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An examination of psychopathy's relationship with two indices of moral judgment

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ABSTRACT

Although psychopathic individuals are often considered immoral in their thinking, research support for this view has been inconsistent. We examined psychopathy's relation to two indices of moral reasoning and decision-making, namely (1) Kohlbergian moral dilemmas and (2) sacrificial moral dilemmas in an undergraduate sample ($N = 191$). We hypothesized that psychopathic traits would not be strongly associated with moral reasoning on Kohlbergian moral dilemmas, but that they would be associated with a greater willingness to engage in utilitarian moral judgment by virtue of psychopathic individuals' affective deficits and emotional detachment. We expected these relations to be most pronounced for the psychopathy subdimensions Fearless Dominance and Coldheartedness. Counter to prediction, we found only a modest negative association between psychopathic traits and Kohlbergian moral reasoning. Psychopathic traits did not relate consistently to utilitarian decision-making. These results suggest that, despite the common perception that psychopathic individuals are deficient in moral understanding, psychopathic traits may be largely unassociated with profound moral reasoning deficits.

1. Introduction

Historically, psychopathic individuals have been characterized as "moral monsters" ((Ellis, 1890), p. 17) and as lacking moral knowledge (Hare, 1991; Hare, 2003). This widespread belief coheres broadly with meta-analytic evidence tying psychopathic traits to antisocial behavior (Leistico, Salekin, DeCoster, & Rogers, 2008). One proposed explanation for psychopathic individuals' engagement in antisocial behavior is that they cannot distinguish right from wrong. Nevertheless, recent meta-analytic evidence (Marshall, Watts, & Lilienfeld, 2016) challenges this popular view (Furnham, Daoud, & Swami, 2009) and points to an unexpectedly meager relationship between psychopathy and aberrant moral judgment. Still, these counterintuitive findings leave open the possibility that psychopathic individuals display moral deficits that extant research has failed to detect. To address this issue, we examined psychopathic traits' relation to moral judgment while adopting several methodological enhancements to provide additional insight into this relationship.

1.1. Moral judgment

Broadly, psychologists have used two measures to examine psychopathy's relations with moral judgment: (a) Kohlbergian moral reasoning measures and (b) sacrificial moral dilemmas. Regarding the former, Kohlberg, 1963 proposed an influential theory of moral development encompassing three stages of moral reasoning: (1) pre-conventional, (2) conventional, and (3) post-conventional. According to Kohlberg, the *reasons* one draws upon to justify one's decision in a moral dilemma, and not the decision itself, determine one's moral reasoning stage. For example, the most famous of these items is the "Heinz and the drug" dilemma, in which participants must decide whether a man should steal a very expensive medicine to help his wife stave off cancer and rank the reasons why the husband should or should not steal the drug. Individuals in the pre-conventional moral reasoning stage emphasize self-preservation (e.g., avoiding going to jail), those in the conventional stage emphasize others' intentions (e.g., save a dying wife), and those in the post-conventional stage – the highest moral stage – emphasize universal, abstract moral principles (e.g., saving human lives).

Some researchers have hypothesized that psychopathic individuals possess less advanced moral reasoning capacities than do other individuals (e.g., (Campbell et al., 2009)) because they act with egocentric motivations and consequently do not progress through the full range of Kohlbergian moral stages. Support for this contention has been mixed.

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Campbell et al., 2009 found that psychopathic individuals prioritize self-interest and tend to not attend to post-conventional moral concerns, whereas Pennuto, 2007 found that psychopathy was unrelated to moral reasoning. Adding to the confusion, still another study (Link, Scherer, & Byrne, 1977) revealed that psychopathic traits were related to *more* advanced moral reasoning.

Beyond measures of Kohlbergian moral reasoning, researchers have also used sacrificial moral dilemmas to examine moral judgment (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). For instance, in the canonical trolley dilemma, a train is headed to kill five people and the participant may choose to flip a switch to divert the train to kill only a single person. The decision to flip the switch is in line with *utilitarian* moral philosophy, which emphasizes pragmatic consequences (e.g., saving the most lives), whereas the decision to not flip the switch is in line with a *deontological* moral philosophy, one that entails prioritizing duties or obligations to individuals regardless of consequences.

