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## Subcomponents of Psychopathy have Opposing Correlations with Punishment Judgments

Jana Schaich Borg<sup>a,b</sup>, Rachel E. Kahn<sup>c</sup>, Walter Sinnott-Armstrong<sup>d</sup>, Robert Kurzban<sup>e</sup>, Paul H. Robinson<sup>f</sup>, and Kent A. Kiehl<sup>g,h</sup>

<sup>a</sup>Institute for Neuro-Innovation & Translational Neurosciences, Stanford University

<sup>b</sup>Department of Psychiatry, Duke University

<sup>c</sup>Department of Psychology, University of New Orleans

<sup>d</sup>Department of Philosophy and Kenan Institute for Ethics, Duke University

<sup>e</sup>Department of Psychology, University of Pennsylvania

<sup>f</sup>University of Pennsylvania Law School

<sup>g</sup>Departments of Psychology and Neuroscience, University of New Mexico

<sup>h</sup>The non-profit Mind Research Network (MRN), an affiliate of Lovelace Biomedical and Environmental Research Institute (LBERI)

### Abstract

Psychopathy research is plagued by an enigma: Psychopaths reliably act immorally, but they also accurately report whether an action is morally wrong. The current study revealed that cooperative suppressor effects and conflicting subsets of personality traits within the construct of psychopathy might help explain this conundrum. Among a sample of adult male offenders ( $n = 100$ ) who ranked deserved punishment of crimes, Psychopathy Checklist-Revised (PCL-R) total scores were not linearly correlated with deserved punishment task performance. However, these null results masked significant opposing associations between task performance and factors of psychopathy: the PCL-R Interpersonal/Affective (i.e. manipulative and callous) factor was positively associated with task performance, while the PCL-R Social Deviance (i.e. impulsive and antisocial) factor was simultaneously negatively associated with task performance. Importantly, these relationships were qualified by a significant interaction where the Interpersonal/Affective traits were positively associated with task performance when Social Deviance traits were high, but Social Deviance traits were negatively associated with task performance when Interpersonal/Affective traits were low. This interaction helped reveal a significant non-linear relationship between PCL-R total scores and task performance such that individuals with very low or very high PCL-R total scores performed better than those with middle-range PCL-R total scores. These results may explain the enigma of why individuals with very high psychopathic traits, but not other groups of anti-social individuals, usually have normal moral judgment in laboratory settings, but still behave immorally, especially in contexts where Social Deviance traits have strong influence.

## Keywords

psychopathy; moral judgment; Deserved Punishment Test

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Psychopaths are infamous for their immoral behavior. Still unclear, however, is whether psychopaths' behavior is due to personality traits that interfere with them *knowing* what is morally wrong or, instead, personality traits that interfere with them from *caring* about what is morally wrong. This unresolved issue has long been at the center of scientific debates about the neural mechanisms of moral judgment and how to treat psychopaths (Glenn, 2010), as well as legal debates about whether psychopaths should be considered criminally (or morally) responsible for their crimes (McMillan & Malatesti, 2010).

## Psychopathy

Psychopathy was originally described as a constellation of interpersonal, affective, and behavioral personality traits that included a superficial and manipulative interpersonal style, a profound lack of empathy/remorse, frequent impulsivity and irresponsibility, and socially deviant behavior or "anti-sociality" (Cleckley, 1941; 1976). While some psychopathic traits are similar to the criteria for Antisocial Personality Disorder (ASPD) contained in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994), psychopathy and ASPD differ in at least two important ways. First, adults with psychopathic traits represent a minority or distinct subgroup of individuals with ASPD (Hare, Hart, & Harpur, 1991; Hart & Hare, 1997) who have a particularly severe and chronic pattern of antisocial behavior (Hart, Knopp, & Hare, 1988; Hemphill, Hare, & Wong, 1998; Kosson, Smith, & Newman, 1990). Second, and perhaps more importantly, ASPD criteria do not include the constellation of interpersonal/affective traits (except lack of remorse/guilt) that characterize psychopathy, and instead focus primarily on the antisocial behavioral traits. For example, criteria for ASPD include traits of impulsivity, irresponsibility, and a lifelong pattern of violating the rights and norms of others (indicated by failure to conform to laws and repeated fighting/assaults), but do not include traits such as having a superficial and manipulative interpersonal style (APA, 1994). As a consequence of these differences, approximately 75% of male prison inmates would qualify for a diagnosis of ASPD, but only 30% of those would also qualify for a diagnosis of psychopathy using the PCL-R (Hart & Hare, 1996; Meloy, 1988).

## Assessment of Psychopathy

Psychopathy is often clinically assessed in incarcerated adults using the Hare Psychopathy Checklist Revised (PCL-R; Hare, 1991; 2003). The PCL-R is an expert-rated scale informed by extensive collateral reports and a semi-structured interview. Using comprehensive descriptions provided in the manual, individuals are rated on 20 specific trait items such as superficial charm, pathological lying, lack of remorse, impulsivity, irresponsibility, and criminal versatility. These items scores are summed to create PCL-R total scores that range from 0 to 40. The PCL-R manual reports that the mean PCL-R total scores in large samples of participants from North American prison and forensic psychiatric samples are 23.6 ( $SD = 7.9$ ) and 20.6 ( $SD = 7.8$ ), respectively (Hare, 1991). Empirical research suggests PCL-R total

scores are dimensional in nature (Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay, Ruscio, Knight, & Hare, 2007; Walters, Duncan, Mitchell-Perez, 2007), but categorical cut-offs are used in practice to infer recidivism risk levels (Hare et al., 1991; see also Harris, Rice, & Quinsey, 1994). When categorical cut-offs are used, a 'psychopath' is traditionally defined in North American participants as someone who receives a total PCL-R score of 30 or above (Hare, 1991; 2003). The PCL-R was originally developed for use with male offenders and forensic patients, but has become widely used in populations of female offenders, sex offenders, and substance abusers as well (for a review see Hare, Clark, Grann, & Thornton, 2000).

## Psychopathy and moral judgment

"Moral judgment" will be referred to here as the event of judging that some act, institution, or person is morally wrong or right. A moral verdict is the outcome of a moral judgment, or the commitment to one moral conclusion (Schaich Borg, Sinnott-Armstrong, Calhoun, & Kiehl, 2011). Most of the well-established psychological research relevant to moral judgment assesses either the quality of reasoning that leads up to a moral verdict (e.g. Colby & Kohlberg, 1987) or the development of the ability to differentiate moral rules from conventional rules (Turiel, 1983). More recently, attempts have been made to study moral verdicts as well (e.g. Cushman, Young, & Hauser, 2006), but these tests cannot be validated in the same way as more traditional psychological tests because there is no universally accepted criteria for identifying what is morally wrong across individuals and cultures, and thus no universally accepted criteria for assessing the quality of moral verdicts. Therefore, at present, moral verdict tests are usually evaluated by their ability to elicit consistent moral conclusions across people and populations.

To date, there is little evidence that psychopaths as defined by total scores on the PCL-R have deficits in either the processes leading up to a moral verdict or the ability to produce normal moral verdicts. The first moral judgment assessments were based on Lawrence Kohlberg's Moral Development theory. To Kohlberg, the most important aspect of moral development was the quality of one's moral justifications, not the outcome of one's moral verdicts. Kohlberg observed that humans progress sequentially through six stages of moral reasoning that preferentially use concepts such as consequences to oneself, maintaining social order, or maintaining universal rights for humanity to justify one's moral verdicts. The Moral Judgment Interview (Colby & Kohlberg, 1987) and the Defining Issues Test (Rest, Cooper, Coder, Masanz, & Anderson, 1974) were developed to assess the sophistication of participants' moral justifications according to this developmental scheme. Psychopaths' moral reasoning as measured by both of these moral development tests is normal (or potentially even above average; (Link, Scherer, & Byrne, 1977; Lose, 1997; O'Kane, Fawcett, & Blackburn, 1996).

A second class of moral judgment assessments were later developed based on the observation that children as young as age 2.5 can differentiate between conventional wrongs (acts judged to be wrong because societal rules say they are wrong, such as wearing your pants inside out) and moral wrongs (acts judged to be wrong regardless of societal rules, such as hitting someone; Smetana, 1981). Variations of "Moral/Conventional" tests were

designed to assess whether children could distinguish between these types of transgressions, and using one of these variations it was reported that individuals with psychopathy do not distinguish between moral versus conventional transgressions (Blair, 1995; Blair, Jones, Clark, & Smith, 1995). However, in both reports psychopaths' performance was characterized by inflation of their ratings of conventional wrongs, not impairment in their ratings of moral wrongs. Further, it was subsequently shown that psychopaths can differentiate between moral and conventional norms as well as incarcerated non-psychopathic controls if doing so is clearly congruent with the experimenter's expectations (Aharoni, Sinnott-Armstrong, & Kiehl, 2011). This suggests that psychopaths' abnormal performance in earlier studies was a result of their efforts to look "more moral" to the experimenter, not an inability to distinguish between moral and conventional transgressions.

Most recently, tests have been developed to examine people's moral verdicts. The most common way to assess moral verdicts is to ask people how they would resolve philosophical moral thought scenarios (Cushman et al., 2006). Thus far, most reports indicate that psychopaths' verdicts for how to resolve philosophical moral thought scenarios are not different from non-psychopaths (Cima, Tonnaer, & Hauser, 2010; Glenn, Raine, Schug, 2009; Glenn, Raine, Schug, Young, & Hauser, 2009). This suggests that psychopaths can successfully report intuitions consistent with common moral principles. In addition, as a more simple method of assessing moral verdicts, psychopaths ratings of the severity of moral violations depicted in pictures are equally severe as ratings provided by non-psychopaths (Harenski, Harenski, Shane, & Kiehl, 2010). Psychopathy has been shown to be negatively associated with valuing certain types of moral virtues (Aharoni, Antonenko, & Kiehl, 2011), but it has not yet been demonstrated that this negative correlation translates into different patterns of moral verdicts. Therefore, overall there is little evidence supporting the hypothesis that psychopaths have deficits in moral judgment during laboratory tasks in controlled environments. This lack of correlation between psychopathy and moral judgment impairment has proven puzzling for researchers in medical, psychological, or legal fields trying to understand why psychopaths still consistently perform immoral acts outside of experimental contexts.

## Deserved Punishment Test

One kind of moral judgment that has not been assessed in psychopaths is judgment about the amount of punishment deserved by differing types of wrongdoing. Robinson and Kurzban's (2007) Deserved Punishment Test (DPT) was designed to assess whether society has "shared intuitions of justice" that lead people to agree on an ordinal ranking of offenders according to their blameworthiness (Robinson & Kurzban, 2007). The DPT asks participants to read twenty-four short scenarios describing a situation where "John" performs an act that may or may not be considered a criminal offense (such as accidentally taking somebody else's umbrella, stealing a microwave from somebody's house, or intentionally shooting someone), and rank order them according to how much punishment, if any, John deserved for each act. This task was intentionally designed to be a ranking task because ratings of the relative seriousness of crimes are more consistent across cultures than the ratings of the absolute seriousness of crimes (Robinson & Kurzban, 2007). Robinson & Kurzban (2007) demonstrated that participants from community samples have "almost perfect" agreement

(Landis & Koch, 1977) about what the “normal” ranking of punishment deserved by each scenario should be in the DPT. This agreement is so strong that the results of the DPT have been used to argue that shared intuitions of justice could be useful for guiding policy and legal theory relevant to legal sentencing (Carlsmith & Darley, 2008; Robison & Darley, 2007).

