Honesty-Humility and criminal behavior among imprisoned criminal offenders

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Abstract

Does the basic prosocial trait of Honesty-Humility predict crime? We test whether Honesty-Humility (1) differentiates between prisoners and the national population, (2) predicts the frequency of criminal behavior (the number of reported crimes), and (3) predicts the type of crime leading to imprisonment (violent, non-violent, and sexual). We found that prisoners had lower levels of Honesty-Humility than the national population, but Honesty-Humility did not predict the number of reported crimes and the type of crime leading to imprisonment in this group. Additionally, we examined if Honesty-Humility predicts violent (defensive and sadistic aggression) and non-violent (cheating) lab antisocial behavior among prisoners. We found that Honesty-Humility negatively predicted violent, but it did not significantly relate to non-violent antisocial behavior in this group.

Keywords: Honesty-Humility, antisocial behavior, crime, criminal behavior, prisoners, criminal offenders

Introduction

People differ substantially in their propensity to engage in antisocial behavior. In this regard, the basic personality trait of Honesty-Humility—defined as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, sp. 156)—has been established as one of most consistent preventive predictors of a broad range of antisocial behaviors (for meta-analytical evidence, see Ścigała et al., 2021; Thielmann et al., 2020; Zettler et al., 2020). However, the vast majority of studies on the relation between Honesty-Humility and antisocial behavior focused on predicting rather *low-stakes* antisocial behaviors, such as antisocial behaviors with small risks and small incentives, often measured in laboratory settings (e.g. Allgaier et al., 2020; Heck et al., 2018; Ścigała et al., 2019).

At the same time, the relation between Honesty-Humility and *high-stakes* antisocial behavior—i.e., antisocial behavior that "involves serious risks if there is no success" (Cambridge Dictionary, 2022)—has been investigated to a lesser extent. For instance, some studies explored relations between Honesty-Humility and high-stakes antisocial behaviors such as counterproductive work behavior (Bourdage et al., 2018; Pletzer et al., 2019, 2020), cheating to obtain relatively high amounts of money (e.g., 150€; Hilbig & Thielmann, 2017)), or cheating on romantic partners (e.g., Ashton & Lee, 2008; Bourdage et al., 2007; Lee et al., 2013). Another line of research on Honesty-Humility and high-stakes antisocial behavior has focused on the relation between Honesty-Humility and crime among imprisoned criminal offenders—however, this relation has been investigated in only a handful of studies, which provided rather contrasting findings (Međedović, 2017; Montalto, 2021; Rolison et al., 2013).

Criminal behavior can lead to a variety of—often devastating—consequences for the victims as well as the society at large. For instance, Heeks and colleagues (2018) estimated that the costs of crime in the UK amounted to approximately £50.1 billion in 2015/16.

However, despite the negative consequences of criminal behavior and the hundreds of studies on Honesty-Humility and antisocial behavior, the relation between crime and the basic prosocial trait of Honesty-Humility remains unclear.

Hence, in the present contribution we ask whether Honesty-Humility predicts criminal behavior. In doing so, we first test whether decreased levels of Honesty-Humility serve as a signature of people who have committed crime leading to imprisonment. In other words, we examine whether Honesty-Humility differentiates between imprisoned criminal offenders and the general population. Next, we investigate whether Honesty-Humility is predictive of the frequency in which individuals engage in criminal behavior. In doing so, we test whether Honesty-Humility predicts the number of committed crimes in the sample imprisoned criminal offenders. Finally, we examine if Honesty-Humility predicts the type of crime that resulted in the prisoners' incarceration—focusing on violent, sexual, and non-violent crime. In sum, we provide a test of whether Honesty-Humility (1) differentiates between imprisoned criminal offenders and the general population, (2) predicts the number of committed crimes among imprisoned criminal offenders, and (3) predicts the type of crime leading to incarceration.

In addition to testing the relation between Honesty-Humility and crime, we test whether it predicts low-stakes antisocial behavior among imprisoned criminal offenders. Although the relation between Honesty-Humility and low-stakes antisocial behavior in general and student samples is well established (e.g. Allgaier et al., 2020; Heck et al., 2018; Ścigała et al., 2019), no studies to date explored whether such relation holds among imprisoned criminal offenders. Such test, however, might bring about relevant implications as low-stakes antisocial behavior (i.e., misconduct) in prison environments have been found to negatively relate to well-being and feelings of safety among prisoners (e.g., van der Laan &

Eichelsheim, 2013). Hence, in the following we test whether Honesty-Humility serves as a useful indication of low-stakes antisocial behavior among imprisoned criminal offenders.

Honesty-Humility and criminal behavior

In the following, we discuss the theoretical basis of the relation between Honesty-Humility and criminal behavior. Next, we summarize previous research investigating the relation between Honesty-Humility and criminal behavior in samples of imprisoned criminal offenders. Specifically, we summarize studies comparing the levels of Honesty-Humility between (formerly and/or currently) imprisoned criminal offenders and non-offenders. Furthermore, we discuss research investigating whether Honesty-Humility predicts the frequency and type of criminal behavior within samples of imprisoned criminal offenders.

The theoretical basis of the relation between Honesty-Humility and criminal behavior

Honesty-Humility is a basic trait, which represents the tendency to be sincere, honest, faithful, and fair minded, as opposed to sly, greedy, pretentious, and boastful (e.g., Ashton et al., 2014; Ashton & Lee, 2007, 2020). More specifically, Honesty-Humility has been defined as the propensity to be "fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156). In other words, individuals with higher levels of Honesty-Humility will prefer to cooperate with others, while those with lower levels of Honesty-Humility will prefer to exploit others for personal gain. Hence, from a theoretical perspective, people with lower levels of Honesty-Humility should be more willing to engage criminal behaviors involving exploitation of others, such as theft, fraud, or corruption.

On a more detailed level, the four facets/domains of Honesty-Humility—Sincerity, Fairness, Modesty, and Greed Avoidance (e.g., Ashton et al., 2014; Ashton & Lee, 2007, 2020)—reveal specific characteristics of people with low levels of Honesty-Humility that might predispose them to crime. Specifically, low Sincerity and Fairness, defined as

tendencies “to be genuine in interpersonal relations” and “to avoid fraud and corruption” (Ashton et al., 2014, p. 142), respectively, might play a role in engagement in crimes involving manipulation, deception, and/or fraud—such as theft, embezzlement, or bribery. Furthermore, individuals low in Modesty, i.e., a tendency to be modest and unassuming (Ashton et al., 2014, p. 142), may feel superior to others and view their own benefits as more important than the costs of other people. As a consequence, such individuals might choose to engage in criminal behavior that benefits themselves and harms others. Finally, those low in Greed Avoidance—a tendency to be uninterested in possessing lavish wealth, luxury goods (Ashton et al., 2014, p. 142)—might engage in criminal behavior that benefits them financially because they are motivated by material wealth. Summarizing, from a theoretical point of view, people with lower levels Honesty-Humility should be more likely to engage in crime.

