. For each theoretical perspective, we present the results from three distinct analytical exercises.

The Inmate Gap We commence by assessing the *inmate gap*—the discrepancy in perceptions and behavior between inmates and representatives of the general population. This involved running multiple regression analyses with our collected behavioral and perceptual measures as dependent variables. For participants surveyed twice, we use their first observation. We control for individual characteristics, including education, age, cognitive reflection scores (CRT)[9], and attentiveness during data collection. The variable of our interest is a binary indicator, which equals 1 for inmates and 0 for non-inmates, including the general population and students. We also control for student status.

Evolution of the Inmate Gap In the second exercise, we investigate how the inmate gap evolves over a year of incarceration. We apply individual fixed-effect models to a subset of inmates and students who participated in both survey waves. The model specification is as follows:

$$y_{i,t} = \beta\,Wave2 + \gamma\,Inmate_i * Wave2 + \alpha_i + \varepsilon_{i,t}$$

Here, y represents our collected measures, with γ being the focal coefficient.

Inmate Perceptions and Misbehavior Correlation The third exercise inverts the approach of the prior analyses. Rather than using the inmate status as an explanatory

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[9]We rephrased the standard CRT and extended it by two additional questions. The CRT was administered only in the second wave for inmates and students. Thus, we exclude participants surveyed solely in the first wave. For those surveyed twice, we utilize first-wave data except for CRT, assuming CRT scores are stable over time.

variable, we examine the correlation between inmates' perceptions (captured in the first survey wave) and their subsequent misbehavior in prison (between waves 1 and 2). To measure the misbehavior, we use an assessment of inmates' behavior provided by prison psychologists. This analysis allows us to evaluate the applicability of the outlined theories in understanding the intensive margin of criminal behavior. Separate regressions are run for each measure, with prison-fixed effects controlled.

4   Results

We outline our core hypotheses in Table 1 and visually present the findings in Figure 1. Primary measures and aggregated indices for each hypothesis are normalized to ensure the general population's mean is 0 and standard deviation is 1. The aggregated indices displayed in bold in Figure 1 are sums of the corresponding normalized measures that are presented below the main indices. Two exceptions exist: firstly, 'relative distrust in inmates' is calculated as the difference between measures directed at inmates and those directed at non-inmates; secondly, 'legitimacy of justice' represents the difference between perceptions of the justice system and perceptions of the public health system.

4.1   Homo œconomicus

Hypotheses   The homo œconomicus theory suggests that individuals engage in criminal activities based on a rational assessment of potential gains versus the risks and costs involved. Central to this theory is the perception of criminal sanctions, which significantly influence the expected costs of committing a crime. We explore two primary hypotheses regarding inmates' perception of the risk of these sanctions. First, we hypothesize that inmates possess a more accurate understanding of the risk of criminal sanctions than non-inmates when cross-validated against the police and court statistics. Along this line, we also predict that inmates convicted for the depicted crime (*experts*) will be more accurate about the risks since they possess superior knowledge. Second, we hypothesize that inmates tend to underestimate the risk and the cost of these sanctions. We expect it to be the case for both direct criminal costs i.e., the probability of being arrested, incarcerated, and the length of incarceration, and indirect social costs i.e., the difficulty to reintegrate into society after prison.[10]

Furthermore, we anticipate that interaction with other criminals during incarceration may refine inmates' understanding of sanction risks. However, this learning process might

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[10]Note that the hypotheses are not mutually exclusive. For example, inmates could underestimate sanctions and be relatively close with their assessment, while the general population could largely overestimate them.

be skewed if the information shared among inmates is biased toward an exaggerated perception of arrest likelihood. This phenomenon could lead inmates to adjust their beliefs about arrest probabilities upwards, regardless of the actual risks.

Lastly, consistent with the homo œconomicus framework, we expect a negative correlation between the perceived risk of sanctions and inmates' misbehavior. In this context, we consider the perception of criminal sanctions as a proxy for individuals' broader risk assessment tendencies, including their behavior within the prison environment.

Results Contrary to expectations, our findings reveal that inmates do not possess a more accurate knowledge of the risk of criminal sanctions compared to representatives of the general population. Analyzing the mean absolute difference between participants' estimates and actual statistics, we observe inconsistent patterns across different criminal scenarios. While inmates tend to be more precise in estimating the probability of arrest, their accuracy falls short when it comes to the likelihood of incarceration. Surprisingly, this lack of enhanced knowledge extends even to *experts* who do not differ from other inmates (see Figure A1 in Appendix A1.1).

A notable finding is that inmates generally perceive a higher risk of criminal sanctions at every juncture within the criminal justice process. This inmate gap is particularly pronounced in their perceptions regarding the likelihood of incarceration (+0.75 SD) and the expected duration of imprisonment (+0.8 SD), diverging from Lochner (2007)'s observation that individuals implicated in crimes often perceive a lower risk of detection.[11]

Regarding the indirect consequences of incarceration, referred to as the inmate penalty and measured as the difference in the perceived likelihood of succeeding of a released man and a man with no criminal history in various situations, our data shows that inmates are more optimistic than non-inmates about the challenges a released individual faces in reintegrating into society. This optimism could potentially lead to an underestimation of the indirect costs of criminal behavior. However, this optimism's impact is relatively minor compared to the substantial misperception of direct criminal sanctions by the inmates.

Inmates' understanding of the risks associated with criminal sanctions does not improve during their incarceration. This static knowledge, contrasting with previous research that highlights learning among offenders through interactions with law enforcement (Philippe, 2023; Dušek and Traxler, 2022; Anwar and Loughran, 2011), suggests a lack of reliable information sources within the prison system. Our participants, isolated from official law enforcement, rely on possibly biased and unverified information from

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[11]Our findings on the inmate knowledge gap and perceived sanction risk remain robust even after discounting measures that could be affected by underreporting, such as the probability of arrest.

fellow inmates. This is evident in a slight uptick in their perceived likelihood of arrest, yet without enhancing overall accuracy, suggesting influence from a skewed perspective. Notably, an additional year in prison leads to an increase in the perceived repercussions of being an ex-inmate, with inmates growing more pessimistic about post-release life. Figures A2 and A3 in Appendix A1.1 suggest that the effect is driven primarily by those recently incarcerated and those in low-level security prison departments.

Furthermore, our analysis suggests a negative correlation—sizable and significant in Panel A of Figure 1 but insignificant when correcting for multiple hypothesis testing (see Table OA3)—between perceived sanction risk and misbehavior in prison. This aligns with the homo œconomicus theory, proposing that a heightened awareness of potential risks curtails delinquent behavior. This correlation primarily stems from inmates' perceptions regarding the probability of arrest, in line with existing literature emphasizing the deterrent effect of sanction likelihood over its severity (Nagin, 2013; Chalfin and McCrary, 2017).