The DPT has three critical characteristics that make it well-suited to study the relationship between psychopathy and moral judgment: a) it asks for judgments that have no clear correct or incorrect answers, minimizing the potentially dominating influence of impression management, b) it allows for a wide range of performance, and c) performance can be indexed by a continuous variable representing how similar a participants’ ranking order is to the modal ranking order, rather than a constrained interval or ordinal variable. These characteristics make the test both more resilient to intentional manipulation and more sensitive to subtle differences than moral judgment tests previously used in incarcerated populations. For these reasons, the DPT was chosen as the moral judgment assessment for the present study. We hypothesized that if psychopaths have impaired moral punishment judgments, PCL-R scores should be negatively correlated with measures indexing the similarity between individuals’ DPT scenario rank orderings and previously agreed upon DPT scenario rank orderings.

### **Subcomponents of Psychopathy may correlate with external variables in opposing directions**

When examining the association between psychopathy and moral judgment, it is important to consider whether the constellation of traits that form the construct of psychopathy have the potential to be differentially associated with moral judgment. Psychopathic personality traits measured by the PCL-R can be meaningfully divided into an Interpersonal/Affective factor (Factor 1) and a Social Deviance factor (Factor 2) (Hare, 2003; Harpur, Hare, & Hakstian, 1989). The Interpersonal/Affective factor includes traits corresponding with psychopaths’ social dominance, manipulation and efficacy (as well as separate traits associated with lack of general affect, including empathy). The Social Deviance factor includes traits corresponding to psychopaths’ impulsivity, irresponsibility, and antisocial behavior. The Interpersonal/Affective and Social Deviance factors of the PCL-R are modestly correlated (Hare, 2003), so when their shared variance correlates with personality traits or behavior in the same way (either in the same direction or not at all), the associations between the unique aspects of the PCL-R factors and variables of interest are often obscured or “suppressed” unless their shared variance is removed through regression or partial correlation. This phenomenon, called cooperative suppression, is well documented (Paulhus, Robins, Trzesniewski, & Tracy, 2004), and has previously been shown to conceal relationships between PCL-R factor scores and other personality measures (Blonigen et al., 2010; Hicks & Patrick, 2006). Technically, cooperative suppression in PCL-R factors can be identified as cases when the sum of partial regression coefficients between PCL-R factors and an external variable are greater than the sum of the simple, or zero-order, regression coefficients between each PCL-R factor in isolation and the same external variable (Cohen & Cohen, 1975).

When cooperative suppression effects are taken into account, PCL-R factor scores have been shown to correlate with other types of personality traits or behaviors in opposite directions. For example, the Interpersonal/Affective and Social Deviance factors of the PCL-R have been shown to have mutually repulsive effects in the prediction of self-reports of emotional distress and fearfulness (Hicks & Patrick, 2006; Patrick, 1994), anger and hostility (Hicks & Patrick, 2006; Reidy, Shelley-Tremblay, & Lilienfeld, 2011), positive affect (Patrick, 1994), achievement (Verona, Patrick, & Joiner, 2001), stress reactivity (Verona et al., 2001), interpersonal aggression (Kennealy, Hicks, & Patrick, 2007), and attempted suicide history (Verona, Hicks, & Patrick, 2005). Thus, the Interpersonal/Affective and Social Deviance factors of the PCL-R often have contrasting associations with external criteria, despite their shared ability to represent parts of the overall construct of psychopathy, but these effects are not detectable unless statistical models take their shared variance into account. These cooperative suppression effects could potentially explain why previous studies have reported difficulty in identifying relationships between psychopathy and moral judgment. The unique aspects of the two PCL-R factors may have opposing associations with moral judgment that cancel each other out when PCL-R total scores are used to assess psychopathy.

## Current Study

The current study assessed whether the Interpersonal/Affective factor (Factor 1) and the Social Deviance factor (Factor 2) of psychopathy have common or distinct correlations with moral judgment as measured by DPT performance. To do this, we implemented regression models that allowed us to investigate whether the PCL-R factors have contrasting associations with moral judgment that are masked when their shared variance is not taken into account. If true, the opposing relationships between PCL-R factors and moral judgment could cancel each other out when both sets of traits are present in high-scoring psychopaths, explaining why moral judgment appears normal. To maximize our chances of being able to detect conflicting correlations between subsets of personality traits, we administered the DPT to a large sample of incarcerated individuals with a wide range of PCL-R scores, including many who scored above the clinical criteria for psychopathy. In addition, previous research has shown that anxiety can interact with psychopathy (Lilienfeld & Perna, 2001) and individuals with high levels of psychopathic traits may manipulate their answers to impress experimenters (Blair, 1995; Book et al., 2006; Wilson & McCarthy, 2011). Therefore, we also assessed whether trait anxiety or impression management influenced the association between PCL-R and DPT performance.

Overall we predicted that 1) PCL-R total scores would not correlate with DPT scenario ratings, consistent with previous studies reporting a lack of relationship between psychopathy and moral judgment, 2) the variance in DPT performance accounted for by the addition of both PCL-R factor scores simultaneously in a regression model would be more than expected if the variance accounted for by each factor in isolation was simply added (indicating a cooperative suppression effect), and 3) when both factor scores were entered simultaneously in a regression model, PCL-R factor scores would correlate with DPT scenario ratings in opposing directions. If these predictions were confirmed, the results of the present study could help explain the lack of relationship between psychopathy and moral



judgment reported in the past, and could help reconcile intuitions that psychopaths' immoral behavior should somehow be related to impairments in moral judgment.

## Method

### Participants

One hundred adult male inmates were recruited from the Western New Mexico Correctional Facility, a minimum/medium security institution in Grants, New Mexico as part of the larger Southwest Advanced Neuroimaging Cohort, Adult sample (SWANC-A), from 2007 to 2010. Participants' ages ranged from 18–56 ( $M = 33.7$ ;  $SD = 9.4$ ). Ethnic/racial composition was 52% “Hispanic or Latino”, 36% “White or Caucasian”, 7% “Black or African American”, 3% “American Indian or Alaska Native”, and 2% “other or mixed ethnicity.” Participants were classified based on their self-classification into these categories. When asked their highest level of education, 22.3% had no high school degree, 40.4% completed high school or the GED, 25.5% had some college education, 8.5% had a two-year college degree, 1.1% had a four-year college degree, and 2.2% had a graduate degree.

Participants were excluded if they were over 60 years of age; had a history of seizures, epilepsy, or psychosis as assessed by the Structured Clinical Interview for DSM-IV; had experienced a clinical loss of consciousness exceeding 30 minutes; or had other major medical problems. These exclusions were made as part of SWANC, in accordance with standard clinical neuroimaging protocols. In addition, all participants were required to show fluency in English at or above a fourth grade reading level and have an estimated IQ (see description of IQ measure below) of at least 70 ( $M = 98.3$ ,  $SD = 14.4$ ).

Consistent with the average wage in the correctional system, participants were paid \$1.00/hr for their time. The study was approved by the Human Research Review Committee at the University of New Mexico, and all participants provided written informed consent.

### Materials

**Moral Judgment**—The Deserved Punishment Test (DPT; Robinson & Kurzban, 2007) consists of twenty-four short scenarios describing a situation where “John” performs an act that may or may not be considered a criminal offense (see Appendix D for transcription of each scenario). Robinson & Kurzban (2007) collected two separate datasets in community population samples to help illustrate how consistent relative assessments of the punishment deserved by crimes can be. One sample of 64 participants was given the test in person and another sample of 246 participants was given the test online. Both samples gave highly consistent rankings of the punishments deserved by the twenty-four DPT scenarios (Robinson & Kurzban, 2007, summarized in Table 2 of the present study). Participants only reversed the modal pairwise rankings of the DPT scenarios 4% and 8.2% of the time, respectively (Robinson & Kurzban, 2007). Further, the Kendall's coefficient of concordance – a statistic that measures agreement among rank orderings of the same set of stimuli (across the entire ranking, not just pairwise comparisons) – was 0.95 for the cohort of 64 participants and 0.88 for the cohort of 246 participants, where a coefficient of 1.0 indicates perfect agreement and 0.0 indicates no agreement (Robinson & Kurzban, 2007). This level

of agreement was similar across the different demographic groups represented in the larger sample of 246 participants.<sup>1</sup>

Replicating the procedures implemented with Robinson and Kurzban's population sample given the test in person, each scenario was pasted onto one index card, for a total of twenty-four cards. Participants were asked to read each scenario and rank order the cards to reflect the amount of punishment, if any, John deserved for each act. Once completed, participants were asked to review and compare each scenario to the one next to it and confirm their answers. The approved rank orderings were then recorded. Community participants have "almost perfect" agreement (Landis & Koch, 1977) about what the "normal" ranking of punishment deserved by each scenario should be (Robinson & Kurzban, 2007; provided for comparison in Table 2). The rankings of the present incarcerated population were compared to this previously-established "normal" ranking using the statistical tests described in detail below. (For further details about the theory behind the Deserved Punishment Test, see Robinson & Kurzban, 2007.) In the present study one inmate scored over three SDs below the mean on the DPT task and was suspected of not paying attention to the task, and was therefore excluded from all analyses.

**Psychopathy**—All participants were evaluated for psychopathy using the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991; 2003). This assessment includes a semi-structured interview that provides in-depth information about participants' school, family, work, and criminal history, as well as their interpersonal and emotional skills. All participants signed a release form allowing the researcher to review their institutional files (criminal history, social worker reports, family history, education, employment, etc.), which was used as sources of collateral information for scoring the PCL-R. The PCL-R consists of 20 items, each of which is scored on a 3-point scale: 0 'doesn't apply', 1 'applies somewhat', and 2 'definitely applies' to the individual. Total scores range from 0 to 40 (Hare, 1991). In the present population, PCL-R total scores ranged from 3.2–36.8 ( $SD = 7.8$ ), with 25 participants scoring a 30 or above. Double ratings were conducted on approximately 17% of the sample, and reliability was high (interclass correlation coefficient (ICC) = .96 for total scores, .92 for the Interpersonal/Affective factor, and .97 for the Social Deviance factor).