Importantly, however, the main focus of Honesty-Humility is not on characteristics predisposing to violent criminal and antisocial behaviors—such as impulsivity (e.g., Martin et al., 2019), sadism (e.g., Duan et al., 2021), or aggression (e.g., Azevedo et al., 2020). Indeed, Honesty-Humility primarily taps into the motivation to exploit others and benefit oneself (e.g., financially), rather than behave in an impulsive and/or aggressive way. Hence, one could argue that Honesty-Humility is not suitable to predict violent crime. On the other hand, it should be noted that violent crimes do involve an element of exploitation for one’s own benefit and hence Honesty-Humility—as a trait tapping into exploitation—might still play a role in predicting violent crime. For example, individuals with lower levels of Honesty-Humility might choose to engage in violent robbery to obtain material goods—i.e., use violent means to exploit others for personal/financial gain. In summarizing, although Honesty-Humility does not tap into some characteristics relevant for violent crime, it might

predict engagement in both violent and non-violent crime, as both of these types of crimes involve exploitation of others.

Finally, it should be noted that the HEXACO scales used to measure Honesty-Humility (Ashton & Lee, 2009; de Vries, 2013; Lee & Ashton, 2018) have been developed as broad measures of normal personality variation within general populations (e.g., Ashton et al., 2017). Hence, the scales themselves have not been designed to answer questions about rather extreme and rare antisocial behaviors such as severe crime among imprisoned criminal offenders. Therefore, it might be that the scales do not have the ability to differentiate between the tendency to engage in minor and severe crime. As such, Honesty-Humility—as measured using the HEXACO inventory (Ashton & Lee, 2009; de Vries, 2013; Lee & Ashton, 2018)—might not be able to adequately predict criminal behavior. Nonetheless, this is an empirical question, which we seek out to answer in the study reported below.

Previous findings on Honesty-Humility and criminal behavior among imprisoned criminal offenders

Does low Honesty-Humility serve as a signature sign of imprisoned criminal offenders? To our knowledge, only two studies to date examined whether decreased Honesty-Humility is a signature sign of imprisoned criminal offenders. Specifically, Rolison and colleagues (2013) found that formerly imprisoned male criminal offenders were *lower* in Honesty-Humility than a control group of male non-offenders. On the other hand, Montalto (2021) found that a group of formerly and currently imprisoned male criminal offenders convicted for violent, drug/substance abuse, and sexual crimes (pedophilia) were *higher* in Honesty-Humility than a normative sample of male non-offenders, while offenders convicted for sexual, and property/financial crimes did not differ in terms of Honesty-Humility from a control group of non-offenders. In sum, the two studies provided mixed findings.

Given the mixed findings, herein we examine whether criminal offenders differ in terms of Honesty-Humility from non-offenders. We extend the previous literature by (1) testing for this difference on a German sample (2) focusing only on criminal offenders who were imprisoned at the time of investigation (to account for potential noise arising from including both currently and formerly imprisoned criminal offenders in one group; Montalto, 2021), and (3) testing for the role of background variables—i.e., age and gender, which have been found to relate to Honesty-Humility (Moshagen et al., 2019) —in the comparison of Honesty-Humility between offenders and non-offenders (since previous studies accounted for gender only; Montalto, 2021, Rolison et al, 2013).

Does Honesty-Humility predict criminal behavior among criminal offenders?

Only one study to date tested whether Honesty-Humility predicts criminal behavior among imprisoned criminal offenders. Specifically, Međedović (2017) examined whether Honesty-Humility predicts criminal/antisocial behavior among imprisoned criminal offenders in Serbia as indicated by self-report, experimenter's observer-report, as well as biographical data indicating prisoners' past criminal behavior. The results indicated that although imprisoned criminal offenders with lower (vs. higher) levels of Honesty-Humility were more likely to engage in criminal/antisocial behavior as indicated by self- and observer-report, Honesty-Humility did not significantly relate to criminal behavior as indicated by prison files. In other words, the findings are rather mixed—Honesty-Humility predicted one's own and observers' perceptions of antisocial/criminal behavior, but not the actual criminal behavior among imprisoned criminal offenders.

In another study, Montalto (2021) tested whether Honesty-Humility predicts the *type* of criminal behavior that the imprisoned criminal behaviors engaged in. Surprisingly, the results show that violent and sexual offenders (i.e., offenders engaging in crimes typically perceived as more severe) were higher in Honesty-Humility than property crime offenders

(i.e., offenders engaging in crimes typically perceived as less severe), which suggests that Honesty-Humility might have positively related to crime severity. Summarizing, the previous findings on the role of Honesty-Humility in predicting the type of crime provide a rather counterintuitive picture. Given these mixed and counterintuitive findings, in the following, we extend the literature on the relation between Honesty-Humility and crime by testing whether Honesty-Humility predicts the frequency of criminal behavior among imprisoned criminal offenders, as well as type of crime that resulted in incarceration.

Honesty-Humility and low-stakes antisocial behavior among imprisoned criminal offenders

The relation between Honesty-Humility and a broad array of low-stakes antisocial behavior is well-established among general and student samples. Specifically, Honesty-Humility has been found to negatively predict dishonesty (e.g., Ścigała et al., 2022), uncooperativeness (e.g., Hilbig et al., 2013), aggression (e.g., Lee & Ashton, 2012), and many other low-stakes antisocial behaviors in general and student samples (for an overview, see Zettler et al., 2020). Nonetheless, no studies to date asked whether Honesty-Humility predicts low-stakes antisocial behavior in a *prison sample*.

The answer to such a question is not obvious. As noted above, the HEXACO scales have been developed to measure normal personality variation within general populations (Ashton & Lee, 2007; Ashton & Lee, 2009). Hence, the scales might not adequately capture the complexities of pro- and anti-social tendencies characterizing imprisoned criminal offenders. Therefore, is it unclear whether Honesty-Humility relates to low-stakes antisocial behavior among imprisoned criminal offenders. Nevertheless, examining this relation might bring about relevant practical implications as low-stakes antisocial behaviors—including both violent (e.g., South & Wood, 2006) and non-violent (e.g., Berghuis et al., 2021) antisocial behaviors—are common in prison environments and might cause negative consequences for

inmates. Hence, in the following we provide a test of whether Honesty-Humility can serve as a useful indication of violent and non-violent low-stakes antisocial behavior among imprisoned criminal offenders.

Present investigation

In the present contribution, we investigate the relation between Honesty-Humility and criminal behavior among imprisoned criminal offenders. First, we test whether imprisoned criminal offenders are lower in Honesty-Humility than the general population. In doing so, we examine whether Honesty-Humility serves as a signature sign of those who have been imprisoned. Furthermore, we test whether Honesty-Humility predicts the frequency of criminal behavior (i.e., the number of committed crimes) among imprisoned criminal offenders. Next, we examine if Honesty-Humility predicts the type of crime that resulted in imprisonment among criminal offenders. Finally, we test whether Honesty-Humility relates to violent and non-violent low-stakes antisocial behavior among imprisoned criminal offenders. With regard to violent low-stakes antisocial behavior, we measured sadistic aggression in the bug-killing paradigm (Buckels et al., 2013) and defensive aggression in the preemptive strike game (Simunovic et al., 2013), and regarding non-violent low-stakes antisocial behavior, we measured dishonesty in the die-rolling game (Fischbacher & Föllmi-Heusi, 2013).