4.2 Criminal Brotherhood

Hypotheses The theory of criminal brotherhood posits that within the criminal world, a unique set of distinct norms and bonds divergent from mainstream society emerges. This study explores this theory, focusing on interpersonal trust and resource sharing. Our hypothesis is that inmates exhibit greater trust towards fellow inmates compared to non-inmates (reflected in larger transfers in the Trust Game, TG), leading to a positive inmate gap in trust in inmates. Additionally, we hypothesize that inmates perceive their fellow inmates as more trustworthy than non-inmates. Therefore, they expect larger back-transfers in the TG, aligning with the concept of a strong criminal brotherhood. Lastly, turning to resource-sharing behavior in the Dictator Game (DG), we expect inmates to be more inclined to share resources with fellow inmates.

An integral part of our investigation is the examination of how these dynamics evolve during incarceration. We anticipate that the strength of criminal identity and brotherhood deepens over time in prison, leading inmates to increasingly trust, find trustworthy, and share resources with their fellow inmates.

Lastly, we explore the relationship between adherence to the norms of this brotherhood and behavior within the prison system. We hypothesize that stronger bonds to the brotherhood are positively correlated with misbehavior in prison, implying that deeper integration into criminal norms detracts from compliance with established prison norms and rules.

Results Our findings do not substantiate the existence of a criminal brotherhood among inmates, challenging this theory. In the TG, inmates displayed a generally higher level of trust, sending more to both fellow inmates and non-inmates alike, regardless of the receiver's identity. The gap of 0.35 SD corresponds to the 10% of the initial endowment.[12] The inmate gaps in sent amounts in the TG are positive for both inmate and non-inmate receivers, and the difference between these gaps is neither substantial nor statistically significant, indicating that inmates do not exhibit a stronger preference for trust towards fellow inmates compared to non-inmates. The effects are documented in Panel B of Figure 1, which shows positive inmate gaps implying that inmates send more than non-inmates, regardless of the identity of the receivers.

Contrary to expectations of a criminal brotherhood, inmates perceive non-inmates as more trustworthy. When assessing the trustworthiness of paired players, inmates, relative to non-inmates, anticipate receiving back more from non-inmates than from fellow inmates. This finding contradicts the notion of strong brotherhood bonds among inmates. In the DG, while inmates demonstrate a willingness to share resources with fellow inmates, this generosity is relatively minor compared to the significant difference in perceived trustworthiness levels.

Importantly, our study reveals that the strength of any criminal brotherhood does not intensify with additional time spent in prison. An extra year of incarceration does not increase inmates' trust in one another, alter their perception of others' trustworthiness, or affect their readiness to share resources. This lack of change over time is crucial, suggesting that an additional year of incarceration does not negatively impact inmates' potential for future societal reintegration.[13] Furthermore, we find no correlation between the strength of criminal brotherhood bonds and inmates' misbehavior in prison. The results are presented in Panel B of Figure 1.

4.3 Procedural Justice

Hypotheses According to the procedural justice theory, criminal behavior stems from a lack of trust in public institutions. We hypothesize that this distrust is more pronounced among inmates compared to non-inmates, particularly towards the justice system, with minimal effects on their perception of other institutions. This theory suggests a tangible negative inmate gap in institutional trust. Furthermore, such distrust could manifest in reduced engagement in public life activities, like voting. A crucial hypothesis of this

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[12]This finding aligns with Chmura et al. (2017), indicating that inmates do not share less than non-inmates in the TG, and may even exhibit greater generosity.

[13]This observation is in line with the findings of Maggioni et al. (2018), who also reported no significant change in trust and altruism among inmates not engaged in accountability programs.

theory is that the degree of trust in institutions, as a proxy for perceived legitimacy, inversely correlates with delinquent behavior. In essence, the lower an individual's trust in public institutions, the more inclined they may be to engage in law-breaking activities.

Results Our analysis reveals a significant negative inmate gap in the perceived legitimacy of the justice system. This distrust manifests in two ways: inmates exhibit greater skepticism towards the justice system's treatment of individuals equally and demonstrate lower trust in information provided by its representatives. However, this lack of trust does not extend to the public healthcare system, indicating that the distrust is specifically targeted at the justice system. Our findings also show that inmates are considerably less likely to participate in public life, particularly in voting, aligning with our hypotheses.

However, the duration of imprisonment does not seem to alter inmates' trust in public institutions. Even an additional year in prison does not shift their perspective, though there is a slight increase in the inclination to participate in anti-government protests. Interestingly, we observe no significant correlation between these trust measures and the frequency of inmates' misbehavior in prison. Together, those results provide some support for the procedural justice theory. For detailed results, refer to Panel C of Figure 1.

4.4 Behavioral Explanations

Hypotheses In exploring the behavioral underpinnings of criminal conduct, we turn to risk tolerance and impatience, which have been identified as significant predictors of criminal behavior (Åkerlund et al., 2016; Epper et al., 2022). Accordingly, we hypothesize that inmates demonstrate a higher propensity for risk, as evidenced by greater engagement in the lottery task and through self-reported risk preferences. Furthermore, we anticipate a pronounced tendency towards impatience among inmates than among non-inmates, expecting a positive inmate gap in impulsivity measures.

Our analysis also extends to the domain of social reciprocity. Here, we predict lower positive reciprocity among inmates, indicating a reduced likelihood of reciprocating favors. Conversely, we expect heightened negative reciprocity, reflecting a greater propensity to retaliate or punish, even at a personal cost. Note that we do not foresee significant changes in these behavioral traits over the course of a year in prison, suggesting a degree of stability in risk preferences and impulsive tendencies (Schildberg-Hörisch, 2018).

Crucially, this notion of impulsivity, encompassing both risk preferences and impatience, is hypothesized to have a direct correlation with misbehavior: the more impulsive the inmate, the more likely he is to engage in delinquent acts within the prison setting.

Results Contrary to our initial hypotheses, the overall gap in impulsivity between inmates and non-inmates skews negative, indicating that inmates exhibit less impulsivity than their non-incarcerated counterparts. This surprising trend is primarily attributed to a notably lower degree of impatience reported by inmates. Equally unexpected, we observe no significant difference in risk preferences between the two groups. The average investment in the lottery task and self-reported risk preferences are comparable across inmates and non-inmates. These findings prompt several considerations: the unique context of the lottery for inmates, especially those with gambling-related issues before incarceration, differing reference points for self-assessment of risk, and arguably relatively higher value of rewards in prison compared to outside (Holt and Laury, 2002). Additionally, our data reveal that inmates display lower negative reciprocity and higher positive reciprocity, further challenging our original expectations.

As expected, we detect no significant shift in these behavioral traits over the course of imprisonment. This stability suggests that incarceration does not inherently modify inmates' patience, risk aversion, or reciprocity levels, whether due to therapeutic interventions, prison environment, or other factors. This finding also implies that the observed disparities in impulsivity cannot be easily directly attributed to the inmates' stay in prison itself.

However, our analysis suggests a positive correlation—sizable and significant in Panel D of Figure 1, insignificant when correcting for multiple hypothesis testing (see Table OA3)—between impulsivity and misbehavior. Inmates with higher impulsivity, particularly as gauged by self-reported risk preferences, seem to demonstrate a greater propensity for misbehavior. This correlation underscores the relevance of impulsivity in understanding the intensity of delinquent behavior among established criminals, despite the lack of clear differentiation in impulsivity levels between inmates and non-inmates. For detailed results, refer to Panel D of Figure 1.