**General Intelligence**—A two subtest form of the Wechsler Adult Intelligence Scale (WAIS-III; Wechsler, 1997) was used to collect a full scale IQ estimate. The two subtests,

<sup>1</sup>The demographics of Robinson and Kurzban's (2007) non-incarcerated populations were:

University population (N=64):

Gender: 36% male, 64% female;

Race: 91% "white", 9% "nonwhite";

Age: 2% age 20 years or under, 11% ages 21–30, 5% ages 31–40, 11% ages 41–50, 22% ages 51–60, 47% ages 61 or over

Highest level of education: 5% some college, 2% two-year college degree, 38% four-year college degree, 39% masters degree, 17% doctorate/professional degree

Internet population (N=246):

Gender: male 50%, female 50%

Race: 6% "Hispanic", 70% "White", 1% "Native American", 5% "Mixed", and 4% "Other"

Age: 6% age 20 years or under, 15% ages 21–30, 21% ages 31–40, 18% ages 41–50, 17% ages 51–60, 23% ages 61 or over

Highest level of education: 4% no high school degree, 18% high school graduate, 47% some college, 7% two year college degree, 14% four year college degree, 10% graduate degree



Vocabulary and Matrix Reasoning, have been shown to provide a reliable estimate of full scale IQ (Ryan, Lopez, & Werth, 1999). One individual did not complete the IQ assessment.

**Anxiety**—Trait anxiety was assessed using the Spielberger State-Trait Anxiety Scale (STAI; Spielberger, Gorsuch, & Lushene, 1970). The STAI is a 40-item self-report measure containing a 20-item section that assesses trait anxiety (how much anxiety a person generally feels). Participants rate each statement on a 4-point scale from “almost never” to “almost always” (e.g., “I feel nervous and restless”; “I am ‘cool, calm, and collected” (reverse-scored)). Within our sample, reliability for the trait anxiety scale of the STAI was Cronbach’s  $\alpha = .93$ . Five individuals did not complete the STAI and an additional four had missing or incomplete data (total missing,  $n=9$ ).

**Social Desirability/Impression Management**—The Balanced Inventory of Desired Responding (BIDR-6; Paulhus, 1991) is a 40-item self-report scale designed to assess whether individuals are likely to distort their answers on tests or questionnaires in an effort to portray themselves positively. The BIDR is composed of two scales: a ‘Self Deceptive Enhancement’ (SDE) scale and an ‘Impression Management’ (IM) scale each comprised of 20 items (e.g. “I never swear” or “I always obey laws, even if I’m unlikely to get caught”). For the purposes of the present study, only the IM scale was used. The IM scale assesses the extent to which an individual deliberately tries to present themselves in a favorable light to others. All items on the BIDR are rated on a 7 point scale with 1 = “not true,” 4 = “somewhat true,” and 7 = “very true.” Higher scores on the BIDR suggest an individual has greater “social desirable responding”, or is attempting to present themselves in a more positive light. In past research, the BIDR has been shown to successfully measure social desirable responding in offender populations similar to the one used in the present study (Kroner & Weekes, 1996). In addition, internal consistency for the two scales has been adequate ( $\sim .80$ ) in both general and forensic samples (Kroner & Weekes, 1996; Paulhus, 1991). In our sample, this scale demonstrated adequate internal consistency as well (Cronbach’s  $\alpha = .78$ ). Two individuals did not complete the BIDR, and IM scores were not calculated for an additional three participants due to missing or incomplete data (total missing,  $n=5$ ).

**Demographic Variables**—All participants completed a demographic questionnaire that included questions regarding ethnicity, age, education level, income level prior to incarceration, number of years incarcerated, number of times incarcerated, and prison security level. Education level was coded using a seven point scale ranging from 1 (“some high school”) to 3 (“some college”) to 7 (“doctoral/professional degree”). Similarly, income level was coded on a six point scale ranging from 1 (“less than \$20,000/year”) to 6 “over \$100,000/year”). Age, number of years incarcerated and number of times incarcerated were coded as continuous variables. Prison security level ranged from level II (minimum security) to IV (medium security).

## Procedure

This study was conducted as part of a larger neuroimaging research project that began in 2007. In total, the participants completed eight to fifteen hours of research over the course of

five to six visits. The assessments pertinent to the present research took between three to four hours and participants were paid for their time as they progressed through the research study. As recommended by the institutional review board, participants were told they could skip any questions that they did not feel comfortable answering.

## Data Analysis

Data were analyzed using SPSS 19. Pearson correlations and analyses of variance (ANOVA) were conducted to assess the association between PCL-R scores and other potentially confounding variables. The DPT was intentionally designed to assess relative (as opposed to absolute) judgments of moral punishment, and performance on the DPT is defined by the order in which participants rank the twenty-four DPT scenarios. Therefore, DPT performance was assessed using statistical tests that compare ordinal rankings. Kendall's coefficient of concordance, a non-parametric statistic used to assess agreement among raters, was used to assess agreement in DPT scenario rankings across participants. A Kendall's tau statistic was calculated for each participant to measure the similarity (or distance) between each participant's rank ordering and the "normal" or modal rank order agreed upon by the non-incarcerated university population from Robinson and Kurzban, 2007 (provided in Table 2). The non-incarcerated university population was chosen as the reference population because, like the present population, they completed the task with physical cards in person whereas Robinson and Kurzban's second community population completed the task over the internet.<sup>2</sup> The Kendall's tau statistic is a metric that counts the number of pairwise disagreements between two lists and gives a value from -1 to 1, where values of -1 represent a perfect negative relationship between the two lists (or complete disagreement), values of 1 represent a perfect positive relationship between the two lists (or complete agreement), and values of 0 represent no relationship at all (Lapata, 2006). Therefore, if a participant ranked the DPT scenarios in the exact same order as Robinson and Kurzban's non-incarcerated university population, that participant would have a Kendall's tau value of 1. If a participant ranked the DPT scenarios in the exact opposite order as Robinson and Kurzban's non-incarcerated university population, that participant would have a Kendall's tau value of -1. If there was no relationship between a participant's DPT scenario rankings and the rankings provided by Robinson and Kurzban's university non-incarcerated population, that participant would have a Kendall's tau value of 0.

Hierarchical regression analyses were conducted to test the effects of psychopathy on DPT performance using Kendall's tau as the dependent variable. In all of these analyses, Kendall's tau was logit transformed ( $\log(x/1-x)$ ) to improve heteroscedasticity.<sup>3</sup> Finally, significant interactions between PCL-R factors were analyzed using the regression equation from the full sample to calculate the predicted tau values if Factors 1 and 2 were high (1 SD

<sup>2</sup>The modal ranking of the university population reversed the order of one set of scenarios compared to the internet population, indicated by an asterisk and bold font in Table 2, but the basic results of the present study do not change if the modal rank provided by Robinson and Kurzban's internet population is used as the reference rank order instead of the modal rank order provided by Robinson and Kurzban's university population.

<sup>3</sup>The logit transform was chosen because it is the standard transformation for proportional variables bounded by 0 and 1 (Lesaffre, Rizopoulos, & Tsonaka, 2007). The transformation did reduce heteroscedasticity in the Kendall's tau distribution and was therefore used for analyses reported in the main text, but as a cautionary measure all the analyses were repeated on non-transformed values of Kendall's tau. The results of these models were comparable to the results discussed in the main text and are provided in Appendix B.

above the mean) or low (1 SD below the mean; Holmbeck, 2002). The slopes of the simple effects from these post-hoc analyses were then used to assess statistical significance.

## Results

### Contribution of demographic variables

To test the contribution of demographic and relevant cognitive variables to PCL-R total and factor scores and determine whether they needed to be considered in analyses investigating the relationship between psychopathy and moral judgment, we computed two-tailed Pearson correlations between all PCL-R scores (total, Interpersonal/Affective factor, Social Deviance factor, and all four PCL-R facet scores) all demographic variables—including age, IQ, education level, income level, number of years incarcerated, number of times incarcerated, and prison security level—and task performance (see Table 1). Age was negatively correlated with PCL-R total ( $r = -.22, p = .03$ ) and Social Deviance factor scores ( $r = -.30, p < .01$ ), but not significantly associated with Interpersonal/Affective factor scores. This is consistent with previous literature showing age-related changes in psychopathic traits are usually explained by a decline in Social Deviance traits (such as impulsivity and antisocial behavior) rather than changes in Interpersonal/Affective traits (such as callousness or superficial charm), which tend to remain stable across age-spans (Hare, 2003; Harpur & Hare, 1994).

To assess potential effects of ethnicity, PCL-R scores were compared for the two largest ethnic groups in our sample (Caucasian,  $n = 36$ ; Hispanic,  $n = 52$ ) using ANOVAs. Sample sizes for the other ethnic groups were too small for statistical comparison. No significant differences in PCL-R total ( $F(1, 86) = 0.27, p = .61$ ) or factor scores (Interpersonal/Affective:  $F(1, 85) = 0.01, p = .93$ , Social Deviance:  $F(1, 86) = 1.10, p = .30$ ) were found between ethnic groups.

Associations between all demographic variables and Kendall's tau, the measurement of how similar a participants' rankings are to the rankings provided by non-incarcerated populations (see Methods), are also reported in Table 1. Kendall's tau was positively correlated with age, IQ, and education level (all  $p < .05$ ). Previous studies of moral verdicts have not examined the relationship between age, IQ, and education level with task performance, but the present results are consistent with previous reports that all three variables correlate positively with moral reasoning as defined by Kohlberg's Moral Development stages (Freeman & Giebink, 1979; Gibbs, Basinger, Grime, & Snarey, 2007). In addition, Kendall's tau was positively correlated with years of incarceration ( $r = .35, p < .05$ ), even when age was taken into account ( $r = .26, p < .05$ ), but not number of times in prison ( $p = .11$ ). An ANOVA showed that Caucasian participants had significantly higher Kendall's tau values on the DPT than Hispanic participants ( $F(1, 89) = 8.95, p < .01$ ). Because age was the only variable significantly correlated with both psychopathy scores and Kendall's tau, age was included as a covariate in all subsequent regression models using either PCL-R total or Social Deviance factor scores as independent variables and Kendall's tau as the dependent variable by entering age in the first block of each hierarchical regression. Regression models including IQ and education levels as covariates were also run, but adding these independent variables

to the models did not affect the statistical relationship between psychopathy variables and task performance (Appendix C), so they were not used as primary analyses.

### Validation of the Deserved Punishment Test in an Incarcerated Sample

We validated the use of the DPT in our incarcerated population by comparing three characteristics of DPT performance in our population with that of non-incarcerated populations: 1) the modal rankings of each DPT scenario, 2) the amount of agreement across participants about how the DPT scenarios should be ranked (indicated by Kendall's coefficient of concordance), and 3) the distribution of Kendall's tau values from individual participants.

The modal rankings provided for how much punishment each scenario deserved were almost identical between the present incarcerated population and the previously described non-incarcerated populations (Table 2). Minor differences in rankings are indicated by bold type and an asterisk in Table 2. The consistency of modal rankings across the three populations indicates that they are a reasonable reference to compare individuals' moral punishment judgments.

Kendall's coefficient of concordance was used to statistically assess how much participants agreed in their rankings of how much punishment each of the 24 items in the DPT deserved. Our incarcerated sample presented very high agreement in their rankings of deserved punishment, with a *Kendall's W* of .86 overall ( $p < .001$ ). Similarly, Robinson and Kurzban's university population of 64 participants provided rankings with a *Kendall's W* of .95 and Robinson and Kurzban's internet-based population of 246 participants provided rankings with a *Kendall's W* of .88 (Robinson & Kurzban, 2007). This means that like non-incarcerated participants, incarcerated participants have "almost perfect" agreement (Landis & Koch, 1977) about what the "normal" ranking of punishment deserved by each scenario should be in the DPT. In other words, all three populations of incarcerated or non-incarcerated participants have shared intuitions of how offenders should be ranked according to their blameworthiness.