Methods

Ethics

The study was approved by the ethical review board of the German Psychological Society (number: 450/17).

Participants and procedures

The following results are based on data from two groups. The first group consists of 117 male imprisoned criminal offenders from a forensic clinic in Ansbach,

Germany (aged from 21 to 57 years; *M* = 34.66, *SD* = 8.02). The average number of registered crimes in the Federal Central Criminal Register ("Bundeszentralregister"; BZR) in this group equaled 7.83 cases (*SD* = 5.92). Data on the number of reported crimes was missing from one participant. 55 participants were diagnosed with dissocial personality disorder according to ICD-10 criteria; 62 received other diagnoses, including diagnoses "mental and behavioral disorders due to use of alcohol" or other drug use.

The second group (herein labeled as "representative") consists of 4,579 German participants: 2,356 females and 2,223 males; aged from 18 to 78 years (*M* = 40.24, *SD* = 12.94). We excluded six participants who selected "diverse" as their gender, as this group was too small to conduct meaningful analyses including gender. We assume that this group is relatively representative for the German population because the percentage of males (48.62%), as well as median age (*Mdn* = 39) are similar to what was observed in the German population (49.46% of males, and a median age of of *Mdn* = 47.8; Statistics Times, 2019; World Population Review, 2022). The data was made available by Thielmann and colleagues (2022).

We chose to use a representative control group in order to compare prisoners' levels of Honesty-Humility to a relatively "average" or "typical" person from the general population (in line with Montalto, 2021). In other words, the representative sample serves as a normative sample, which allows us to answer the question of whether prisoners' levels of Honesty-Humility deviate from the typical level of Honesty-Humility in the general population. Such approach is in line with a broad array of research comparing personality traits between prisoners and normative samples (i.e., samples representative for the wider populations the prisoners come from; see e.g., Eriksson et al., 2017; Montalto, 2021; Thiry, 2012).

In addition to testing whether prisoners' levels of Honesty-Humility deviate from the typical level of Honesty-Humility in the general national population, we account for

background variables—i.e., gender only (in line with Montalto, 2021 and Rolison et al., 2013), as well as age and gender (in line with meta-analytical findings showing that age and gender relate to Honesty-Humility Moshagen et al., 2019) when comparing prisoners to the general sample. With this, we aim to answer the question of whether the potential difference in terms of Honesty-Humility between the representative and the prison sample remains when controlling for relevant background variables. The detailed reasoning behind control variable selection is available in the Results section below (p. 14).

All participants provided informed consent to participate in the study. To reduce the possibility of socially desirable responding in the sample of criminal offenders, participants were informed at the beginning of the study that their answers will be treated anonymously. They were further assured that neither the forensic clinic management, clinical staff or other persons involved in the treatment or decisions about the patients are given access to the questionnaires. Honesty-Humility, gender, and age were measured in all samples, while criminal behavior and low-stakes antisocial behavior were measured among imprisoned criminal offenders only. The data from the imprisoned criminal offenders was collected as a part of a study which included a range of questionnaires and behavioral paradigms, which are not relevant for the current investigation. Similarly, the data from the representative German sample was collected as a part of a separate study including a range of questionnaires not relevant for the current investigation. The list of all measures included in both studies is available in the OSF (link below).

We have not controlled for non-compliance (i.e., inattentive responding; e.g., Barends & de Vries, 2019) in the prison sample. In the representative sample, non-compliance was controlled for as follows: (1) inclusion of two attention checks embedded in the scales (failed by 697 participants (11.85% of the entire sample, who were excluded), (2) controlling for low variation in personality scales (i.e., $SD < 0.2$) or completion in less than two seconds per

item on average (applying these criteria resulted in the exclusion of 352 participants; 5.99% of the entire sample, for more details the representative sample, see https://osf.io/m2abp/).

Power analyses

Herein, we use linear multiple regression models with a maximum of three predictors, using a sample of N = 4,696 (imprisoned criminal offenders and the general population). A sensitivity power analysis for a linear multiple regression model with three predictors (ΔR^2) revealed that given the sample size of N = 4,696 and assuming α = .05, we had 80% power to detect small effects of at least f^2 = .002 (G*Power, version 3.1.9.7; Faul et al., 2007). Next, we use Pearson's correlations and modified randomized-response correlation (Heck & Moshagen, 2018; for details on the modified randomized-response correlation, see pp. 20-21) on the sample of imprisoned criminal offenders (N = 117). A sensitivity power analysis for Pearson's correlation revealed that given the sample size of N = 117 and assuming α = .05, we had 80% power to detect effects of r = .26 (G*Power, version 3.1.9.7; Faul et al., 2007). Finally, a sensitivity power analysis for the modified logistic correlation model with baseline probability of winning (p) of 34% and α = .05, revealed that we had 80% power to detect an effect of r = .35 (Heck & Moshagen, 2018). All the effect sizes we had sufficient power to detect correspond to small or medium effects (Cohen, 1988).

Transparency

Study materials, a list of all included measures, information about the datasets, as well as analyses scripts with results are available in the OSF (https://osf.io/3pbku/). Because data from imprisoned criminal offenders includes identifying information, we made it available in a synthetic format (i.e., data that mimics the original data but does not allow to identify individuals; Nowok et al., 2016). The results presented herein are exploratory and were not pre-registered.

Choice of control variables

In the following, we compare the levels of Honesty-Humility between the prisoners and the general population. In this regard, we had access to three potential background/demographic variables we could control for: age, gender, and educational level. To determine which of the background variables to control for, we first tested if they relate to the dependent variable (i.e., Honesty-Humility). Doing so allows to avoid controlling for "impotent control variables", i.e,. variables that are irrelevant for the dependent variable and hence should not be controlled for as they introduce noise and reduce statistical power (Becker, 2005; Bernerth et al., 2018).

In line with a recent meta-analysis (Moshagen et al., 2019), we found that age and gender significantly related to Honesty-Humility—that is, older individuals, as well as women exhibited higher levels of Honesty-Humility (r = .18; 95% CI = [.16, .21], p <.001 and r = .04; 95% CI = [.01, .07], p = .012, respectively). However, educational level did not significantly relate to Honesty-Humility (r = -.01; 95% CI = [-.04, .02], p = .632). Therefore, in the following, we control for age and gender only. Furthermore, please note that (1) in addition to controlling for age and gender, we compare the levels of Honesty-Humility between the sample of criminal offenders and a male only sample of non-offenders (in line with Montalto, 2021 and Rolison et al., 2013), and (2) for the sake of transparency, we report all analyses both with and without control variables.