Table 1: **Hypotheses**

	Inmate Gap	**Evolution of Inmate Gap over Prison Time**	**Correlation with Misbehavior**
Homo oeconomicus	More knowledgeable of the risk of sanctions Perceived lower risk of sanction	Knowledge of the risk of sanction improves Perceived risk of sanction increases	Perceived risk of sanction correlates negatively
Criminal Brotherhood	Grater trust in other inmates Share more with inmates	Trust in inmates increases Sharing with inmates increases	Trust in inmates correlates positively
Procedural Justice	Lower trust in institutions	Trust in institutions decreases	Institutional trust correlates negatively
Behavioral Explanations	More impulsive Stronger negative reciprocity Weaker positive reciprocity	No effect on risk preferences	Risk aversion correlates negatively Impulsivity correlates positively

Notes: The exercises presented in columns **Inmate Gap** and **Evolution of Inmate Gap over Prison Time** were registered before the data collection started. The last column represents an exercise that was not registered, as it was highly uncertain that the prison services would share the necessary data.

Figure 1: **Results**
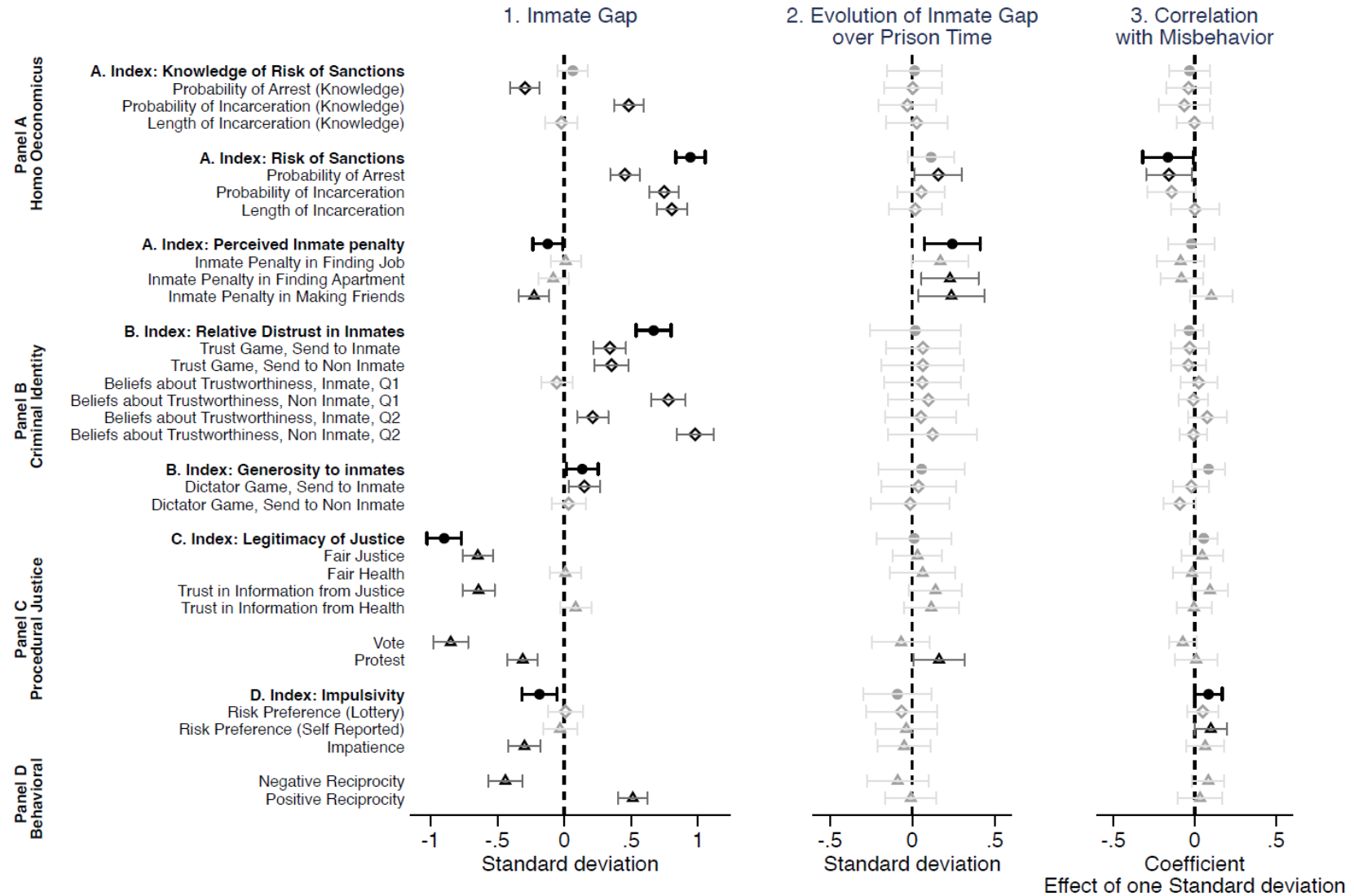
Notes: The left panel shows the **inmate gap**, the conditional difference in the corresponding measures between inmates and non-inmates. The middle panel shows the **evolution of inmate gaps**, i.e., how the difference between inmates and non-inmates changed over a year in prison. The right panel shows the correlation of corresponding measures and **misbehavior in prisons**, reported by social workers. The presented effects are in the standard deviations of the general population. Measures in Panel A relate to homo œconomicus theory, measures in Panel B relate to criminal identity, Panel C to procedural justice, and Panel D to behavioral motives. The bold cycles at the top of the class of measures represent aggregated measures. Diamonds represent incentivized measures, triangles non-incentivized measures. The transparent estimates are statistically indistinguishable from 0.

5 Concluding Remarks

Our analysis of inmates and non-inmates provides new insights into the assumptions and applicability of four major contemporary theories of criminal behavior. We systematically compared these two groups across multiple dimensions—perception of risk of sanctions, views on reintegration, interpersonal and institutional trust, and impulsivity—yielding findings that partially align with existing theories, but also challenge some established notions.

A significant finding is that inmates perceive a higher risk of sanctions compared to non-inmates, which contradicts certain expectations of the homo œconomicus theory. Furthermore, their perceptions are no more accurate than those of non-inmates. Our results indicate a pronounced gap in institutional trust, with inmates exhibiting a lower trust in the justice system than non-inmates. This gap, particularly towards the justice system and not spilling over to other institutions, provides partial support for the procedural justice theory. Interestingly, contrary to our hypotheses, inmates were found to be less impulsive than non-inmates. This challenges the traditional view that impulsivity is a key driver of criminal behavior.

Moreover, our findings about the impact of a year in prison are noteworthy. Except for an increase in pessimism about post-release reintegration prospects, one year in prison does not significantly alter inmates' perceptions or attitudes: Inmates do not learn about the risk of recidivism, the ties among inmates do not strengthen, and the exposure to the system does not change inmates' trust in the justice system.