We also calculated a Kendall's tau statistic for each participant to measure how similar each participant's rank ordering was to the modal ranking provided by non-incarcerated populations. The mean Kendall's tau value from the present incarcerated population was 0.81 ( $SD = .11$ ), with a range from 0.47–0.99 and a distribution that was positively skewed. The mean Kendall's tau value from the previously published non-incarcerated university population was 0.93 ( $SD = .06$ ) with a range from 0.69–1.00, and the Kendall's tau value from the previously published non-incarcerated internet population was 0.85 ( $SD = .11$ ) with a range from 0.42–0.99. Both of these samples were also positively skewed (Appendix A). These comparable Kendall's tau distributions indicate that the current sample of incarcerated adults provided a similar distribution of punishment rankings to those provided by non-incarcerated adults. Overall, the results of these three metrics from our incarcerated population support the use of the DPT as an assessment of robust "shared intuitions of justice" that can be used to probe the relationship between psychopathy and moral punishment judgments.

### Ruling out the confounding influences of anxiety

To ensure that anxiety could not explain or alter correlations between PCL-R total scores and DPT performance, we examined the interaction between trait anxiety, psychopathy, and DPT performance using the Spielberger State Trait Anxiety Inventory (STAI; Spielberger et al., 1970). We ran a hierarchical regression with each participant's Kendall's tau value as the dependent variable, age entered in Step 1 (because it was correlated with both PCL-R total scores and Kendall's tau as described in the "*Contribution of demographic variables*" section)<sup>4</sup>, total PCL-R scores and STAI scores entered in Step 2, and a psychopathy×anxiety interaction term (PCL-R scores×STAI scores) entered in Step 3. There were no significant interactions between psychopathy and trait anxiety for DPT performance ( $R^2 = .01$ ,  $F(1, 86) = 0.57$ ,  $p = .45$ ,  $b = -.08$ ). Thus, anxiety was not considered to be a confounding variable and was not included as a covariate in subsequent regression analyses.

### Ruling out potentially confounding influences of impression management

To confirm that DPT performance was not sensitive to impression management, we calculated the two-tailed Pearson correlation between participants' Kendall's tau values and their scores on the BIDR IM subscale. There was no significant correlation between BIDR IM subscale scores ( $p = .27$ ) and Kendall's tau. Therefore, impression management did not correlate with moral judgment and was not included as a covariate in subsequent regression analyses.

### PCL-R total scores and DPT performance

To test the effects of psychopathy on DPT performance, we implemented a hierarchical regression with Kendall's tau as the dependent variable, age in the first block (because it was correlated with both PCL-R total scores and Kendall's tau as described in the "*Contribution of demographic variables*" section)<sup>4</sup>, and PCL-R total scores in the second block. As summarized in Table 3, PCL-R total scores did not account for a significant amount of variance in DPT performance ( $p = .84$ ). The  $R^2$  change due to the addition of PCL-R total scores was 0. Thus, as predicted, when PCL-R total scores are used to index psychopathy, there was no significant linear association between psychopathy and moral judgment.

### Isolated PCL-R factor scores and DPT performance

To test the effects of each factor score in isolation on DPT performance, a hierarchical regression was implemented with Kendall's tau as the dependent variable, age in the first block, and *either* the Interpersonal/Affective PCL-R factor (Factor 1) or the Social Deviance PCL-R factor (Factor 2) scores in the second block. Consistent with the zero-order correlations provided in Table 1, neither the Interpersonal/Affective PCL-R factor ( $p = .19$ ) nor the Social Deviance PCL-R factor ( $p = .25$ ) scores individually accounted for a significant amount of variance. The  $R^2$  change due to the addition of Interpersonal/Affective scores or the Social Deviance scores was 0.02 or 0.01, respectively. Thus, compatible with

<sup>4</sup>As a cautionary measure, all the analyses reported here were repeated without age included in the model. The results of the models without age were comparable to the results discussed in the main text.

our predictions, when PCL-R factor scores are used in isolation to index psychopathy, psychopathy is not associated with moral judgment.

### Combined PCL-R factor scores and DPT performance

To test whether cooperative suppression could reveal opposing relationships between PCL-R factors and DPT performance that would not be observable when either PCL-R factor score was assessed in isolation, a hierarchical regression was implemented with Kendall's tau as the dependent variable, age in the first block, and both the PCL-R Interpersonal/Affective factor (Factor 1) and the PCL-R Social Deviance Factor (factor 2) scores in the second block. As predicted, the  $R^2$  change due to the addition of both factor scores simultaneously was 0.07, more than expected if the variance accounted for by each variable in isolation was simply added. This indicates that cooperative suppression was present in the relationship between PCL-R factor scores and DPT performance. Also predicted, PCL-R Factor 1 and Factor 2 scores correlated with DPT performance in opposite directions (Table 3). Interpersonal/Affective factor (Factor 1) scores predicted larger Kendall's tau values, meaning they predicted participants would provide punishment rankings that were more similar to the modal punishment rankings ( $\beta = .30, p = .01$ ). PCL-R Social Deviance factor (Factor 2) scores simultaneously predicted smaller Kendall's tau values, meaning they predicted participants would provide punishment rankings that were less similar to the modal punishment rankings ( $\beta = -.30, p = .02$ ). Given that neither factor significantly correlated with tau on their own, these results suggest that the PCL-R factors only predict DPT performance when their shared variance is removed through regression analysis. In other words, the characteristics of the Interpersonal/Affective factor that predict "normal" DPT performance are the characteristics that are unique and that do not overlap with the Social Deviance factor. Likewise, the characteristics of the Social Deviance factor that predict deviant DPT performance are the characteristics that are unique and that do not overlap with the Interpersonal/Affective factor.

### Regression analysis: Interaction between PCL-R factor scores and DPT performance

To test whether an interaction between the Interpersonal/Affective factor (Factor 1) and the Social Deviance factor (Factor 2) could account for variance in DPT performance, the above regression was repeated with the two centered factor scores in the second block, and a multiplicative interaction term between the two factors in a third block. The interaction was significant ( $\beta = .26, p < .01$ ). Collectively, the interaction term, the Interpersonal/Affective factor, and the Social Deviance factor accounted for 13.1% of the variance ( $p < .01$ ) in Kendall's tau, with the individual factors accounting for 7.0% of the variance and the interaction term accounting for an additional 6.1% of the variance. To plot this interaction, the simple slopes of the effects of the Interpersonal/Affective factor were calculated for high (one standard deviation above the mean) and low (one standard deviation below the mean) Social Deviance factor scores according to the procedures described by Holmbeck (2002; see Figure 1). The effect of the Interpersonal/Affective factor was significant when Social Deviance factor scores were high ( $\beta = .54, p < .001$ ), but not when Social Deviance factor scores were low ( $p = .71$ ). In contrast, the effect of the Social Deviance factor was significant when Interpersonal/Affective factor scores were low ( $\beta = -.46, p = .001$ ), but not when Interpersonal/Affective factor scores were high ( $p = .90$ ).



To help interpret the results of the interaction, Interpersonal/Affective factor scores were plotted as a function of Social Deviance factor scores (Figure 2). This plot illustrated that the factor scores correlated positively in this study population ( $r = .60$ ) as reported in Table 1, but in addition clarified that Social Deviance factor scores started to plateau near their maximum possible value of 20 when Interpersonal/Affective factor scores were only slightly past their mean of 7.01 (out of a possible score of 20). Thus, part of the interaction effects identified in the regression analyses could be due to the fact that Social Deviance factor scores had already plateaued near their ceiling when Interpersonal/Affective factor scores were high (+1 SD in Figure 1), obscuring any effects of the Social Deviance factor but permitting the observation of the effects of the Interpersonal/Affective factor.

### **Implications of the Interaction between PCL-R factor scores and DPT performance for PCL-R total scores**

PCL-R total scores are used more often than PCL-R factor scores to assess psychopathy in both research and clinical settings. Thus, in order to make our results more directly comparable to past research and applicable to clinical settings, we translated the results of the significant PCL-R factor interaction into corresponding PCL-R total scores. This was done by calculating the mean PCL-R total scores for participants with low (1 SD below the mean) Interpersonal/Affective (Factor 1) scores or high (1 SD above the mean) Interpersonal/Affective (Factor 1) scores. The mean PCL-R total scores for participants with low Interpersonal/Affective (Factor 1) scores was 17.5, with a range of 3.2 to 29. The mean PCL-R total scores for participants with high Interpersonal/Affective (Factor 1) scores was 28.9, with a range of 16 to 36.8. Given that the Social Deviance Factor only predicted worse DPT performance when Interpersonal/Affective (Factor 1) scores were low, this curiously suggests that participants with mean PCL-R total scores of 17.5 may have worse DPT performance than those with mean PCL-R total scores of 28.9. In other words, participants with PCL-R total scores near the clinical cut-off for psychopathy (PCL-R total scores of 30 or above) may perform better than those with high levels of social deviance traits, but who have PCL-R total scores far below the clinical cut-off for psychopathy.

To test these non-linear predictions explicitly, a hierarchical regression was implemented with Kendall's tau as the dependent variable, age in the first block (recall that age was correlated with both PCL-R total scores and Kendall's tau), and both a centered linear and a centered quadratic PCL-R total predictor in the second block. The relationship between the quadratic PCL-R Total predictor and tau was significant ( $\beta = 1.46, p < .01$ ), and the linear and quadratic PCL-R total terms collectively accounted for 7.9% of the variance in DPT performance. This quadratic relationship between PCL-R total scores and Kendall's tau is illustrated in the scatter plot provided in Figure 3. Thus, PCL-R total scores do correlate with DPT performance, but they do so in a non-linear fashion. Participants with very low PCL-R total scores (who have simultaneously low Interpersonal/Affective and Social Deviance factor scores) have normal DPT performance. Participants with very high PCL-R total scores (who have simultaneously high Interpersonal/Affective and Social Deviance factor scores) have normal DPT performance as well. In contrast, participants with mid-level PCL-R total scores (who have higher Social Deviance scores than Interpersonal/Affective scores in the present population) have impaired DPT performance. Interestingly, when

hierarchical regressions were run with centered quadratic PCL-R Interpersonal/Affective or Social Deviance factor terms, only the Interpersonal/Affective quadratic term was significant (Table 3). Thus, the quadratic relationship between PCL-R total scores and DPT performance is likely driven by a combination of the non-linear relationship between Interpersonal/Affective factor scores and DPT performance and the non-linear relationship between Interpersonal/Affective and Social Deviance factor scores.