Measures

Honesty-Humility

Honesty-Humility was measured using a German translation of the self-report questionnaire HEXACO-60 (Ashton & Lee, 2009; Moshagen et al., 2014), which measures Honesty-Humility using 10 items. Among the imprisoned criminal offenders, only Honesty-Humility was measured but not the other dimensions of the HEXACO. Participants were asked to rate the extent to which they (dis)agree with presented items about themselves and

others on a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). A sample item for Honesty-Humility is “I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.” The scale exhibited good reliability in both samples; a = .75 and a = .71 in the representative and the prison sample, respectively.

Die-rolling paradigm

To assess cheating, we used a modified version of the classic die-rolling paradigm (Fischbacher & Föllmi-Heusi, 2013). In the task, participants could misreport an outcome of a die-roll to obtain an additional monetary incentive. Specifically, participants were presented with two random numbers between one and six on the computer screen. Then, they were instructed to roll a die and informed that if they roll and report one of the two target numbers presented on the screen, they will obtain an additional bonus incentive of €3. Participants were assured that their die rolls are fully private and that the dice are fair. Because the die-rolls were indeed fully private, participants had an opportunity to cheat without fearing any external consequences. Assuming full honesty (i.e., in line with the actual probability distribution of die-roll outcomes), 34% of participants should win the bonus incentive. All economic decisions in this study were paid out as a total sum at the end of the study.

In the current study, the probability of dishonesty amounted to 33.33% (SE = 0.07), which is comparable to other studies using similar measures of dishonesty—for instance, in a large re-analysis of studies on the relation between Honesty-Humility and dishonesty, Heck et al. (2018) estimated the probability of dishonesty to 26.1% with a 95% confidence interval between 19.2% and 34.4%.

Bug-killing paradigm

To measure sadistic aggression, we implemented the bug-killing paradigm (Buckels et al., 2013; Lobbestael et al., 2020; Martens et al., 2007; Pfattheicher et al., 2020). In the bug-killing paradigm, participants had an option to kill small bugs (*Porcellio scaber)* by

shredding them in a machine. Specifically, participants were instructed as follows: “Now you have the opportunity to shred bugs. For this task, you will find one bug in each of the three cups in front of you. If you feel like it, you can put the bugs in the machine and shred them while watching the video. To do so, press the button on the machine. Some participants do, others don’t.” The machine was a modified coffee grinder. The bugs were given names (Muffin, Tootsie, Ike) to humanize them, and to make the behavior even crueler (Buckels et al., 2013). A barrier within the machine prevented the bugs from actually being killed so they could be set free after the study; thus, no bugs were harmed in the study. Participants were unaware of this at the time, but all participants were debriefed at the end of data collection. Participants grinded on average $M = 0.12$ bugs ($SD = 0.56$).

Preemptive strike game

We used the incentivized preemptive strike game in order to assess defensive aggression (Simunovic et al., 2013). Specifically, participants were informed that they are matched in a dyad with an interaction partner (a participant ostensibly taking the study at the same time), and that both themselves and their partner have a chance to click a red button within 20 seconds from the beginning of the task. If neither the participant, nor their partner clicked the red button, both of them would receive €1. On the other hand, if the participant clicked the red button first, the participant would receive €0.80 and their partner would receive €0. Analogically, if their partner clicked the red button first, the partner would receive €0.80 and the participant would receive €0. As such, participants could protect their own financial endowment by harming the other financially (i.e., defensive aggression as a “preemptive strike”; Simunovic et al., 2013). Participants played the game across five rounds. The number of preemptive strikes (range: 0-5) was used as our main variable in our analyses below. The partner was pre-programmed and never clicked the red button. Participants were

debriefed at the end of data collection about this aspect of the study. Participants engaged in 2.51 preemptive strikes on average (*SD* = 2.17).

Results

Honesty-Humility and criminal behavior

In the following, we examine whether imprisoned criminal offenders differ from the general population in terms of their levels of Honesty-Humility. Because the sample of imprisoned criminal offenders varied in terms of the diagnosis they received (i.e., dissocial personality disorder vs. other diagnoses), we first tested whether criminal offenders with dissocial personality disorder differed in terms of Honesty-Humility from criminal offenders with other disorders. We found that the two groups had similar levels of Honesty-Humility (β = 0.12; 95% CI = [-0.25; 0.48], p = .534). Therefore, we decided to merge the two groups into an overall sample of imprisoned criminal offenders.

Next, to compare the levels of Honesty-Humility between the imprisoned criminal offenders and the general population, we fitted two linear regression models predicting Honesty-Humility with either (1) group (i.e., imprisoned criminal offenders vs. the general population), or (2) group, gender, and age. The results from the first model suggest that imprisoned criminal offenders are lower in Honesty-Humility than the general population (β = -0.41; 95% CI = [-0.59; -0.22], p < .001; see Figure 1). Similarly, the results from the second model (adjusted for gender and age) revealed that imprisoned criminal offenders are lower in Honesty-Humility than the general population (β = -0.23; 95% CI = [-0.41; -0.05], p = .014).

To further assure that gender did not play a role in these findings, we excluded all females from the representative sample and repeated the analyses (since the sample of criminal offenders consisted of males only). We found that imprisoned criminal offenders are lower in Honesty-Humility than the general male population, both when not controlling for

age (β = -0.37; 95% CI = [-0.56; -0.19], p < .001) and when age is controlled for (β = -0.23; 95% CI = [-0.41; -0.04], p = .016). In summary, imprisoned criminal offenders exhibited lower levels of Honesty-Humility than the general population (irrespective of gender and age differences between the two groups). Hence, our results suggest that Honesty-Humility might serve as an indicator distinguishing those who engage in criminal behavior resulting in imprisonment and the general population