Arbitrating between the different theories of criminal behavior is crucial for developing effective interventions, allocating resources efficiently, designing rehabilitation strategies, informing sentencing and punishment practices, and reducing recidivism. By understanding which theories most accurately explain criminal behavior, policymakers and practitioners can make evidence-based decisions that target the key drivers of crime, whether they be economic incentives, social influences, psychological factors, or a combination thereof. Future research tracking perceptions, attitudes, and beliefs from early childhood into adulthood can help identify the antecedents of criminal behavior to inform more effective interventions and ultimately to contribute to a more equitable criminal justice system.

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.

ANDERSON, M. L. (2008): "Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," *Journal of the American statistical Association*, 103, 1481–1495.

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.

——— (2022): "Sanctions, Perceptions, and Crime," *Annual Review of Criminology*, 5, 205–227.

BALAFOUTAS, L., A. GARCÍA-GALLEGO, N. GEORGANTZIS, T. JABER-LOPEZ, AND E. MITROKOSTAS (2020): "Rehabilitation and Social Behavior: Experiments in Prison," *Games and Economic Behavior*, 119, 148–171.

BARNUM, T. C., D. S. NAGIN, AND G. POGARSKY (2021): "Sanction Risk Perceptions, Coherence, and Deterrence," *Criminology*, 59, 195–223.

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.

BIRKELAND, S., A. W. CAPPELEN, E. Ø. SØRENSEN, AND B. TUNGODDEN (2014): "An Experimental Study of Prosocial Motivation among Criminals," *Experimental Economics*, 17, 501–511.

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 (2017): "At the Mercy of a Prisoner Three Dictator Experiments," *Applied Economics Letters*, 24, 774–778.

CLEMMER, D. (1940): *The prison community.*, Christopher Publishing House.

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.

DONNER, C., J. MASKALY, L. FRIDELL, AND W. G. JENNINGS (2015): "Policing and procedural justice: A state-of-the-art review," *Policing: an international journal of police strategies & management*, 38, 153–172.

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.

DRÁPAL, J. (2023): "Sentencing multiple conviction offenders," *European journal of criminology*, 20, 142–160.

DUŠEK, L. AND C. TRAXLER (2022): "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.

Eriksson, T. G., J. G. Masche-No, and A. M. Dåderman (2017): "Personality Traits of Prisoners as Compared to General Populations: Signs of Adjustment to the Situation?" *Personality and Individual Differences*, 107, 237–245.

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.

Gneezy, U. and J. Potters (1997): "An experiment on risk taking and evaluation periods," *The quarterly journal of economics*, 112, 631–645.

Gummerum, M. and Y. Hanoch (2012): "Altruism Behind Bars: Sharing, Justice, Perspective Taking and Empathy Among Inmates," *Social Justice Research*, 25, 61–78.

Holt, C. A. and S. K. Laury (2002): "Risk aversion and incentive effects," *American economic review*, 92, 1644–1655.

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.

Khadjavi, M. and A. Lange (2013): "Prisoners and Their Dilemma," *Journal of Economic Behavior & Organization*, 92, 163–175.

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.

Maggioni, M. A., D. Rossignoli, S. Beretta, and S. Balestri (2018): "Trust behind bars: Measuring Change in Inmates' Prosocial Preferences," *Journal of Economic Psychology*, 64, 89–104.

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

MATSUEDA, R. L., D. A. KREAGER, AND D. HUIZINGA (2006): "Deterring Delinquents: A Rational Choice Model of Theft and Violence," *American Sociological Review*, 71, 95–122.

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.

MÄSIAROVÁ, L. (2022): "Statistická ročenka vězeňské služby České Republiky 2022 [Statistical Yearbook of the Prison Service of the Czech Republic 2022]," .

NAGIN, D. S. (2013): "Deterrence: A review of the evidence by a criminologist for economists," *Annu. Rev. Econ.*, 5, 83–105.

NAGIN, D. S. AND G. POGARSKY (2004): "Time and punishment: Delayed consequences and criminal behavior," *Journal of Quantitative Criminology*, 20, 295–317.

NAGIN, D. S. AND C. W. TELEP (2017): "Procedural Justice and Legal Compliance," *Annual Review of Law and Social Science*, 13, 5–28.

NESE, A., N. O'HIGGINS, P. SBRIGLIA, AND M. SCUDIERO (2018): "Cooperation, Punishment and Organized Crime: A Lab-in-the-Field Experiment in Southern Italy," *European Economic Review*, 107, 86–98.

NEWTON, A., X. MAY, S. EAMES, AND M. AHMAD (2019): "Economic and Social Costs of Reoffending: Analytical Report," Tech. rep., Ministry of Justice, UK.

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

POGARSKY, G., S. P. ROCHE, AND J. T. PICKETT (2017): "Heuristics and Biases, Rational Choice, and Sanction Perceptions," *Criminology*, 55, 85–111.

ROSENFELD, R., J. WALLMAN, AND R. FORNANGO (2005): "The contribution of ex-prisoners to crime rates," *Prisoner reentry and crime in America*, 80, 80–104.

SCHILDBERG-HÖRISCH, H. (2018): "Are Risk Preferences Stable?" *Journal of Economic Perspectives*, 32, 135–54.

ŚCIGAŁA, K. A., N. RUHARA, J. NITSCHKE, AND S. PFATTHEICHER (2022): "Honesty-Humility and Criminal Behavior Among Imprisoned Criminal Offenders," *Journal of Research in Personality*, 101, 104289.

SHIMOTSUKASA, T., A. OSHIO, M. TANI, AND M. YAMAKI (2019): "Big Five Personality Traits in Inmates and Normal Adults in Japan," *Personality and Individual Differences*, 141, 81–85.

THIRY, B. (2012): "An Assessment of Personality Disorders with the Five-Factor Model among Belgian Inmates," *International Journal of Law and Psychiatry*, 35, 327–333.

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.

WALTERS, G. D. (2003): "Changes in criminal thinking and identity in novice and experienced inmates: Prisonization revisited," *Criminal Justice and Behavior*, 30, 399–421.