#### Four Factor Model of Psychopathy and DPT performance

Some models of psychopathy describe PCL-R scores as being comprised of four facets (Hare, 2003). The PCL-R Interpersonal/Affective factor can be divided into two facets: Facet 1 (Interpersonal, e.g. lying, manipulation, superficial charm) and Facet 2 (Affective, e.g. shallow affect and lack of empathy). The PCL-R Social Deviance factor can be divided into Facet 3 (Lifestyle, e.g. impulsivity, irresponsibility, parasitic lifestyle, and lack of goals) and Facet 4 (Antisocial, e.g. juvenile delinquency, adult antisocial behavior, criminal versatility, and lack of behavioral control; Hare, 2003). To compare the four-facet model to the two-factor model and determine whether specific facets could account for the cooperative suppression between the Interpersonal/Affective factor and the Social Deviance factor, a hierarchical regression was implemented with Kendall's tau as the dependent variable, age in the first block, and all four facets in the second block. The  $R^2$  change due to the addition of the facet scores simultaneously was 0.10 ( $p = .02$ ). The Interpersonal facet (Facet 1) predicted normal DPT performance ( $\beta = .31, p = .01$ ) while the Antisocial facet (Facet 4) predicted more deviant DPT performance ( $\beta = -.23, p = .04$ ). Neither the Affective facet (Facet 2;  $p = .60$ ) nor the Lifestyle facet (Facet 3;  $p = .29$ ) significantly predicted DPT performance. Therefore, the positive relationship between the Interpersonal/Affective factor and DPT performance is likely due more to the interpersonal traits, rather than the affective traits, of this factor, and the negative relationship between the Social Deviance factor and DPT performance is likely due more to the antisocial traits, rather than the lifestyle traits, of this particular factor. A model including age in the first block, centered Interpersonal facet, centered Antisocial facet, and a multiplicative interaction between the centered Interpersonal and Antisocial facet did not account for as much variance in DPT performance as the interaction model using factor scores ( $R^2 = .11$ ). Further, the interaction between the Interpersonal facet and the Antisocial facet only approached significance ( $p = .09$ ). Therefore, the two-factor model of psychopathy described performance in the current study better than the four-facet model of psychopathy.

#### Discussion and Conclusion

Thus far it has proven difficult to demonstrate deficits in moral judgment in individuals with psychopathy, despite their clearly immoral behavior. This study provides evidence that one reason for this historical difficulty may be that Interpersonal/Affective and Social Deviance psychopathic traits can predict moral judgment performance in opposing directions, ultimately canceling each other out and obscuring the relationship when PCL-R total scores are used as the only index of psychopathy. Consistent with previous studies showing no relationship between psychopathy and moral judgment, the present study also showed PCL-R total scores did not linearly predict DPT performance. However, by having a large sample

size with a full range of PCL-R scores, choosing a task that minimized impression management and allowed for a wide range of performance, and testing for cooperative suppression effects, we demonstrate that PCL-R factor scores do predict moral judgment. When entered into a regression together, Interpersonal/Affective (Factor 1) PCL-R scores predict that incarcerated participants will rate the relative amount of punishment crimes deserve more like other participants, while the Social Deviance (Factor 2) PCL-R scores predict that incarcerated participants will rate the relative amount of punishment crimes deserve less like other participants. The factors' opposing effects are driven by each factor's unique qualities, because the zero-order correlations between each factor and DPT performance were not significant, likely because of a lack of correlation between their strong shared variance and Kendall's tau.

The associations between the Interpersonal/Affective factor and the Social Deviance factor were qualified by a significant multiplicative interaction. Specifically, Interpersonal/Affective traits were positively associated with task performance when Social Deviance traits were high, but Social Deviance traits were negatively associated with task performance when Interpersonal/Affective traits were low. The consequences of this interaction in the present population were that participants who had either very low PCL-R total scores or very high PCL-R total scores had more normal DPT performance than participants who had middle range PCL-R total scores. Put differently, Social Deviance psychopathic traits predicted deviant moral punishment judgment performance, but Interpersonal/Affective psychopathic traits counteracted these negative associations when they were sufficiently present.

Although the non-linear properties of the present incarcerated population will need to be replicated in other incarcerated populations, intriguingly, this interaction between opposing influences provides one mechanism by which the construct of psychopathy might manifest as a taxon, despite its composition of dimensional traits (Walters et al., 2007). The mean PCL-R total scores for participants who had an Interpersonal/Affective (Factor 1) score above the population mean (where the positive relationship between Interpersonal/Affective scores and DPT performance is significant) in our sample was 28.9. This average is very close to the clinical PCL-R cut-off of 30 used to diagnose psychopathy, and thus suggests that people who have PCL-R total scores of above 30 may indeed perform differently on the DPT than those who have high psychopathic traits but score below 30. However, our data suggests their performance would be a result of qualified opposing linear interactions between specific subsets of psychopathic traits and moral judgment, not a result of simply having "enough" general psychopathic traits. It will be useful for future studies to assess whether cooperative suppression and PCL-R factor distributions can lead to similar taxonomic effects on other behaviors, perhaps explaining why individuals with very high psychopathy scores can have such distinct psychiatric profiles despite their diagnosis being grounded in the identification of dimensional, continuous traits.

When interpreting the interaction effects in the present study, it is important to note that the present population sample did not include many participants with low Social Deviance (Factor 2) scores, especially low Social Deviance scores with simultaneous high Interpersonal/Affective (Factor 1) scores (Figure 2). Further, Social Deviance scores

correlated with Interpersonal/Affective scores when Interpersonal/Affective scores were low, but not when Interpersonal/Affective scores were high (because Social Deviance scores had already reached their ceiling). These population characteristics may have made it difficult to statistically detect the effects of the Interpersonal/Affective scores when Interpersonal/Affective scores were low or detect the effects of the Social Deviance factor when Interpersonal/Affective scores were high. Thus, it would be informative for future studies to determine whether the interaction between PCL-R factors and moral judgment performance reported here persist in samples with many participants who have low Social Deviance and high Interpersonal/Affective scores. That said, the characteristics of the present sample may be similar to the characteristics of other incarcerated populations because the antisocial behavioral characteristics of the Social Deviance factor are likely to be much more strongly represented in incarcerated samples than non-incarcerated samples. Most studies of psychopathy do not provide extensive details of their reported correlations between PCL-R factor scores. However, one study of male sex offenders providing adequate detail reported a similar relationship between Interpersonal/Affective and Social Deviance scores to the relationship reported here, including a lack of participants scoring high in Interpersonal/Affective traits but low in Social Deviance traits (Patrick, Bradley, & Lang, 1993); see Figure 2). Also interesting, another study of primarily non-institutionalized and non-criminal participants reported a lack of correlation between Interpersonal/Affective and Social Deviance scores in higher-scoring participants who had PCL-R total scores of 15 – 27, despite significant correlations between Interpersonal/Affective and Social Deviance scores across their entire sample (DeMatteo, Heilbrun, & Marczyk, 2006). Therefore, it is possible that the distribution of factor scores reported here represents fundamental characteristics of the relationship between the PCL-R factors, and thus may be present in other study populations as well.

One important implication of the present study's results is that the different subsets of personality traits in psychopathy may lead to different constellations of behaviors depending on which traits dominate in a given individual or in a particular life situation. The results of the present study suggest that psychopaths will have impaired moral judgment and thus may have more antisocial behavior in contexts where the Social Deviance (Factor 2) traits will be more influential (such as when behavioral controls are required, i.e. when anger is invoked, opportunities for strong and exciting sensations are presented, or when strong immediate rewards are offered). Conversely, individuals with psychopathy may have fully intact moral judgment and restrained antisocial behavior in contexts where the Interpersonal/Affective (Factor 1) traits will be more influential (such as when no powerfully provoking stimulus is in the immediate environment or when manipulation of other people is the ideal strategy). Further research will be needed to test and develop this hypothesis. If true, the results may have implications for treatment programs aimed at modifying psychopathic traits, which historically have had debatable and inconsistent success in adult populations (Salekin, Worley, & Grimes, 2010). Specifically, our results may suggest that different strategies should be taught for situations in which Interpersonal/Affective traits are likely to dominate (including strategies that exploit moral reasoning) compared to situations in which Social Deviance traits are likely to dominate (which might require strategies that manage behavior rather than try to alter judgment).

The Deserved Punishment Task (DPT) was chosen for this study because it is a validated moral judgment test that would maximize statistical ability to detect associations with psychopathy. Additionally, the content of the task was very relevant to an incarcerated population, and the brain regions involved in punishment judgments (Buckholtz et al., 2008) overlap with the brain regions believed to be involved in psychopathy (Kiehl, 2006). However, it should be recognized that deciding how much punishment a moral wrong deserves is only one kind of moral judgment among others. In addition, how much punishment a moral wrong is seen to deserve can be influenced by potentially non-moral factors such as arbitrary legal rules or evolved motives to cooperate (Cushman, 2008; Darley & Pittman, 2003; DeScioli & Kurzban, 2009, 2012; Kurzban, DeScioli, & O'Brien, 2007), and these non-moral factors can result in situations where punishment is deemed necessary even though no moral wrong was committed. Thus, it will be important for future studies to develop other appropriate moral judgment tasks that allow a wide range of performance to replicate our PCL-R factor results and assess whether PCL-R factor scores have opposing effects on other types of moral decision-making as well.

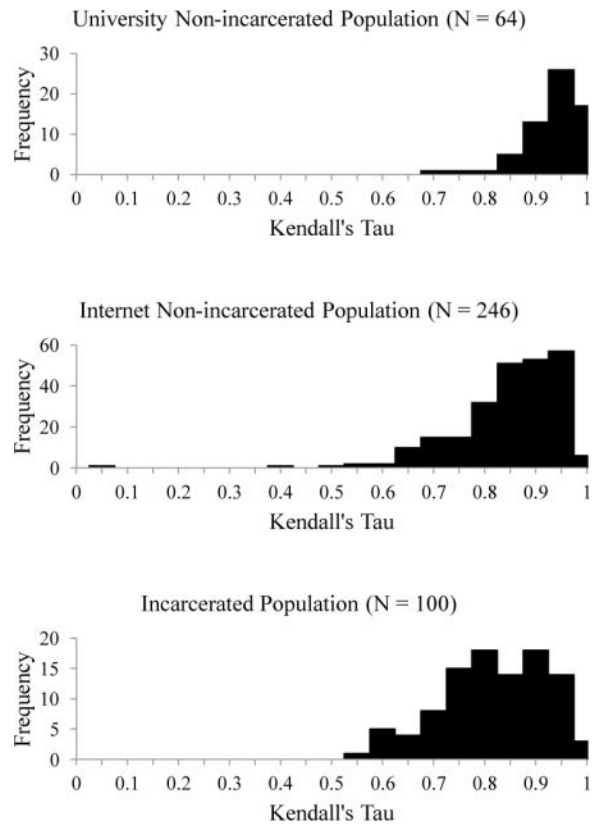
The data from this study help begin to unravel the enigma of psychopaths' simultaneous normal reports of moral judgment and immoral behavior. First, in a population of individuals scoring above the recommended clinical diagnostic threshold for psychopathy, there is now evidence supporting the powerful intuition that psychopathic traits influence moral judgment and, equally important, this evidence suggests plausible explanations for why these influences have been so difficult to uncover in the past. However, in other ways, these data underscore the enigma of apparently intact moral judgment in psychopathy. Most importantly, this study adds to the mounting evidence that PCL-R total scores do not correlate linearly with moral judgment. Further, even the non-linear PCL-R total results suggest that many variables other than psychopathy affect how people make moral judgments or behave. Supporting this idea, it is important to acknowledge that PCL-R factor scores only accounted for a 13.1% of the variance in DPT performance (when age is placed in the first block). This reinforces the notion that impairments in moral judgment are not likely to be the strongest explanation for psychopaths' antisocial behavior. Nonetheless, the results of this study demonstrate that features of psychopathy do influence moral judgment, which provides evidence to bridge our intuitive notions of the relationship between moral judgment and moral behavior with the dramatic clinical features of psychopathy.