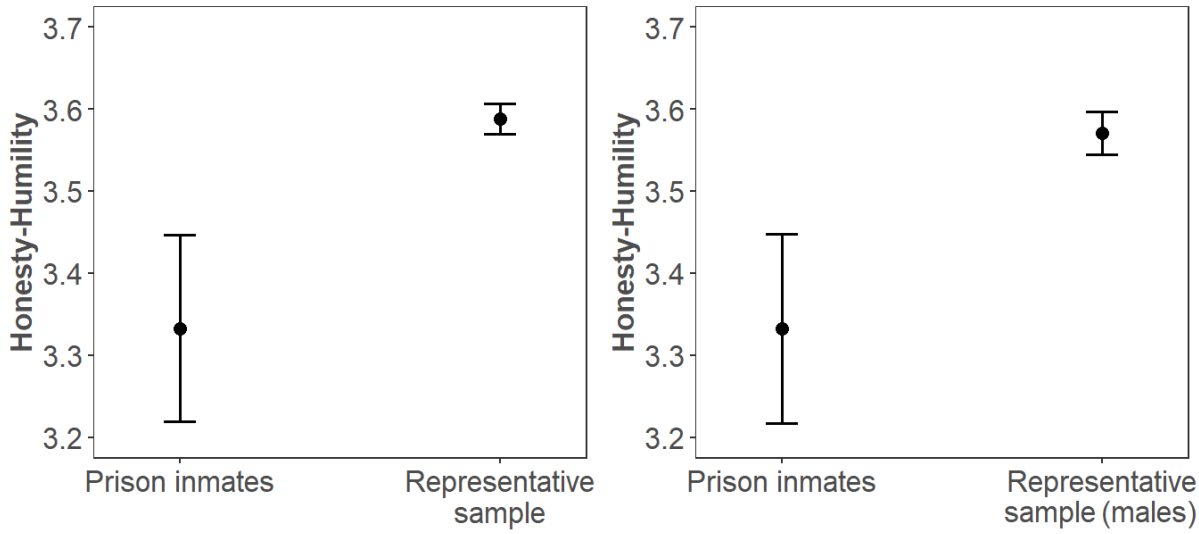

Figure 1. Honesty-Humility among imprisoned criminal offenders (N = 117) and a representative sample (N = 4,579; left panel) and representative sample of males only (N = 2,340; right panel). Possible range: 1-5; black dots indicate means, vertical lines indicate 95% confidence intervals.

Next, we used Pearson's correlation to test whether Honesty-Humility significantly related to the degree to which prisoners engaged in high-stakes antisocial behavior (i.e., the number of committed crimes as indexed in the official German Federal Central Criminal Register). We found that Honesty-Humility is not significantly related to the number of committed crimes (r = -.05; 95% CI = [-.23; .14], p = .609). Because the correlation was not significant, we further conducted a Bayesian analysis (Mulder et al., 2021). The null

hypothesis is that there is no relation between Honesty-Humility and the number of committed crimes and the alternative hypotheses is that there is such a relation. The assumed priors are that the null and the alternative hypotheses are equally likely. The obtained Bayes Factors show that the null hypothesis was 11.70 times as likely as the alternative hypothesis. Hence, the Bayes Factor shows a strong evidence for the lack of relation between Honesty-Humility and the number of committed crimes (Andraszewicz et al., 2015). In other words, our results suggest that Honesty-Humility does not constitute a useful predictor of the number of committed crimes among imprisoned criminal offenders.

Finally, we tested whether Honesty-Humility predicted the type of crime that resulted in participants getting into jail (i.e., violent, sexual, and non-violent). Specifically, we fitted three logistic regression models where we tested whether Honesty-Humility predicts the probability of engaging in violent (vs. sexual and non-violent) crime, sexual (vs. violent and non-violet crime), and non-violent (vs. violent and sexual) crime. We found that Honesty-Humility did not significantly relate to the probability of engaging in violent crime (vs. sexual and non-violent crime; OR = 1.46, 95% CI = [0.87, 2.53], p = .166), sexual crime (vs. violent and non-violet crime; OR = 2.42, 95% CI = [0.97, 6.65], p = .069), and non-violent crime (vs. violent and sexual crime; OR = 0.76, 95% CI = [0.43, 1.32], p = .347).

Because the regression models showed not significant results, we followed up each model with a Bayesian analysis (Mulder et al., 2021). The null hypotheses are that there are no relations between Honesty-Humility and the probabilities of engaging in (1) violent crime (vs. sexual and non-violent crime), (2) sexual crime (vs. violent and non-violent crime), and (3) non-violent crime (vs. violent and sexual crime), and the alternative hypotheses are that there are such relations. The assumed priors are that the null and the alternative hypotheses are equally likely. The obtained Bayes Factors show that the null hypotheses regarding violent, sexual, and non-violent crimes, respectively, were 4.14, 2.08, and 6.96 times as likely

as the alternative hypotheses. Hence, the Bayes Factors show moderate evidence for the lack of relation between Honesty-Humility and the probability of engaging in violent crime (vs. sexual and non-violent) and non-violent crime (vs. violent and sexual crime), and anecdotal evidence for the lack of relation between Honesty-Humility and sexual crime (vs. violent and non-violent crime; Andraszewicz et al., 2015).

Honesty-Humility and low-stakes antisocial behavior among imprisoned criminal offenders

Next, we examined whether Honesty-Humility is related to low-stakes antisocial behavior—defensive aggression, killing bugs, and dishonesty in the lab among imprisoned criminal offenders. In doing so, we used two Pearson's correlations examining relations between Honesty-Humility and either (1) defensive aggression (i.e., number of preemptive strikes) or (2) sadistic aggression (i.e., bug-grinding). We found that participants with higher levels of Honesty-Humility were less likely to engage in both defensive aggression (r = -.29; 95% CI = [-.45; -.11], p = .002) and sadistic aggression (r = -.21; 95% CI = [-.38; -.03], p = .020). In sum, prisoners with higher levels of Honesty-Humility were less likely to engage in both defensive and sadistic aggression.

Because sadistic aggression (i.e., bug-grinding) was relatively rare in the sample, we tested for robustness of our finding concerning the relation between Honesty-Humility and sadistic aggression by using Poisson regression, i.e., logistic regression adjusted for analyzing rare events. Specifically, we dichotomized the variable indicating the number of grinded bugs, so that it indicates whether participants chose to grind any bugs (coded as 1) or chose not to grind bugs (coded as 0). We found that when using Poisson regression, Honesty-Humility negatively predicted the probability of engaging in sadistic aggression (OR = 0.30; 95% CI = [0.16; 0.58], p < .001). Summarizing, the negative relation between Honesty-

Humility and sadistic aggression remained significant when using Poisson regression adjusted for analyzing rare events.

Next, to test whether Honesty-Humility relates to cheating among prisoners, we fitted a modified randomized-response correlation between Honesty-Humility and the outcomes reported in the cheating task. We used the modified randomized-response correlation approach as it accounts for the measurement noise that arises from the fact that the cheating measure (outcomes reported in the cheating task) reflects the number of both dishonestly and honestly reported matching outcomes (Heck & Moshagen, 2018). In other words, the modified correlation approach allows to control for the fact that 33.34% of the prisoners were expected to win and, thus, to report honestly that their rolled and the shown number matched (for details, see Heck & Moshagen, 2018). Using the modified randomized-response correlation, we found that Honesty-Humility was not significantly related to dishonesty (r = -.18; 95% CI = [-.50; .11], p = .148). Please note that even though the correlation between Honesty-Humility and dishonesty is not significant, we were not able to conduct a Bayesian analysis to estimate the degree of support for the null hypothesis, because to date there is no available ready solution for a Bayesian modified randomized-response correlation. Hence, our results suggest that Honesty-Humility was not significantly related to dishonest behavior among imprisoned criminal offenders. Summarizing, we found that Honesty-Humility was significantly negatively related to two out of three low-stakes antisocial behaviors among prisoners, i.e., defensive and sadistic aggression, but not dishonesty. Correlation matrix of all reported variables included in the prison sample is available in Table 1.