A1   Appendix

A1.1   Additional Results

Figure A1: **Perception of the Risk of Sanctions**
By Experts' Status
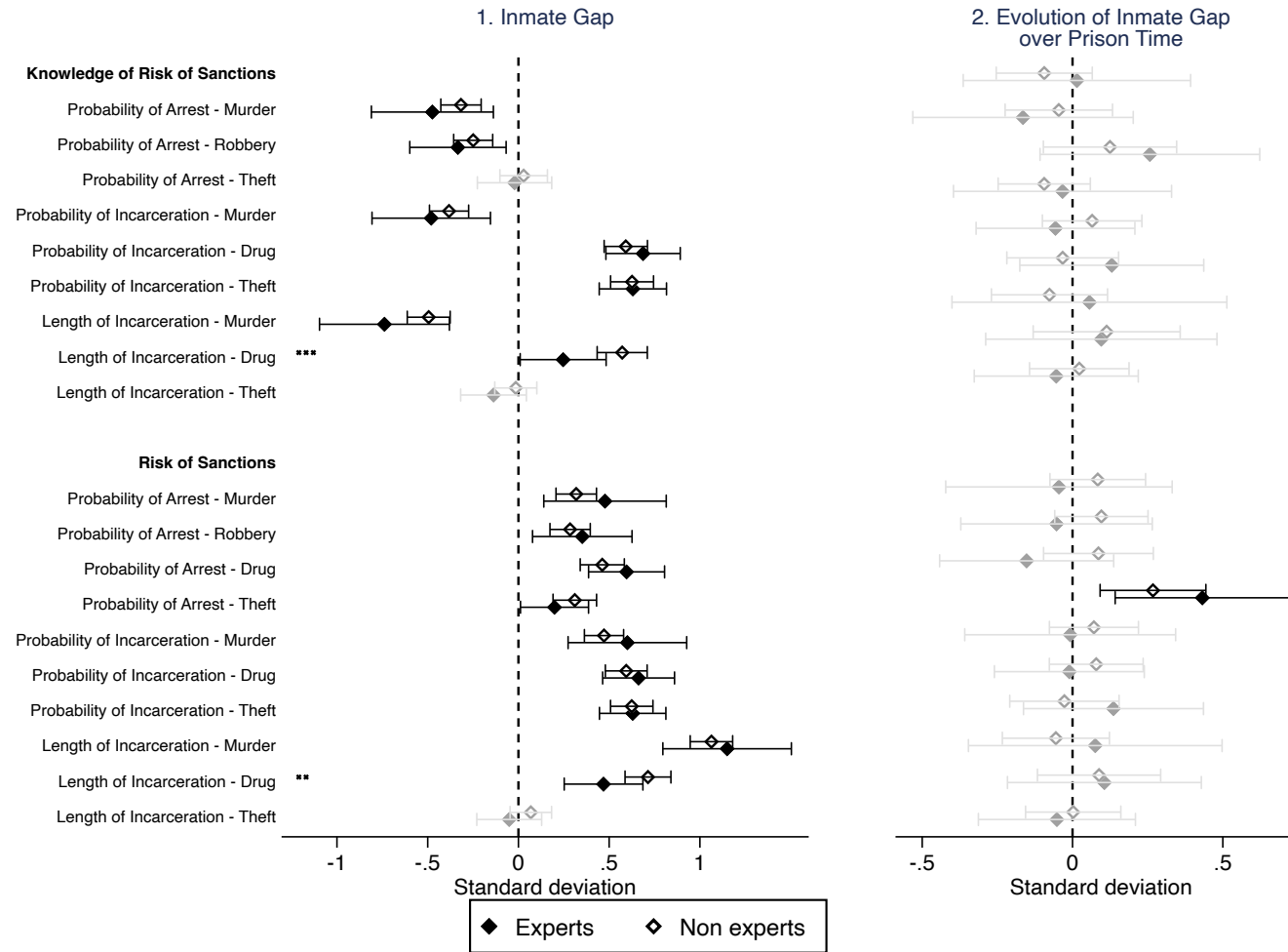
Notes: This figure shows **inmate gap** and **evolution of inmate gap over prison time** in perceptions of risk of sanctions for *experts* (inmates who were sentenced for a depicted crime, e.g. for murder cases, experts are inmates convicted for murder) and *non-experts* (other inmates). For each crime, the *expert* groups consist of different inmates. The plotted coefficients do not show that *experts* are systematically more knowledgeable or view the risk of sanction differently. Experts are more knowledgeable only about the length of incarceration in drug-related cases. Similarly, the evolution over prison time does not differ by expert status.

Figure A2: **Evolution of Inmate Gap**
By Time Spent in Prison
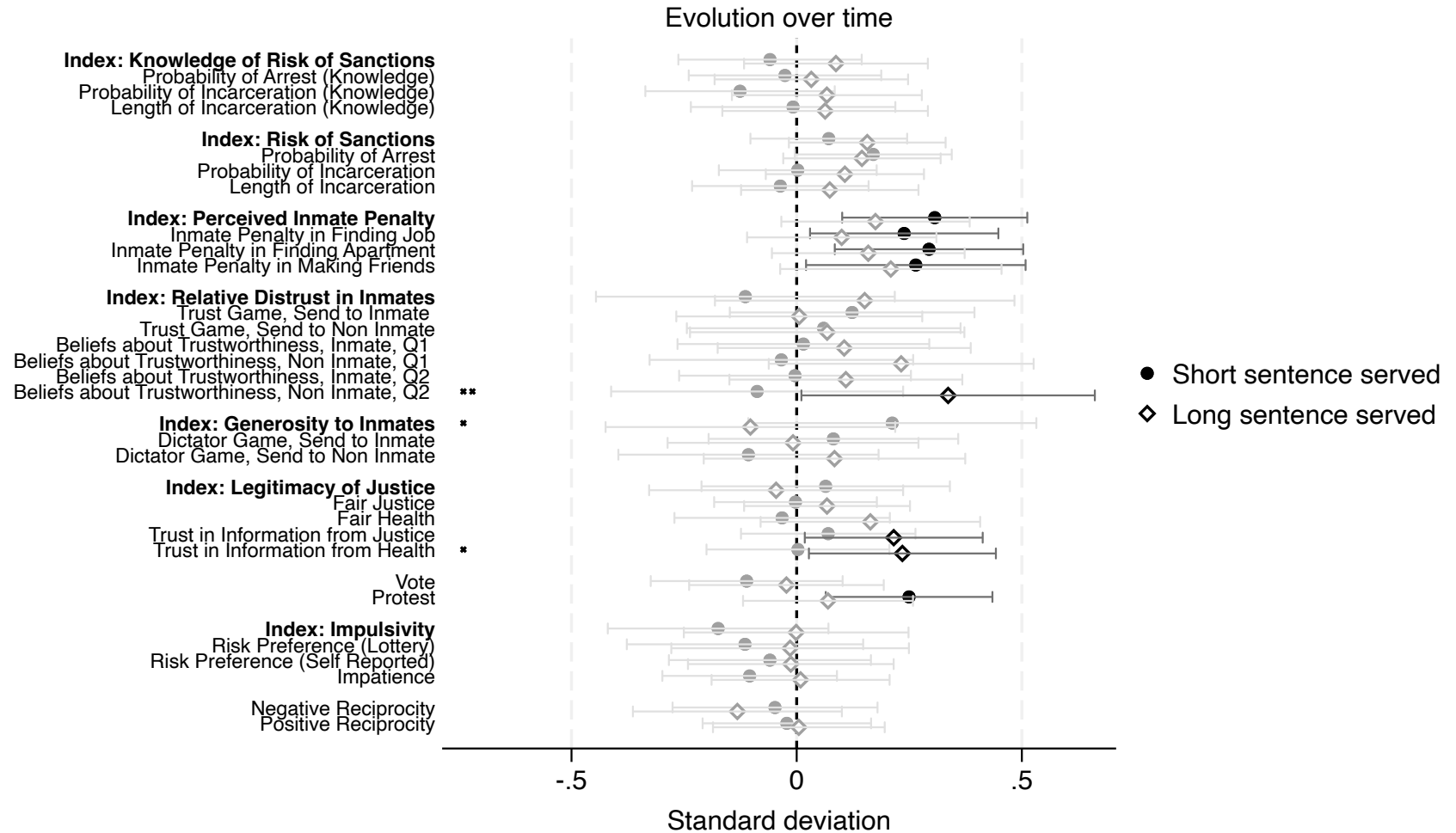
Notes: This figure splits the inmate sample by the median length of sentence served and estimates the **evolution of the inmate gap**. We do not find strong evidence that the first years in prison are more formative. Recently incarcerated inmates seem to be becoming more pessimistic regarding their reintegration into society as they expect large inmate penalties. The difference between the studied groups, however, is not statistically significant.