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## Appendix A

Histograms illustrating the distribution of Kendall's tau values from the present incarcerated population and previously published non-incarcerated populations



## Appendix B

Regression analyses with PCL-R total and factor scores as predictors of DPT performance (as measured by raw, non- transformed Kendall's tau values)

	B	SE	$\beta$	R <sup>2</sup>
<b>Psychopathy Total Scores</b>				
<i>Step 1</i>				.05*
Age	<.01	<.01	.23*	
<i>Step 2</i>				<.01
PCL-R Total	<.01	<.01	.03	
<b>Psychopathy Factor Scores (Entered Independently)</b>				
<i>Step 1</i>				.05*
Age	<.01	<.01	.24*	
<i>Step 2</i>				.02
PCL-R Interpersonal/Affective Factor	<.01	<.01	.15	
<i>Step 1</i>				.05*
Age	<.01	<.01	.19 <sup>†</sup>	
<i>Step 2</i>				.01



	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>R<sup>2</sup></b>
PCL-R Social Deviance Factor	>-.01	<.01	-.12	
<b>Psychopathy Factor Scores (Entered Simultaneously)</b>				
<i>Step 1</i>				.05 <sup>*</sup>
Age	<.01	<.01	.16	
<i>Step 2</i>				.09 <sup>**</sup>
PCL-R Interpersonal/Affective Factor	<.01	<.01	.35 <sup>**</sup>	
PCL-R Social Deviance Factor	>-.01	<.01	-.34 <sup>**</sup>	
<b>Psychopathy Factor Interaction</b>				
<i>Step 1</i>				.05 <sup>*</sup>
Age	<.01	<.01	.20 <sup>*</sup>	
<i>Step 2</i>				.09 <sup>**</sup>
PCL-R Interpersonal/Affective Factor	.01	<.01	.34 <sup>**</sup>	
PCL-R Social Deviance Factor	>-.01	<.01	-.26 <sup>*</sup>	
<i>Step 3</i>				.05 <sup>*</sup>
Interpersonal/Affective $\times$ Social Deviance	<.01	<.01	.23 <sup>*</sup>	
<b>Psychopathy Total Scores with Quadratic Term</b>				
<i>Step 1</i>				.05 <sup>*</sup>
Age	<.01	<.01	.23 <sup>*</sup>	
<i>Step 2</i>				.06 <sup>*</sup>
PCL-R Total	<.01	<.01	.09	
PCL-R Total <sup>2</sup> (quadratic)	<.01	<.01	.25 <sup>**</sup>	
<b>Psychopathy Factor Scores with Quadratic Term</b>				
<i>Step 1</i>				.05 <sup>*</sup>
Age	<.01	<.01	.20 <sup>*</sup>	
<i>Step 2</i>				.09 <sup>**</sup>
PCL-R Interpersonal/Affective Factor	<.01	<.01	.13	
PCL-R Interpersonal/Affective <sup>2</sup> ((quadratic))	<.01	<.01	.26 <sup>**</sup>	
<i>Step 1</i>				.05 <sup>*</sup>
Age	<.01	<.01	.20 <sup>§</sup>	
<i>Step 2</i>				.02
PCL-R Social Deviance Factor	>-.01	<.01	-.08	
PCL-R Social Deviance <sup>2</sup> (quadratic)	<.01	<.01	.09	

Note.

\*\*  $p$  .01;

\*  $p$  .05;

§ =  $p$  = .06;

†  $p$  .07

## Appendix C

Regression analyses with IQ, education level, age, and PCL-R total and factor scores as predictors of DPT performance (as measured by logit transformed Kendall's tau)

	B	SE	$\beta$	R <sup>2</sup>
<b>Psychopathy Total Scores</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.47**	
Education Level	.03	.03	.11	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.17 <sup>§§</sup>	
<i>Step 3</i>				<.01
PCL-R Total	<.01	<.01	.01	
<b>Psychopathy Factor Scores (Entered Independently)</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.47**	
Education Level	.02	.03	.08	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.19*	
<i>Step 3</i>				.01
PCL-R Interpersonal/Affective Factor	.01	.01	.11	
<i>Step 1</i>				.31**
IQ	.01	<.01	.47**	
Education Level	.03	.03	.11	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.13	
<i>Step 3</i>				.01
PCL-R Social Deviance Factor	-.01	.01	-.11	
<b>Psychopathy Factor Scores (Entered Simultaneously)</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.46**	
Education Level	.02	.03	.07	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.13	
<i>Step 3</i>				.05*
PCL-R Interpersonal/Affective Factor	.02	.01	.27*	
PCL-R Social Deviance Factor	-.02	.01	-.27*	
<b>Psychopathy Factor Interaction</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.49**	

	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>R<sup>2</sup></b>
Education Level	-.01	.03	-.03	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.21*	
<i>Step 3</i>				.05*
PCL-R Interpersonal/Affective Factor	.03	.01	.28**	
PCL-R Social Deviance Factor	-.01	.01	-.17	
<i>Step 4</i>				.09**
Interpersonal/Affective $\times$ Social Deviance	.01	<.01	.32**	
<b>Psychopathy Total Scores with Quadratic Term</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.48**	
Education Level	.01	.03	.02	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.20*	
<i>Step 3</i>				.09**
PCL-R Total	<.01	<.01	.10	
PCL-R Total <sup>2</sup> (quadratic)	<.01	<.01	.32**	
<b>Psychopathy Factor Scores with Quadratic Term</b>				
<i>Step 1</i>				.31**
IQ	.01	<.01	.44**	
Education Level	>-.01	.03	-.01	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.17 <sup>§</sup>	
<i>Step 3</i>				.07**
PCL-R Interpersonal/Affective Factor	.01	.01	.11	
PCL-R Interpersonal/Affective <sup>2</sup> (quadratic)	.01	<.01	.26**	
<i>Step 1</i>				.31**
IQ	.01	<.01	.47**	
Education Level	.03	.03	.10	
<i>Step 2</i>				.02 <sup>†</sup>
Age	.01	<.01	.15	
<i>Step 3</i>				.03
PCL-R Social Deviance Factor	>-.01	.01	-.03	
PCL-R Social Deviance <sup>2</sup> (quadratic)	<.01	<.01	.16	

Note.

\*\*  
p = .01;

\*  
p = .05;

§  
= p = .06;

†  
= p = .07;

§§  
= p = .08

## Appendix D

DPT scenarios (originally published in Robinson & Kurzban, 2007)

### S1 DEFENDING ATTACK

John is knocked down from behind by a man with a knife who moves to stab him. **As the man lunges for him, John stabs him with a piece of glass** he finds on the ground, which is the **only thing he can do** to save himself from being killed. The **man later dies of his injuries**.

### S2 COERCIVE THREAT TO CHILD

A man **grabs John's child and puts a sharp knife to her throat**. He tells John that he will kill the child if John does not steal **an expensive digital camera** from a nearby shop or he attempts to contact police. Because the man can see everything he does, **John does as he is told in order to save his child**. (What punishment for *John*?)

### S3 UMBRELLA MISTAKE

John takes **another person's umbrella** assuming it to be his own because it has the same unusual color pattern as his own, a fact that the police confirm.

### S4 WOLF HALLUCINATION

Another person slips a drug into John's food, which causes him to **hallucinate that he is being attacked by a wolf**. When John **strikes out in defense, he does not realize that he is in fact striking a person**, a fact confirmed by all of the psychiatrists appointed by the state, who confirm that John had no ability to prevent the hallucination.

### S5 WHOLE PIES FROM BUFFET

The owner has posted rules at his all-you-can-eat buffet that **expressly prohibit taking food away**; patrons can only take what they eat at the buffet. The owner has **set the price of the buffet accordingly**. John purchases dinner at the buffet, but when he leaves he **takes with him two whole pies** to give to a friend.

### S6 LOGO T-SHIRT FROM STORE

John notices in a small family-owned music store a T-shirt with the logo of his favorite band. While the store clerk is preoccupied with inventory, John **places the \$15 T-shirt in his coat and walks out**, with no intention of paying for it.

### S7 SHORT CHANGE CHEAT

John is a cab driver who picks up a high school student. Because the customer **seems confused about the money transaction**, John decides he can trick her and gives **her \$20 less change than he knows she is owed**.

## S8 CLOCK RADIO FROM CAR

As he is walking to a party in a friend's neighborhood, John sees a clock radio on the backseat of a car parked on the street. Later that night, on his return from the party, he **checks the car and finds it unlocked**, so he takes the **clock radio from the back seat**.

## S9 ELECTRIC DRILL FROM GARAGE

John does not have all the tools he needs for his workshop but knows of a family two streets over who sometimes leave unlocked the door to the **detached garage next to their house**. When he next sees his chance, he enters the **detached garage through the unlocked door** and takes a **mediumsize electric drill**, intending to keep it forever.

## S10 MICROWAVE FROM HOUSE

While a family is on vacation, John **jimmies the back door** to their house and **steps into their kitchen**. On the counter, he sees their **microwave, which he carries away**.

## S11 SMASHING TV

While a family is away for the day, John **breaks in** through a bedroom window and rummages through the house looking for valuables. He can only find an **18-inch television**, which angers him. When he gets it outside, he realizes that it is an older model than he wants, so he **smashes it onto the driveway**, breaking it into pieces.

## S12 SLAP & BRUISING AT RECORD STORE

A record store patron is wearing a cap that mocks John's favorite band. John follows him from the store, confronts him, then **slaps him in the face hard**, causing him to stumble. The man's face develops a **harsh black and yellow bruise that does not go away for some time**.

## S13 HEAD-BUTT AT STADIUM

While attending a football game, John becomes angry as he overhears an opposing fan's disparaging remarks about John's team. At the end of the game, John sticks his face in the man's face and **headbutts him**, causing a **black-eye** and a **gash that requires two stitches** to close.

## S14 STITCHES AFTER SOCCER GAME

Angry after overhearing another parent's remarks during a soccer match in which John's son is playing, John approaches the man after the game, **grabs his coffee mug**, knocks him down, then **kicks him several times** while he is on the ground, **knocking him out for several minutes** and causing **cuts that require five stitches**.

### S15 NECKLACE SNATCH AT MALL

As a woman searches her purse for car keys in a mall parking lot, John runs up and **grabs her gold necklace** but it does not break. He **yanks the woman to the ground** by her necklace, **where she gashes her head, requiring stitches**. John runs off without the necklace.