Discussion

Criminal behavior results in severe negative consequences for individuals and societies at large (e..g, Heeks et al., 2018). Herein, we test whether the basic prosocial trait of Honesty-Humility (Ashton & Lee, 2007) serves as a signal for such behavior. We show that imprisoned criminal offenders had lower levels of Honesty-Humility than the national population (irrespective of gender and age), which suggests that Honesty-Humility serves as a signature sign of individuals who engage in crime resulting in imprisonment. On the other hand, we found that Honesty-Humility did not relate to the number of committed crimes among imprisoned criminal offenders and the type of crime that resulted in incarceration. Summarizing, our findings suggest that Honesty-Humility is relevant for broadly distinguishing those who engage in crime leading to imprisonment from those who do not, but it does not predict the more specific aspects of criminal behavior, i.e., the frequency of criminal behavior, and the type of criminal behavior leading to imprisonment (in line with Međedović, 2017).

In other words, the results show that Honesty-Humility does have the capability to predict crime on a general (i.e., having committed a crime resulting in incarceration) rather than on a specific level (i.e., frequency and type of crime). These findings might be explained by the fact that the HEXACO scale has not been developed with the aim of assessing groups that frequently engage in crime, such as convicted criminal offenders, but rather to measure antisocial behavior within general populations (Ashton & Lee, 2009; de Vries, 2013; Lee & Ashton, 2018). As such, the HEXACO might lack the specificity required to distinguish between different degrees of criminal behavior (herein conceptualized as frequency and type of said behaviors).

Furthermore, we found that in the group of imprisoned criminal offenders, Honesty-Humility negatively predicted two out of three of the low-stakes antisocial behaviors reported

herein—specifically, Honesty-Humility was negatively related to violent low-stakes antisocial behaviors (i.e., defensive and sadistic aggression), but was not significantly related to non-violent low-stakes antisocial behavior (i.e., cheating). In other words, Honesty-Humility captured imprisoned criminal offenders' pro- and anti-social tendencies sufficiently to predict violent, but not non-violent low-stakes antisocial behavior. A possible explanation of these findings is that we did not have a large enough sample size to obtain a significant relation between Honesty-Humility and cheating. Specifically, a sensitivity power analysis showed that we had sufficient power to detect medium effects of r = -.35/.35, while the observed (insignificant) effect size was small (r = -.18). Notably, the observed effect size of the relation between Honesty-Humility and cheating was comparable to a meta-analytical small effect size of the relation between Honesty-Humility and cheating of r = -.25 (Zettler et al., 2020). However, Heck and colleagues (2018) reported a medium-to-large effect size of r = -.38 (converted from odds ratios; see OSF) in a large re-analysis of studies on the relation between Honesty-Humility and dishonesty. Hence, the effect size of r = -.18 was comparable to the estimate observed by Zettler and colleagues (2020), and smaller than the estimate observed by Heck and colleagues (2018). Future studies could examine whether a significant relation between Honesty-Humility and cheating among imprisoned criminal offenders emerges in larger samples. In sum, our findings show that criminal offenders with higher levels of Honesty-Humility were less likely to engage violent low-stakes antisocial behavior, but there was no significant relation between Honesty-Humility and non-violent low-stakes antisocial behavior in this group.

The findings presented herein have some practical implications, as well as implications for applied research. Notably, these implications are preliminary as they are based on exploratory research and based on one study only. Therefore, confirmatory research is needed before these implications can be implemented in practice. Our findings provide

preliminary evidence showing that Honesty-Humility might be used as a way to assess whether imprisoned criminal offenders are at risk of engaging in violent low-stakes antisocial behavior (i.e., defensive and sadistic aggression). Furthermore, our results showing that imprisoned criminal offenders are lower in Honesty-Humility than the national population point towards the necessity of conducting longitudinal research testing whether Honesty-Humility serves as a cause of crime resulting in imprisonment.

Our study has several limitations. First, the results presented herein are exploratory and, as such, should be treated as preliminary. Therefore, future research should examine whether our findings hold when using pre-registered, confirmatory tests—especially before the findings are used in practical contexts. Second, our analyses are based on a relatively small sample size of prisoners (N = 117). Future research should examine whether our findings—especially the insignificant relation between Honesty-Humility and cheating—can be confirmed on larger samples. Third, our findings are based on a population of prisoners located in a forensic clinic, who face various psychological disorders. Hence, future research could examine whether the findings presented herein generalize to non-forensic populations of prisoners. Fourth, we have not controlled for inattentive responding/non-compliance in the prison sample which might have introduced noise to the obtained results (e.g., Barends & de Vries, 2019). Fifth, in the current study we used the number of reported criminal acts as a dependent variable, which has two primarily limitations: (1) it accounts for quantity but not severity of committed crimes; (2) it does not account for crimes that were not discovered by the legal authorities. Sixth, the other HEXACO traits (with the exception of Honesty-Humility) were not assessed. However, previous research shows that traits such as Agreeableness, Conscientiousness, and Emotionality also play a role in sadistic and high-risk/reckless behaviors (e.g., Book et al., 2016; Mularczyk et al., 2020; Weller & Tikir, 2011), as well as criminal behavior (Međedović, 2017). In this regard, there is potential that

other dimensions of the HEXACO differ between prisoners and the general population as well, as well that they might interact with Honesty-Humility when predicting criminal behavior. A final limitation is that our study was not longitudinal and hence does not allow to make any causal claims about the role of Honesty-Humility in criminal behavior.

Summarizing, we show that Honesty-Humility serves as a signature sign of individuals who engage in crime resulting in imprisonment, but does not predict the degree to which imprisoned criminal offenders engage in such behavior or the type of crime that led to imprisonment. Furthermore, we found that Honesty-Humility predicts violent low-stakes antisocial behavior (i.e., defensive and sadistic aggression) among imprisoned criminal offenders, but does not serve as a useful predictor of non-violent low-stakes antisocial behavior in this group.

References

Allgaier, K., Ścigała, K. A., Trautwein, U., Hilbig, B. E., & Zettler, I. (2020). Honesty-humility and dictator and ultimatum game-giving in children. *Journal of Research in Personality*, *85*, 103907. https://doi.org/10.1016/j.jrp.2019.103907

Andraszewicz, S., Scheibehenne, B., Rieskamp, J., Grasman, R., Verhagen, J., & Wagenmakers, E.-J. (2015). An Introduction to Bayesian Hypothesis Testing for Management Research. *Journal of Management*, *41*(2), 521–543. https://doi.org/10.1177/0149206314560412

Ashton, M. C., de Vries, R. E., & Lee, K. (2017). Trait Variance and Response Style Variance in the Scales of the Personality Inventory for *DSM–5* (PID–5). *Journal of Personality Assessment*, *99*(2), 192–203. https://doi.org/10.1080/00223891.2016.1208210

Ashton, M. C., & Lee, K. (2007). Empirical, Theoretical, and Practical Advantages of the HEXACO Model of Personality Structure. *Personality and Social Psychology Review*, *11*(2), 150–166. https://doi.org/10.1177/1088868306294907