Figure A3: **Evolution of Inmate Gap**
By Security Level
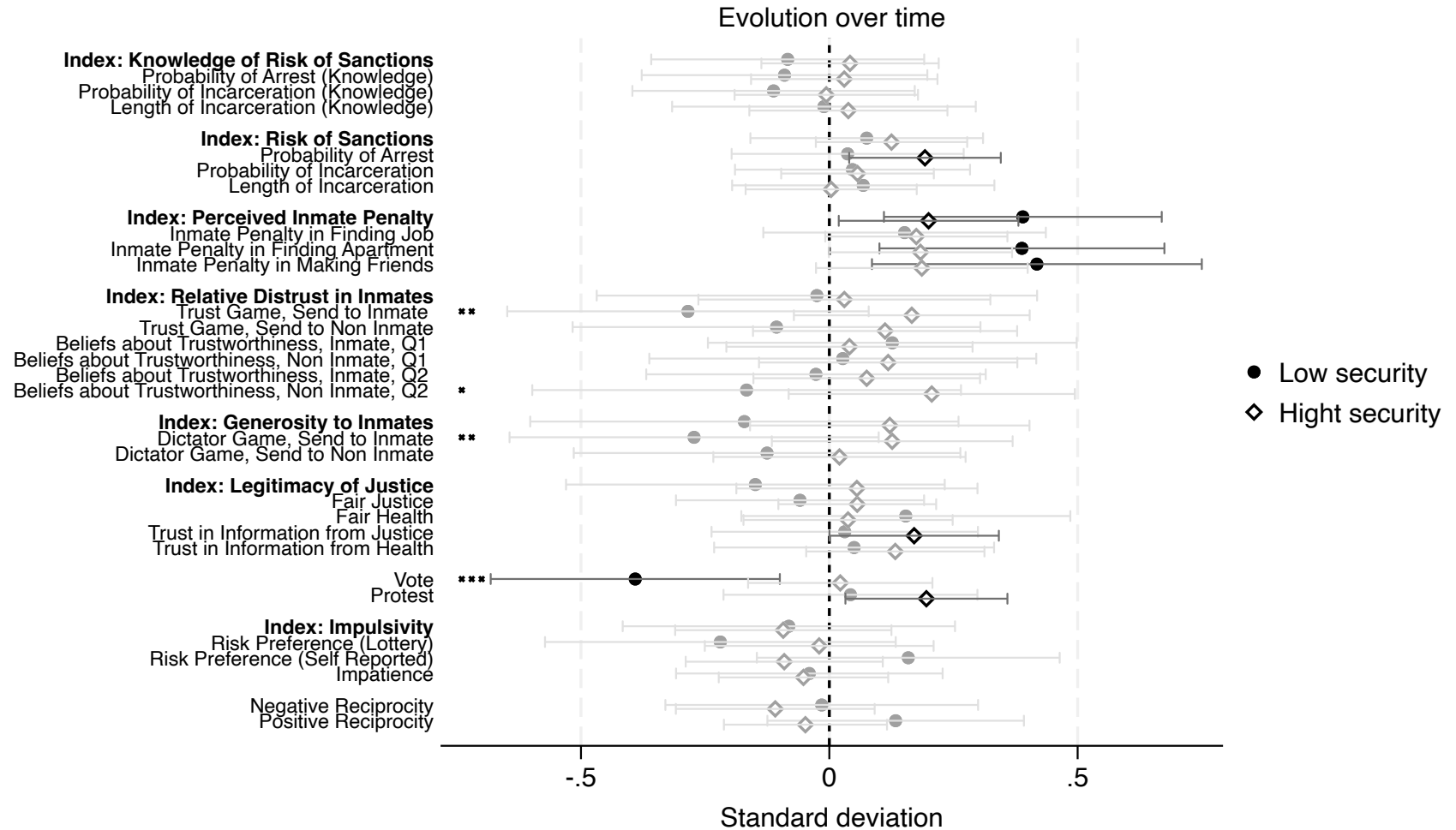
Notes: This figure estimates the **evolution of the inmate gap** for inmates by the security level of prison (department of prison). We do not find evidence that the inmate gap evolves differently by the security level. Inmates in the low-level security seem to be becoming more pessimistic regarding their reintegration into society as they expect large inmate penalties. The difference between the studied groups, however, is not statistically significant.

OA1 Online Appendix

OA1.1 Additional Results

Table OA1: **Inmate Gap**

	Knowledge of Risks of Sanctions	Risk of Sanctions	Perceived Inmate Penalty	Relative Distrust in Inmates	Generosity to Inmates	Legitimacy of Justice	Impulsivity
Inmates	0.064	0.94***	-0.12**	0.67***	0.13**	-0.90***	-0.19***
	(0.26)	(0)	(0.031)	(0)	(0.027)	(0)	(0.0063)
	[0.039]	[0.001]	[0.016]	[0.001]	[0.016]	[0.001]	[0.007]
N	1,768	1,767	1,764	1,772	1,773	1,771	1,773

Notes: This table presents the inmate gap for the seven indexes used in Figure 1. Regressions include controls for education, attention, and cognitive abilities. Numbers in parenthesis are p-values of the coefficients. Numbers between brackets are q-values adjusting for multiple hypothesis testing following Anderson (2008).

Table OA2: **Evolution of Inmate Gap over Prison Time**

	Knowledge of Risks of Sanctions	Risk of Sanctions	Perceived Inmate Penalty	Relative Distrust in Inmates	Generosity to Inmates	Legitimacy of Justice	Impulsivity
Wave2 * Inmates	0.014	0.11	0.24***	0.018	0.056	0.011	-0.090
	(0.87)	(0.12)	(0.0051)	(0.90)	(0.68)	(0.92)	(0.39)
	[1]	[0.545]	[0.038]	[1]	[1]	[1]	[1]
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	985	984	970	949	988	974	937

Notes: This table presents the evolution of the inmate gap for the seven indexes used in Figure 1. Regressions include individual fixed effects and a dummy equal to one for inmates. Numbers in parenthesis are p-values of the coefficients. Numbers between brackets are q-values adjusting for multiple hypothesis testing following Anderson (2008).