### S16 ATTEMPTED ROBBERY AT GAS STATION

John demands money from a man buying gas at a gas station. When the man refuses, John punches the man several times in the face, breaking his jaw and causing several cuts that each require stitches. He then runs off without getting any money.

### S17 CLUBBING DURING ROBBERY

To force a man to give up his wallet during a **robbery attempt**, John **beats the man with a club until he relinquishes his wallet, which contains \$350**. The man must be **hospitalized for two days**.

### S18 MAULING BY PIT BULLS

**Two vicious pit bulls that John keeps for illegal dog fighting** have just learned to escape and have attacked a person who came to John's house. The police tell John he must destroy the dogs, **which he agrees to do but does not intend to do**. The next day, the dogs **escape again and maul to death** a man delivering a package.

### S19 INFANT DEATH IN CAR

John is driving to see a man about buying an illegal gun but must **babysit his friend's toddler son**. It occurs to him that **it is too hot to safely leave the toddler** in the car but he decides to leave him anyway and to return soon. He gets talking with the seller, however, and **forgets about the toddler, who passes out and dies**.

### S20 STABBING

John is offended by a woman's mocking remark and **decides to hurt her badly**. At work the next day, when no one else is around, he **picks up a letter opener from his desk and stabs her**. She later **dies from the wound**.

### S21 AMBUSH SHOOTING

John knows the address of a woman who has highly offended him. As he had planned the day before, he **waits there for the woman** to return from work and, when she appears, John **shoots her to death**.



## S22 ABDUCTION SHOOTING

A woman at work reveals John's misdeeds to his employer, thereby getting him fired. John devises a plan to get even with her. The next week he **forces the woman into his car** at knife point and **drives her to a secluded area where he shoots her to death**.

## S23 BURNING MOTHER FOR INHERITANCE

John works out a plan to kill his 60-year-old invalid mother for the inheritance. He drags to her bed, puts her in, and **lights her oxygen mask with a cigarette**, hoping to make it look like an accident. The elderly woman **screams as her clothes catch fire and she burns to death**. John **just watches** her burn.

## S24 RANSOM, RAPE, TORTURE & STRANGLING

John kidnaps an 8 year-old girl for ransom, rapes her, then records the child's screams as he burns her with a cigarette lighter, sending the recording to her parents to induce them to pay his ransom demand. Even though they pay as directed, John strangles the child to death to avoid leaving a witness.

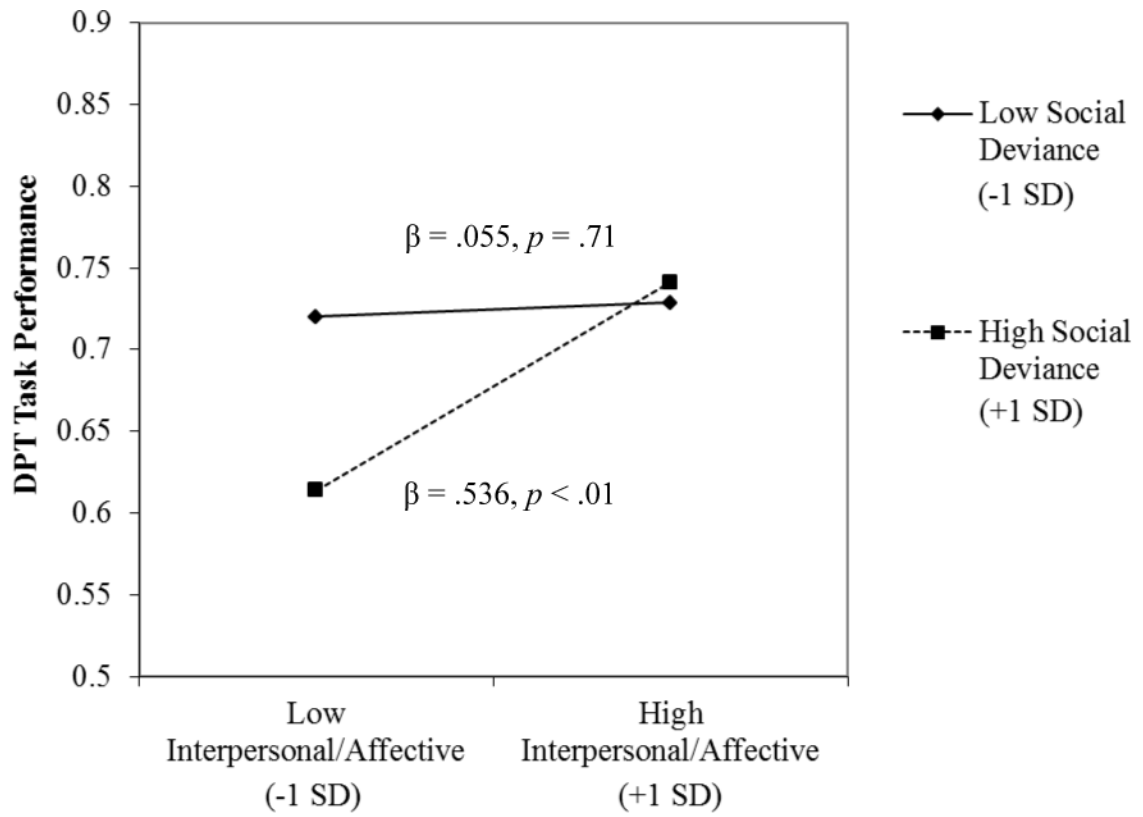
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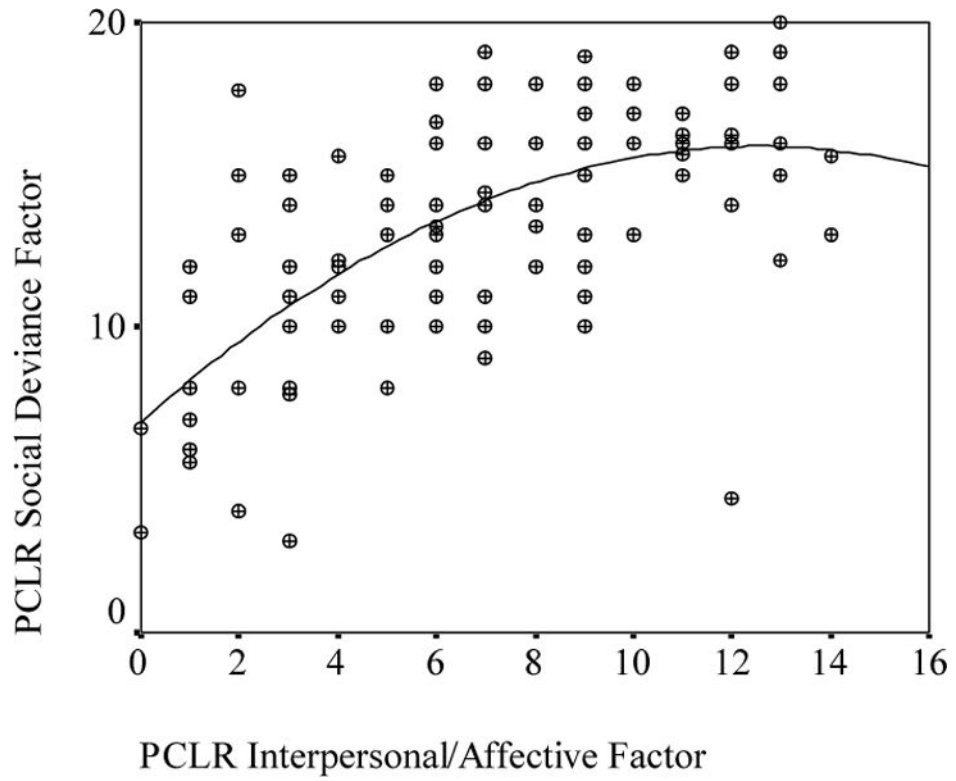
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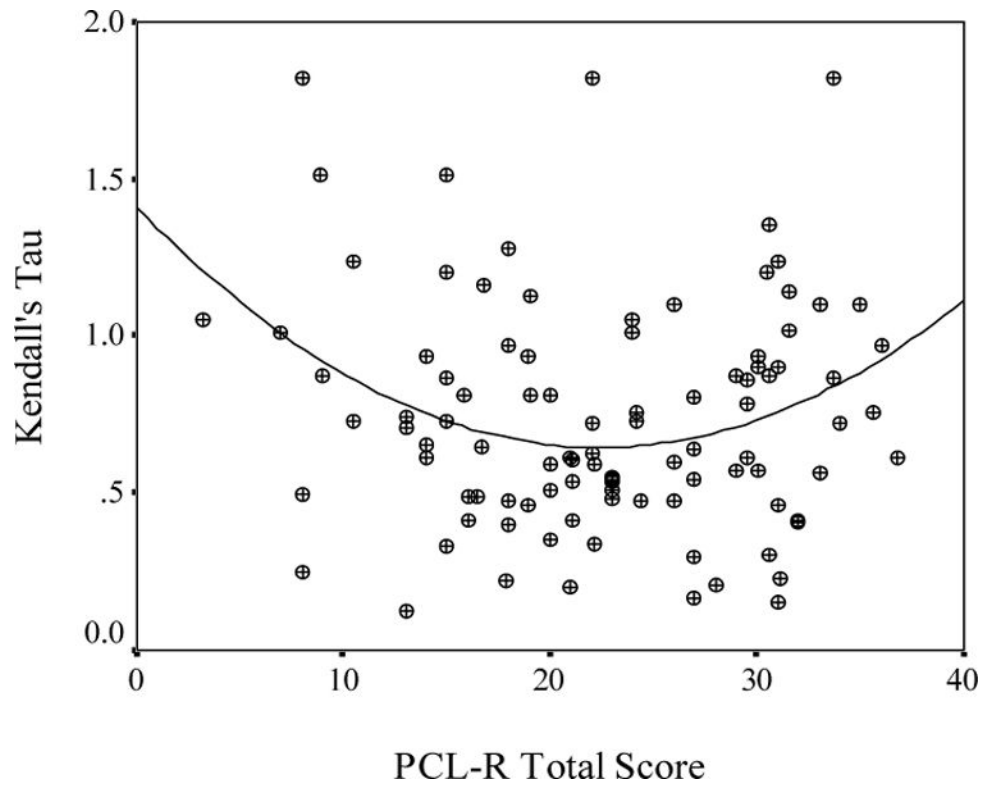
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**Figure 1.** Interaction between DPT performance (as measured by logit transformed Kendall's tau) and PCL-R Interpersonal/Affective (Factor 1) scores at high and low levels of PCL-R Social Deviance (Factor 2) scores.