Because utilitarian moral judgment has been linked to aberrant affective processing (Koenigs et al., 2007) and lack of anxiety (Perkins et al., 2013), researchers have posited that psychopathic individuals may be more likely to make utilitarian decisions owing to their lack of social emotions, such as guilt or empathy (Blair, 2007). Bartels & Pizarro, 2011 found that highly psychopathic individuals endorse utilitarian moral decisions more frequently (i.e., pushing an individual onto train tracks to save five people) than do their less psychopathic counterparts. Importantly, they postulated that these results do not necessarily suggest that psychopathic individuals are more advanced utilitarian decision-makers. Instead, psychopathic individuals may express utilitarian choices by virtue of other (e.g., egoistic) motivations. Regardless, other work has not found support for a significant relationship between psychopathy and moral decision-making, leading some to argue that psychopathic individuals know right from wrong but do not care (Cima, Tonnaer, & Hauser, 2010). These findings raise the possibility that psychopathic individuals possess an intact moral sense, but are insufficiently motivated to act in line with such knowledge.

These mixed findings call for an investigation of the strength of the relationship between psychopathy and moral deficits. In a meta-analysis of 23 studies examining the relationship between psychopathy and moral judgment, Marshall et al., 2016 found a small yet statistically significant relationship between psychopathy and Kohlbergian moral reasoning measures ($r_w = 0.10$) and sacrificial moral dilemmas ($r_w = 0.16$).[1] One plausible account of these surprisingly small relationships emerges from differences in how researchers conceptualize and measure psychopathy.

For instance, although psychopathy has historically been considered a unitary construct, growing data suggest that it is a configuration of largely distinct personality traits and behaviors (Lilienfeld, Watts, Francis Smith, Berg, & Latzman, 2015) that are continuously distributed in the population (e.g., (Edens, Marcus, Lilienfeld, & Poythress, 2006)). As such, researchers have increasingly studied psychopathy in non-clinical and non-criminal samples, including undergraduates. Still, few studies have examined the relationship between psychopathic traits and moral judgment dimensionally.

In line with the configural conceptualization of psychopathy, factor analyses of two commonly used self-report psychopathy measures – the Psychopathic Personality Inventory-Revised (PPI-R; (Lilienfeld & Widows, 2005)) and the Levenson Self-report Psychopathy Scale (LSRP; (Levenson, Kiehl, & Fitzpatrick, 1995)) – have found that two, if not three (Patrick, Fowles, & Krueger, 2009), subdimensions constitute psychopathy. Importantly, psychopathy subdimensions of the PPI-R and the LSRP often differentially relate to important constructs, such as internalizing and externalizing symptoms (Patrick, Hicks, Krueger, & Lang, 2005). For example, PPI-R Fearless Dominance (PPI-R FD), a higher-order dimension partially underpinning psychopathy that measures stress immunity and physical and social boldness, tends to correlate negatively with internalizing (e.g., fear, distress) and externalizing (e.g., aggression) behaviors. In contrast, PPI-R Self-centered Impulsivity (PPI-R SCI) and LSRP Factor 2, both of which capture the impulsive and reckless psychopathy features associated with antisocial behavior, are positively associated with these forms of psychopathology (Miller & Lynam, 2012).

This research leaves open the possibility that psychopathic traits (i.e., affective deficits) may differentially relate to moral judgment tasks. Meta-analytic evidence (Marshall et al., 2016) offered little evidence of this possibility on either Kohlbergian moral reasoning or sacrificial moral dilemmas. Nonetheless, the power to detect differences was low because few studies examined the relationship between psychopathy subdimensions and moral judgment. In addition, when researchers have adopted dimensional approaches toward psychopathy, most have only examined the relationship between a singular subdimension of psychopathy—namely, exclusively LSRP Factor 1—and moral judgment, overlooking the possibility that other psychopathy features may relate to moral judgment.

1.2. Current study

With these considerations in mind, the primary objective of the current study was to examine whether and how subdimensions of psychopathy relate differentially to alternative measures of moral judgment, which should provide a more fine-grained picture of psychopathy's relation to moral judgment. To do so, we adopted four methodological enhancements compared with previous studies.

First, given the multidimensional nature of psychopathy (Edens et al., 2006), we examined the relations between psychopathy subdimensions and two measures of moral judgment: Kohlbergian measures of moral reasoning and sacrificial moral dilemmas. Given the decidedly mixed literature, we based our hypotheses largely on recent meta-analytic evidence (Marshall et al., 2016). In line with this meta-analysis, we predicted that psychopathic traits would not be strongly associated with scores on Kohlbergian measures of moral reasoning. We also predicted that, consistent with research connecting utilitarian decision-making and affective deficits (Koenigs et al., 2007), psychopathy subdimensions characterized by a pronounced absence of anxiety and empathy (i.e., PPI-R FD and PPI-R Coldheartedness) would predict utilitarian decision-making, albeit only modestly. More provisionally, we predicted that the disinhibitory psychopathy features (i.e., PPI-R SCI, LSRP F1, and LSRP F2) would correlate negatively with deontological decision-making, given that they are related to emotional distress (e.g., (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005)).