Table OA3: **Evolution of Inmate Gap over Prison Time**

	Subjective assessment of inmates' behavior in prison (1-best 5 worst)						
Knowledge of Risks of Sanctions	-0.032 (0.62) [0.515]						
Risk of Sanctions		-0.16** (0.040) [0.202]					
Perceived Inmate Penalty			-0.020 (0.78) [0.515]				
Relative Distrust in Inmates				-0.034 (0.45) [0.515]			
Generosity to Inmates					0.086* (0.096) [0.202]		
Legitimacy of Justice						0.056 (0.19) [0.288]	
Impulsivity							0.085** (0.048) [0.202]
N	252	251	249	253	254	253	254

Notes: This table presents the correlation between misbehavior, as captured by social workers' assessment, and the seven indexes used in Figure 1. Regressions include prison fixed effects. Numbers in parenthesis are p-values of the coefficients. Numbers between brackets are q-values adjusting for multiple hypothesis testing following Anderson (2008).

OA1.2 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.[14] 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.

Regarding security level, our sample resembles the 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 the high-level security clearance department of a prison, which corresponds to 64% in the inmate population. The remaining third (26% in the first wave and 44% from those surveyed only in the second wave) come from the middle-level security clearance department of a prison, which is more than 24% in the 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 inmate in the first wave and three in the second wave. See Table OA6 for more details.

Surveys were organized as pen&paper sessions in small groups (median size of 19 inmates, see figure OA1 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 evidence that inmates participated voluntarily. The session consists of several blocks of activities. Each activity was first explained to everyone, and then completed. Prison

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[14]10% of inmates were released, 9% were moved to a different prison that we did not visit or were moved to a prison we just visited, 5% were not available on that day (sick, work), 3% were not interested, and 2% were moved to higher security level.

guards were rarely 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 OA1: **Inmates per Session**
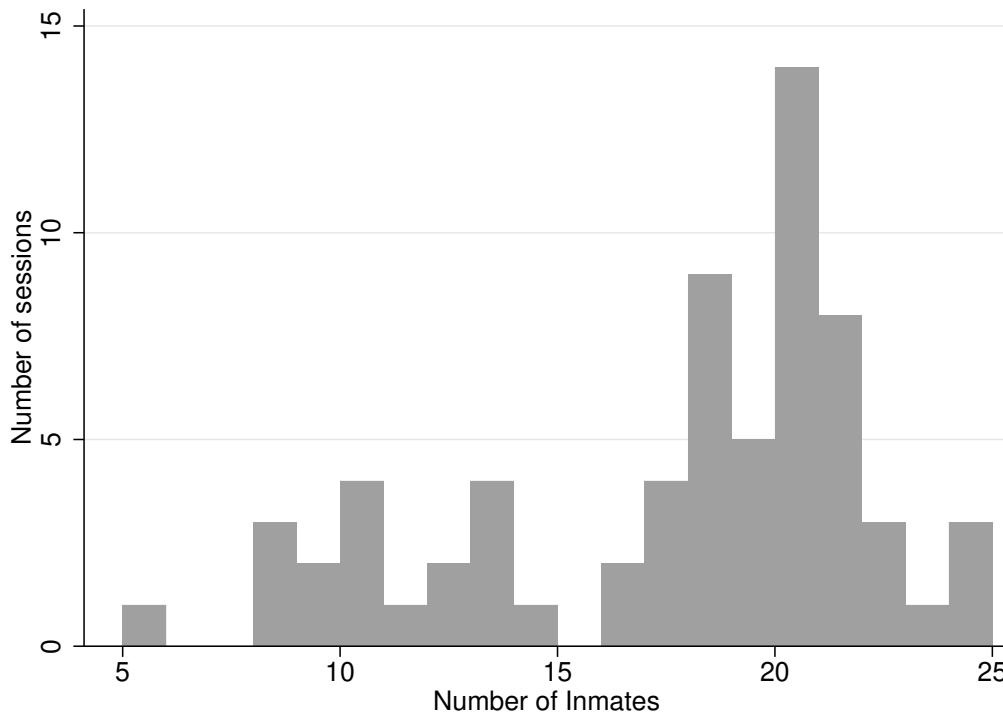
Notes: We organized 67 sessions (30 in the first wave, 37 in the second wave). The average number of inmates per session is 17.2, and the median is 19.

Participating inmates were guaranteed to receive 3 postage stamps (each of a value of CZK 19, ca €0.8) as a participation fee.[15] 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 (CZK 265, 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 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.

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[15]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 OA2: **Number of Postage Stamps**
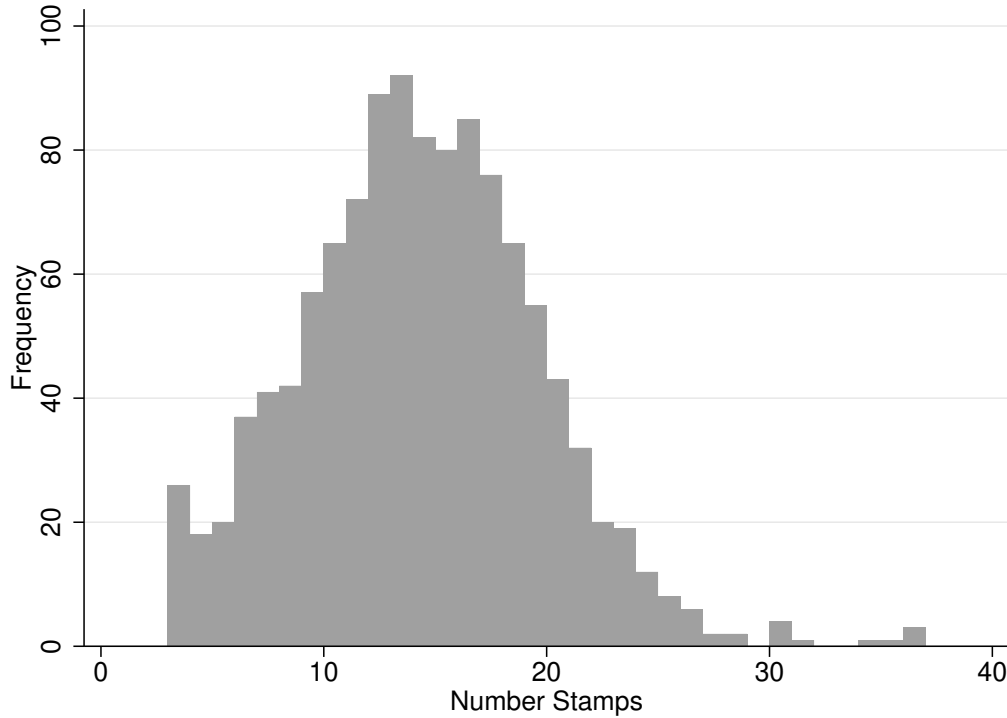
Notes: Inmates were rewarded with postage stamps (1 stamp = CZK 19, ca €0.8). Everyone received at least 3 postage stamps as a show-up fee. The average number of postage stamps was 13.8, and the median value 14. The maximum number of postage stamps was 37, which we handed out on three occasions.

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 CZK 100 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 conducted 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.

Table OA4: **Descriptive Statistics: Demographic Characteristics**

	Unique Inmates	General Population	Unique Students
Education Level (%)			
Elementary of less	41	16	.
Highschool	55	68	.
University	4	16	.
Age Structure (Years)			
Average	35.4	38.8	22.9
Minimum	19	18	18
Maximum	70	60	36
Marital Status (%)			
Single	77	56	.
Married	6	31	.
Divorced (Widower)	17	13	.
N	816	1238	310

Notes: The table provides descriptive statistics on the demographic characteristics of inmates, the general population, and students. Every participant is counted once, and the data correspond to the participant's situation at the moment of his first data collection.