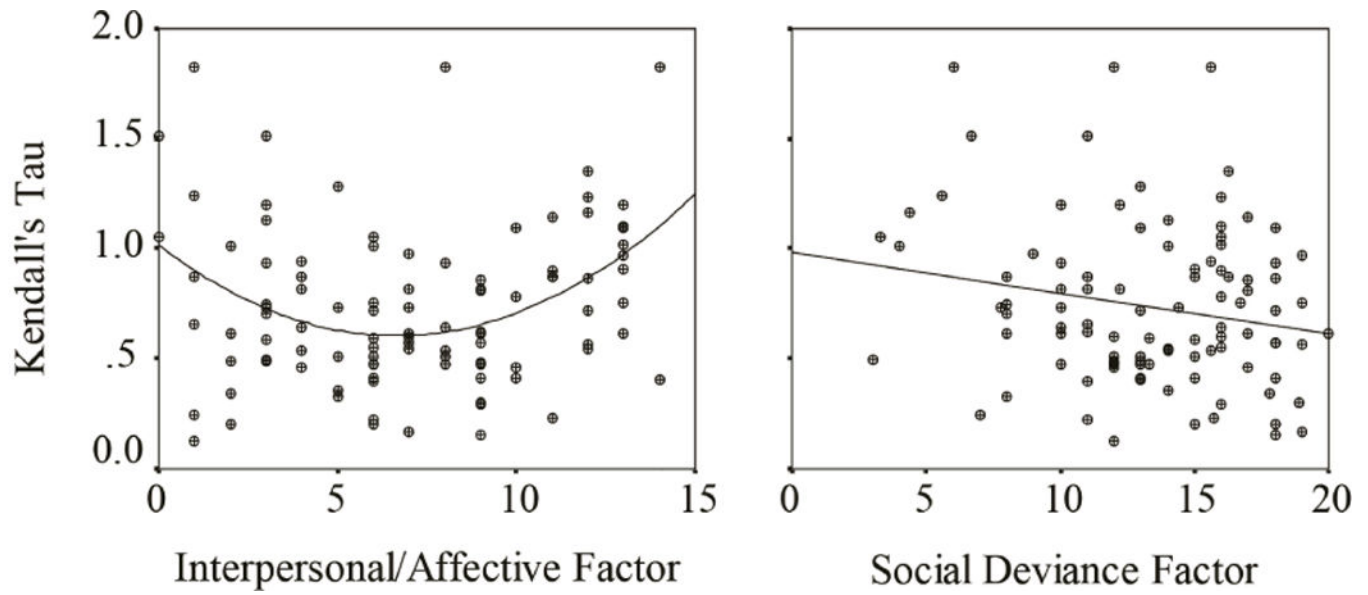


**Figure 2.** Scatter plot of PCL-R Interpersonal/Affective (Factor 1) scores relative to PCL-R Social Deviance (Factor 2) scores.



**Figure 3.** Scatter plot of PCL-R total scores relative to DPT performance (as measured by logit transformed Kendall's tau).





**Figure 4.** Scatter plots of PCL-R factor scores (Interpersonal/Affective and Social Deviance) relative to DPT performance (as measured by logit transformed Kendall's tau).

Table 1

Descriptive statistics and correlations between study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	M(SD)
1. PCL-R Total																	22.6 (7.8)
PCL-R Factors																	
2. Interpersonal/Affective	<b>.88</b>																7.0 (3.8)
3. Social Deviance	<b>.87</b>	<b>.60</b>															13.3 (3.9)
PCL-R Facets																	
4. Interpersonal	<b>.74</b>	<b>.84</b>	<b>.47</b>														2.9 (2.2)
5. Affective	<b>.76</b>	<b>.87</b>	<b>.56</b>	<b>.46</b>													4.1 (2.3)
6. Lifestyle	<b>.76</b>	<b>.55</b>	<b>.84</b>	<b>.49</b>	<b>.46</b>												6.1 (2.1)
7. Antisocial	<b>.73</b>	<b>.49</b>	<b>.84</b>	<b>.31</b>	<b>.49</b>	<b>.42</b>											7.2 (2.4)
Control Variables																	
8. Age	<b>-.22</b>	<b>-.13</b>	<b>-.30</b>	<b>-.03</b>	<b>-.17</b>	<b>-.33</b>	<b>-.19</b> <sup>†</sup>										33.7 (9.4)
9. IQ	.01	.06	-.07	.14	-.02	-.09	-.03	<b>.18</b> <sup>†</sup>									98.3 (14.4)
10. Education Level	.09	.13	-.04	<b>.29</b>	-.02	.01	-.09	<b>.27</b>	<b>.46</b>								2.3 (1.1)
11. Income Level	.05	.08	-.02	.15	-.04	-.09	.05	.03	.12	<b>.22</b>							2.6 (1.6)
12. Years Incarcerated	.07	.06	.04	.18	-.06	-.02	.06	<b>.39</b>	<b>.46</b>	<b>.26</b>	-.02						4.8 (6.2)
13. No. Times Incarcerated	.08	.02	.11	.01	.05	.06	.12	<b>.43</b>	<b>-.25</b>	-.07	-.10	-.18					2.1 (1.7)
14. Prison Security Level	.16	.14	<b>.18</b> <sup>†</sup>	.05	<b>.19</b> <sup>†</sup>	.02	<b>.29</b>	-.12	<b>.19</b>	.10	-.01	<b>.29</b>	<b>.19</b> <sup>†</sup>				2.5 (0.7)
15. BIDR IM Scale	<b>-.20</b> <sup>†</sup>	-.10	<b>-.28</b>	-.08	-.08	<b>-.21</b>	<b>-.27</b>	.14	.10	.12	.13	.09	-.10	-.03			63.9 (17.1)
16. STAI Trait Anxiety	-.06	-.11	.01	-.07	-.12	.09	-.06	.18	.10	.19	-.11	-.05	.09	-.07	.08		37.0 (11.3)
Dependent Variable																	
17. Kendall's tau	-.05	.09	<b>-.20</b>	<b>.21</b>	-.04	-.14	<b>-.22</b>	<b>.30</b>	<b>.55</b>	<b>.37</b>	.13	<b>.35</b>	-.17	.01	.11	-.06	0.74 (0.36)

Note: n = 100. Correlations in bold significant at p<.05;

<sup>†</sup> = p .08. Kendall's tau was inverse logit transformed before calculating the reported correlations. The mean and standard deviation of Kendall's tau in the table reflects the logit transformed variable; as reported in the text, the mean and standard deviation of the non-transformed variable was 0.81 (SD=.11), with a range from 0.47-0.99. PCL-R=Psychopathy Checklist Revised; BIDR IM = Balanced Inventory of Desired Responding Impression Management; STAI=Spielberger State Trait Anxiety Scale.

**Table 2**

Comparison of Punishment Ratings Provided by Present Incarcerated Population with those Previously Provided by Non-Incarcerated Populations

Scenario	University non-incarcerated population (N = 64, Robinson and Kurzban, 2007)			Internet non-incarcerated population (N = 246, Robinson and Kurzban, 2007)			Present incarcerated population (N=100)		
	mean rank	modal ranking	% Assigning "No Punishment"	mean rank	modal ranking	% Assigning "No Punishment"	mean rank	modal ranking	% Assigning "No Punishment"
S1 (defending)	0.6	0	91	1.2	0	82	2.03	0	78
S2 (coercion)	0.3	0	92	2.3	0	75	1.03	0	82
S3 (umbrella)	1.4	0	92	0.3	0	87	0.53	0	87
S4 (hallucination)	0.3	0	92	1.7	0	71	1.44	0	79
S5 (pies)	3.9	5	27	5.4	5	8	3.51	0	41
S6 (T-shirt)	6.3	6*	8	7.4	7*	1	6.31	7*	18*
S7 (short change)	6.8	7*	9	7.1	6*	6	6.98	6*	14*
S8 (radio)	7.6	8	5	8.4	8	0	7.28	8	12*
S9 (drill)	8.8	9	3	9.2	9	0	9.48	10	7
S10 (microwave)	9.9	10	2	10.2	10	0	9.48	10	6
S11 (TV)	10.4	11	2	10.6	11	0	9.63	11	8
S12 (slap)	12.1	12	0	11.6	12	0	10.52	12	12*
S13 (head-butt)	1.3	13	2	12.2	13	2	10.96	13	14*
S14 (stitches)	14.1	14	0	13.7	14	0	11.73	14	13*
S15 (necklace)	14.8	15	0	13.6	15	0	14.74	16	2
S16 (robbery)	15.6	16	0	15.3	16	0	14.46	16	6
S17 (clubbing)	16.8	17	0	16.7	17	1	15.94	17	1
S18 (pit bulls)	18.2	18	0	17.8	18	0	16.53	18	4
S19 (infant)	18.6	19	3	19	19	1	21.36*	22*	0
S20 (stabbing)	19.7	20	0	20.1	20	0	19.87	19	0
S21 (ambush)	20.9	21	0	20.9	21	0	20.47	21	0
S22 (abduction)	21.7	22	0	21.4	22	0	20.6	21	1
S23 (burning)	23	23	0	22.2	23	0	22.5	23	0
S24 (ransom)	23.9	24	0	23.5	24	0	23.64	24	0

Note: Bold entries marked with an asterisk indicate notable differences.

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**Table 3**

Regression analyses with PCL-R total and factor scores as predictors of DPT performance (as measured by logit transformed Kendall's tau)

	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>R<sup>2</sup></b>
<b>Psychopathy Total Scores</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.31**	
<i>Step 2</i>				<.01
PCL-R Total	<.01	.01	.02	
<b>Psychopathy Factor Scores (Entered Independently)</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.32**	
<i>Step 2</i>				.02
PCL-R Interpersonal/Affective Factor	.01	.01	.13	
<i>Step 1</i>				.09**
Age	.01	<.01	.27**	
<i>Step 2</i>				.01
PCL-R Social Deviance Factor	-.01	.01	-.12	
<b>Psychopathy Factor Scores (Entered Simultaneously)</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.25*	
<i>Step 2</i>				.07*
PCL-R Interpersonal/Affective Factor	.03	.01	.30**	
PCL-R Social Deviance Factor	-.03	.01	-.30*	
<b>Psychopathy Factor Interaction</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.28**	
<i>Step 2</i>				.07*
PCL-R Interpersonal/Affective Factor	.03	.01	.30**	
PCL-R Social Deviance Factor	-.02	.01	-.22 <sup>†</sup>	
<i>Step 3</i>				.06**
Interpersonal/Affective $\times$ Social Deviance	<.01	<.01	.26**	
<b>Psychopathy Total Scores with Quadratic Term</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.31**	
<i>Step 2</i>				.08*

	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>R<sup>2</sup></b>
PCL-R Total	<.01	.01	.08	
PCL-R Total <sup>2</sup> (quadratic)	<.01	<.01	.29**	
<b>Psychopathy Factor Scores with Quadratic Term</b>				
<i>Step 1</i>				.09**
Age	.01	<.01	.27**	
<i>Step 2</i>				.11**
PCL-R Interpersonal/Affective Factor	.01	.01	.10	
PCL-R Interpersonal/Affective <sup>2</sup> (quadratic)	.01	<.01	.32**	
<i>Step 1</i>				.09**
Age	.01	<.01	.28**	
<i>Step 2</i>				.02
PCL-R Social Deviance Factor	-.01	.01	-.06	
PCL-R Social Deviance <sup>2</sup> (quadratic)	<.01	<.01	.11	

*Note.*

\*\*  
p .01;

\*  
p .05;

†  
= p = .076