Ashton, M. C., & Lee, K. (2008). The prediction of Honesty–Humility-related criteria by the HEXACO and Five-Factor Models of personality. *Journal of Research in Personality*, *42*(5), 1216–1228. https://doi.org/10.1016/j.jrp.2008.03.006

Ashton, M. C., & Lee, K. (2020). Objections to the HEXACO Model of Personality Structure—And why those Objections Fail. *European Journal of Personality*, *34*(4), 492–510. https://doi.org/10.1002/per.2242

Ashton, M. C., Lee, K., & de Vries, R. E. (2014). The HEXACO Honesty-Humility, Agreeableness, and Emotionality Factors: A Review of Research and Theory. *Personality and Social Psychology Review*, *18*(2), 139–152. https://doi.org/10.1177/1088868314523838

Ashton, M., & Lee, K. (2009). The HEXACO-60: A Short Measure of the Major Dimensions of Personality. *Journal of Personality Assessment, 91*(4), 340–345. https://doi.org/10.1080/00223890902935878

Azevedo, J., Vieira-Coelho, M., Castelo-Branco, M., Coelho, R., & Figueiredo-Braga, M. (2020). Impulsive and premeditated aggression in male offenders with antisocial personality disorder. *PLOS ONE, 15*(3), e0229876. https://doi.org/10.1371/journal.pone.0229876

Barends, A. J., & de Vries, R. E. (2019). Noncompliant responding: Comparing exclusion criteria in MTurk personality research to improve data quality. *Personality and Individual Differences, 143,* 84–89. https://doi.org/10.1016/j.paid.2019.02.015

Becker, T. E. (2005). Potential Problems in the Statistical Control of Variables in Organizational Research: A Qualitative Analysis With Recommendations. *Organizational Research Methods, 8*(3), 274–289. https://doi.org/10.1177/1094428105278021

Berghuis, M. L., Sentse, M., Palmen, H., & Nieuwbeerta, P. (2021). Receiving visits in prison and aggressive and contraband misconduct among Dutch prisoners. *European Journal of Criminology,* 1–20. https://doi.org/10.1177/14773708211041016

Bernerth, J. B., Cole, M. S., Taylor, E. C., & Walker, H. J. (2018). Control Variables in Leadership Research: A Qualitative and Quantitative Review. *Journal of Management, 44*(1), 131–160. https://doi.org/10.1177/0149206317690586

Book, A., Visser, B. A., Blais, J., Hosker-Field, A., Methot-Jones, T., Gauthier, N. Y., Volk, A., Holden, R. R., & D'Agata, M. T. (2016). Unpacking more "evil": What is at the core of the dark tetrad? *Personality and Individual Differences, 90,* 269–272. https://doi.org/10.1016/j.paid.2015.11.009

Bourdage, J. S., Goupal, A., Neilson, T., Lukacik, E.-R., & Lee, N. (2018). Personality, equity sensitivity, and discretionary workplace behavior. *Personality and Individual Differences*, *120*, 144–150. https://doi.org/10.1016/j.paid.2017.08.018

Bourdage, J. S., Lee, K., Ashton, M. C., & Perry, A. (2007). Big Five and HEXACO model personality correlates of sexuality. *Personality and Individual Differences*, *43*(6), 1506–1516. https://doi.org/10.1016/j.paid.2007.04.008

Buckels, E. E., Jones, D. N., & Paulhus, D. L. (2013). Behavioral Confirmation of Everyday Sadism. *Psychological Science*, *24*(11), 2201–2209. https://doi.org/10.1177/0956797613490749

Cambridge Dictionary. (2022). *High-stakes*. https://dictionary.cambridge.org/dictionary/english/high-stakes

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence Erlbaum Associates.

de Vries, R. E. (2013). The 24-item Brief HEXACO Inventory (BHI). *Journal of Research in Personality*, *47*(6), 871–880. https://doi.org/10.1016/j.jrp.2013.09.003

Duan, J., Yang, Z., Zhang, F., Zhou, Y., & Yin, J. (2021). Aggressive behaviors in highly sadistic and highly impulsive individuals. *Personality and Individual Differences*, *178*, 110875. https://doi.org/10.1016/j.paid.2021.110875

Eriksson, T. G., Masche-No, J. G., & Dåderman, A. M. (2017). Personality traits of prisoners as compared to general populations: Signs of adjustment to the situation? *Personality and Individual Differences*, *107*, 237–245. https://doi.org/10.1016/j.paid.2016.11.030

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Fischbacher, U., & Föllmi-Heusi, F. (2013). Lies In Disguise: An Experimental Study on Cheating. *Journal of the European Economic Association*, *11*(3), 525–547. https://doi.org/10.1111/jeea.12014

Heck, D. W., & Moshagen, M. (2018). RRreg: An R Package for Correlation and Regression Analyses of Randomized Response Data. *Journal of Statistical Software*, *85*(2), Article 2. https://doi.org/10.18637/jss.v085.i02

Heck, D. W., Thielmann, I., Moshagen, M., & Hilbig, B. E. (2018). Who lies? A large-scale reanalysis linking basic personality traits to unethical decision making. *Judgment and Decision Making*, *13*(4), 356–371.

Heeks, M., Reed, S., Tafsiri, M., Prince, S., Great Britain, & Home Office. (2018). *Economic and social costs of crime*. Home Office.

Hilbig, B. E., & Thielmann, I. (2017). Does everyone have a price? On the role of payoff magnitude for ethical decision making. *Cognition*, *163*, 15–25. https://doi.org/10.1016/j.cognition.2017.02.011

Hilbig, B. E., Zettler, I., Leist, F., & Heydasch, T. (2013). It takes two: Honesty–Humility and Agreeableness differentially predict active versus reactive cooperation. *Personality and Individual Differences*, *54*(5), 598–603. https://doi.org/10.1016/j.paid.2012.11.008

Lee, K., & Ashton, M. C. (2012). Getting mad and getting even: Agreeableness and Honesty-Humility as predictors of revenge intentions. *Personality and Individual Differences*, *52*(5), 596–600. https://doi.org/10.1016/j.paid.2011.12.004

Lee, K., & Ashton, M. C. (2018). Psychometric Properties of the HEXACO-100. *Assessment*, *25*(5), 543–556. https://doi.org/10.1177/1073191116659134

Lee, K., Ashton, M. C., Wiltshire, J., Bourdage, J. S., Visser, B. A., & Gallucci, A. (2013). Sex, Power, and Money: Prediction from the Dark Triad and Honesty–Humility. *European Journal of Personality*, *27*(2), 169–184. https://doi.org/10.1002/per.1860

Lobbestael, J., van Teffelen, M., & Baumeister, R. F. (2020). Psychopathy subfactors distinctively predispose to dispositional and state-level of sadistic pleasure. *Journal of Behavior Therapy and Experimental Psychiatry*, *67*, 101458. https://doi.org/10.1016/j.jbtep.2019.02.003