Table OA5: **Descriptive Statistics: Collected Measures**

|	Unique Inmates	General Population	Unique Students
Risk of Sanctions (Probability or months)			
Prob. Arrest (Drugs)	65.3	37.4	22.5
Prob. Arrest (Murder)	93.0	78.6	81.9
Prob. Arrest (Robbery)	75.4	66.9	74.3
Prob. Arrest (Theft)	57.1	45.1	51.9
Prob. Incar. (Drugs)	75.9	56.7	67.5
Prob. Incar. (Murder)	87.3	79.0	86.7
Prob. Incar. (Theft)	75.0	57.5	65.8
Length Incar. (Drugs)	53.7	29.0	27.9
Length Incar. (Murder)	154.1	80.9	92.9
Length Incar. (Theft)	29.5	22.9	20.3
Perceived Inmate Penalty (scale 1-11)			
Finding Job (No Record)	9.6	9.3	9.7
Finding Job (Ex-inmates)	5.4	5.2	4.2
Finding Apartment (No Record)	9.3	9.2	9.7
Finding Apartment (Ex-inmates)	5.3	4.8	4.3
Making Friend (No Record)	9.1	9.2	10.0
Making Friend (Ex-inmates)	6.8	6.3	6.3
Distrust in Inmates (endowment 7)			
TG, Sent to Inmate	3.6	3.2	3.0
TG, Sent to Non-inmate	3.8	3.5	3.0
Generosity to Inmates (endowment 7)			
DG, Sent to Inmate	3.2	2.8	1.5
DG, Sent to Non-inmate	3.2	3.1	1.6
Legitimacy of Justice (scale 1-11)			
Fair Justice	3.6	5.4	6.2
Fair Health	6.2	6.3	6.7
Trust in Information (Justice)	5.0	6.5	7.7
Trust in Information (Health)	7.9	7.8	8.9
Vote (scale 1-11)	6.6	9.3	10.6
Protest (scale 1-11)	3.3	4.1	4.9
Impulsivity			
Lottery (endowment 5)	2.9	2.9	3.4
Risk Preferences (scale 1-11)	6.2	6.2	7.0
Patience (scale 1-11)	7.8	7.2	7.6
Neg. Reciprocity (scale 1-11)	5.2	6.2	6.0
Pos. Reciprocity (scale 1-11)	9.8	8.9	9.3
N	816	1238	310

Notes: The table provides descriptive statistics on the collected measures of inmates, the general population, and students. Every participant is counted once, and the data correspond to the participant's situation at the moment of his first data collection.

Table OA6: **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	15,883

Notes: This table compares our samples' and the 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 correspond to the male inmate population. The type of crime is comparable: while for the inmate population, the figure shows anyone who has been convicted for that type of crime. In our sample, the table classifies the crime only if it was the most serious crime committed by the offender. Age corresponds to the age at the time of the first wave collection, unless the inmate was involved only in the second wave.

Figure OA3: **Distribution of Time Served in Prison**
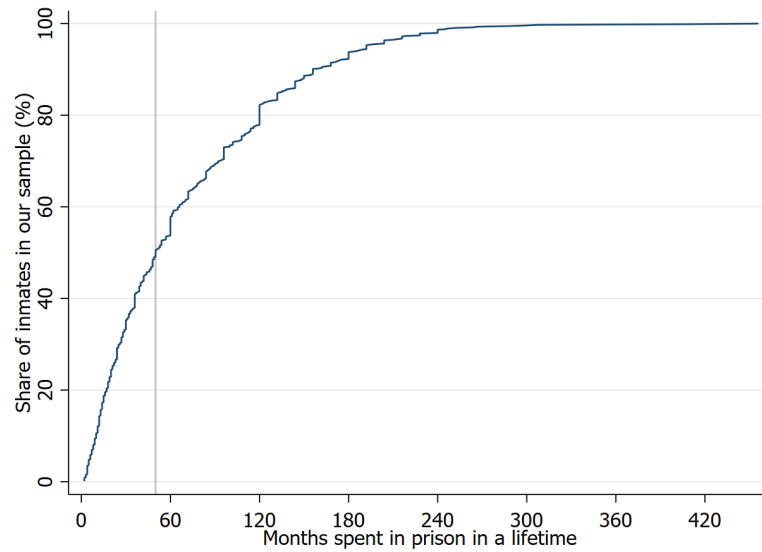
(a) **Lifetime**
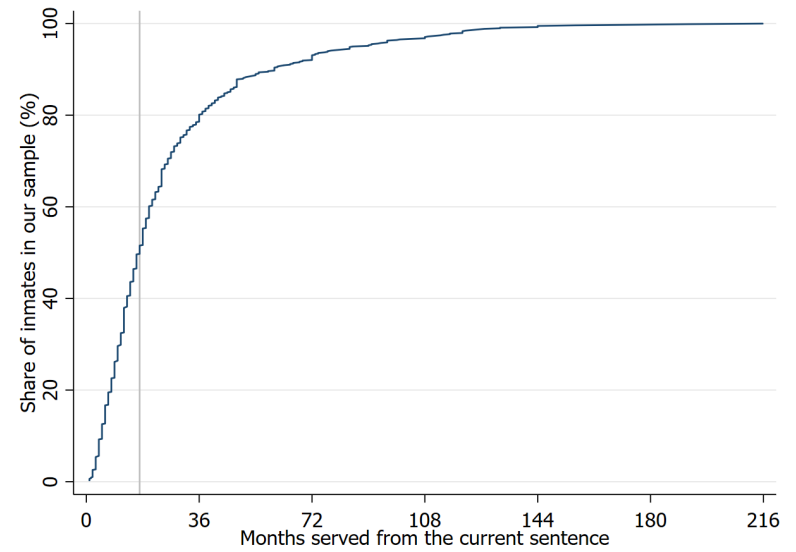
(b) **Current Sentence**

Notes: The left panel shows the cumulative distribution function of the number of months served in prison in inmates' lifetime at the time of their first interview session. The right panel shows the cumulative distribution function of the number of months served in prison from the current sentence at the time of their first interview session. The gray vertical lines indicate the number of months the median inmate has served in his lifetime and from the current sentence, respectively.

OA1.3 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. [16] Each participant played each game twice, once with a receiver currently in a Czech prison[17] (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). The participant received three currency units for any guess close to the correct value (+/- 5).

(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?

(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)

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[16]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.

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

(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 it is that a recently released man [a man with no criminal record] will be able to rent an apartment?

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

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

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

(13) How likely do you think it is that 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 a psychologist or social worker provided us with his/her professional assessment of inmates' behavior. They were instructed to give each inmate a grade between 1 (the best behavior) and 5 (the worst behavior). We rely on a 1 to 5 scale, a scale used in the educational system in the Czech Republic for decades and people are familiar with it.