Martens, A., Kosloff, S., Greenberg, J., Landau, M. J., & Schmader, T. (2007). Killing Begets Killing: Evidence From a Bug-Killing Paradigm That Initial Killing Fuels Subsequent Killing. *Personality and Social Psychology Bulletin*, *33*(9), 1251–1264. https://doi.org/10.1177/0146167207303020

Martin, S., Zabala, C., Del-Monte, J., Graziani, P., Aizpurua, E., Barry, T. J., & Ricarte, J. (2019). Examining the relationships between impulsivity, aggression, and recidivism for prisoners with antisocial personality disorder. *Aggression and Violent Behavior*, *49*, 101314. https://doi.org/10.1016/j.avb.2019.07.009

Međedović, J. (2017). The profile of a criminal offender depicted by HEXACO personality traits. *Personality and Individual Differences*, *107*, 159–163. https://doi.org/10.1016/j.paid.2016.11.015

Montalto, M. (2021). A Criminological and Psychological Approach to Criminal Offender Personality Traits, PhD thesis. *The University of Western Australia*.

Moshagen, M., Hilbig, B., & Zettler, I. (2014). Faktorenstruktur, psychometrische Eigenschaften und Messinvarianz der deutschsprachigen Version des 60- Item HEXACO Persönlichkeitsinventars. *Diagnostica*, *60*, 86–97. https://doi.org/10.1026/0012-1924/a000112

Moshagen, M., Thielmann, I., Hilbig, B. E., & Zettler, I. (2019). Meta-Analytic Investigations of the HEXACO Personality Inventory(-Revised): Reliability Generalization, Self–Observer Agreement, Intercorrelations, and Relations to Demographic Variables. *Zeitschrift Für Psychologie*, *227*(3), 186–194. https://doi.org/10.1027/2151-2604/a000377

Mularczyk, K. P., Farrell, A. H., Volk, A. A., & Book, A. S. (2020). The Utility of Broad versus Specific Measures of Personality for Assessing Adolescent Antisociality. *North American Journal of Psychology*, *22*(4), 679–700.

Mulder, J., Williams, D. R., Gu, X., Tomarken, A., Böing-Messing, F., Olsson-Collentine, A., Meijerink, M., Menke, J., Aert, R. van, Fox, J.-P., Hoijtink, H., Rosseel, Y., Wagenmakers, E.-J., & Lissa, C. van. (2021). BFpack: Flexible Bayes Factor Testing of Scientific Theories in R. *Journal of Statistical Software*, *100*(18), 1–63. https://doi.org/10.18637/jss.v100.i18

Nowok, B., Raab, G. M., & Dibben, C. (2016). synthpop: Bespoke Creation of Synthetic Data in R. *Journal of Statistical Software*, *74*(11), 1–26. https://doi.org/10.18637/jss.v074.i11

Pfattheicher, S., Lazarević, L. B., Westgate, E. C., & Schindler, S. (2020). On the relation of boredom and sadistic aggression. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/pspi0000335

Pletzer, J. L., Bentvelzen, M., Oostrom, J. K., & de Vries, R. E. (2019). A meta-analysis of the relations between personality and workplace deviance: Big Five versus HEXACO. *Journal of Vocational Behavior*, *112*, 369–383. https://doi.org/10.1016/j.jvb.2019.04.004

Pletzer, J. L., Oostrom, J. K., Bentvelzen, M., & de Vries, R. E. (2020). Comparing domain- and facet-level relations of the HEXACO personality model with workplace deviance:

A meta-analysis. *Personality and Individual Differences*, *152*, 109539. https://doi.org/10.1016/j.paid.2019.109539

Rolison, J. J., Hanoch, Y., & Gummerum, M. (2013). Characteristics of offenders: The HEXACO model of personality as a framework for studying offenders' personality. *The Journal of Forensic Psychiatry & Psychology*, *24*(1), 71–82. https://doi.org/10.1080/14789949.2012.752024

Ścigała, K. A., Schild, C., Heck, D. W., & Zettler, I. (2019). Who deals with the devil? Interdependence, personality, and corrupted collaboration. *Social Psychological and Personality Science*, *10*(8), 1019–1027. https://doi.org/10.1177/1948550618813419

Ścigała, K. A., Schild, C., Moshagen, M., Lilleholt, L., Zettler, I., Stückler, A., & Pfattheicher, S. (2021). Aversive Personality and COVID-19: A First Review and Meta-Analysis. *European Psychologist*, *26*(4), 348–358. https://doi.org/10.1027/1016-9040/a000456

Ścigała, K. A., Schild, C., & Zettler, I. (2022). Dark, gray, or bright creativity? (Re)investigating the link between creativity and dishonesty. *European Journal of Personality*, *36*(1), 108–129. https://doi.org/10.1177/08902070211010993

Simunovic, D., Mifune, N., & Yamagishi, T. (2013). Preemptive strike: An experimental study of fear-based aggression. *Journal of Experimental Social Psychology*, *49*(6), 1120–1123. https://doi.org/10.1016/j.jesp.2013.08.003

South, C. R., & Wood, J. (2006). Bullying in prisons: The importance of perceived social status, prisonization, and moral disengagement. *Aggressive Behavior*, *32*(5), 490–501. https://doi.org/10.1002/ab.20149

Statistics Times. (2019). *Germany demographics 2021—StatisticsTimes.com*. https://statisticstimes.com/demographics/country/germany-demographics.php

Thielmann, I., Hilbig, B., Horsten, L. K., & Scholz, D. (2022). *The Prosocial Personality Project. OSF*. https://doi.org/10.17605/OSF.IO/M2ABP

Thielmann, I., Spadaro, G., & Balliet, D. (2020). Personality and prosocial behavior: A theoretical framework and meta-analysis. *Psychological Bulletin*, *146*(1), 30–90. https://doi.org/10.1037/bul0000217

Thiry, B. (2012). An assessment of personality disorders with the Five-Factor Model among Belgian inmates. *International Journal of Law and Psychiatry*, *35*(4), 327–333. https://doi.org/10.1016/j.ijlp.2012.04.010

van der Laan, A., & Eichelsheim, V. (2013). Juvenile adaptation to imprisonment: Feelings of safety, autonomy and well-being, and behaviour in prison. *European Journal of Criminology*, *10*(4), 424–443. https://doi.org/10.1177/1477370812473530

Weller, J. A., & Tikir, A. (2011). Predicting domain-specific risk taking with the HEXACO personality structure. *Journal of Behavioral Decision Making*, *24*(2), 180–201. https://doi.org/10.1002/bdm.677

World Population Review. (2022). *Germany Population 2022*. https://worldpopulationreview.com/countries/germany-population

Zettler, I., Thielmann, I., Hilbig, B. E., & Moshagen, M. (2020). The Nomological Net of the HEXACO Model of Personality: A Large-Scale Meta-Analytic Investigation. *Perspectives on Psychological Science*, *15*(3), 723–760. https://doi.org/10.1177/1745691619895036