Second, we adopted measures of two competing conceptualizations of psychopathy, operationalized by the PPI-R and LSRP. The overwhelming majority of research on this topic has relied exclusively on the Psychopathy Checklist-Revised (Hare, 1991; Hare, 2003) and its variants. This approach raises two concerns. First, exclusive reliance on a single psychopathy indicator introduces mono-operation bias and thus raises questions regarding the generalizability of any given finding to other psychopathy measures. Second, because the PCL-R contains several items that directly assess immoral (i.e., antisocial) behaviors (e.g., juvenile delinquency, criminal versatility), studies using this measure may inflate the extent to which psychopathy is characterized by moral deficits. The inclusion of an alternative measure of psychopathy, one that places less focus on overt antisocial behaviors (e.g., the PPI-R), may help to address this possibility.

Third, because psychopathy measures diverge in their coverage of adaptive functioning, we included both the PPI-R and the LSRP, the former of which focuses more heavily on potentially adaptive psychopathy features, to ensure broad coverage of differing conceptions of psychopathy. Fourth, we examined the relationship between psychopathic

[1] The data presented here was included in this meta-analysis (Marshall et al., 2016), although sensitivity analyses omitting these data did not produce any difference in the meta-analytic effects (analyses available from first author upon request).

subdimensions and moral judgment while controlling for verbal intelligence. We did so because lower levels of verbal intelligence among forensic samples (Sanders, Lubinski, & Benbow, 1995) may spuriously inflate the relationship between psychopathy and morality judgment measures, as has been posited by Lykken, 1991.

2. Method

2.1. Participants

Participants ($N = 191$) were undergraduates at a private university in the southeast United States enrolled in two introductory psychology courses. The sample largely comprised females (71%) of Caucasian (40%) or Asian (40%) descent with a mean age of 19 ($SD = 1.04$). Participants were mostly college freshmen (58%) and sophomores (26%). Because undergraduate samples are thought to exhibit less pronounced levels of psychopathic traits (e.g., (Borg & Sinnott-Armstrong, 2013)), we compared our sample's psychopathy scores (and their variabilities) to those of other samples—an unpublished community sample and two offender samples[2]—and corrected for restriction of range in accord with our findings (see "Corrections for restriction of range" for a discussion of these findings and Supplemental Table 1 for these samples' demographic information).

2.2. Measures

2.2.1. Psychopathic Personality Inventory-Revised (PPI-R; (Lilienfeld & Widows, 2005))

The PPI-R is a 154-item self-report inventory intended to assess core personality features associated with psychopathy; it provides little coverage of overt antisocial or criminal behaviors. The PPI-R yields a total score and scores on eight subscales, seven of which coalesce into the higher-order subdimensions of FD ($\alpha = 0.90$) and SCI ($\alpha = 0.91$; (Benning et al., 2005), but see (Neumann, Malterer, & Newman, 2008), for an alternative factor structure). As is common in the literature, we presented data from FD, SCI, and Coldheartedness (C; $\alpha = 0.89$), but we present the lower-order subscales' relation to moral judgment in the Supplemental materials.

2.2.2. Levenson Self-Report Psychopathy Scale (LSRP; (Levenson et al., 1995))

The LSRP yields scores on Factor 1 ($\alpha = 0.80$) and Factor 2 ($\alpha = 0.59$) psychopathy traits. Factor 1 (F1) measures selfish, uncaring, and manipulative postures towards others, whereas Factor 2 (F2) measures impulsivity and self-defeating lifestyle behaviors.

2.2.3. Defining Issues Test Version 2 (DIT-2; (Rest & Narvaez, 1998))

Based on Kohlberg's work, the DIT-2 asks participants to rank the reasons that influence their moral decisions across 5 moral dilemmas. The DIT-2 yields (a) a *post-conventional (P) score*, which reflects an individual's tendency to engage in post-conventional thinking; (b) a *Personal Interest score*, which measures the proportion of responses that prioritize direct advantages to the actor; and (c) an *N2 score*, a newer index of post-conventional reasoning. We used the N2 score, which takes into account participants' preference for both higher-order moral reasons in addition to their *rejection* of personal interest related concerns, and Personal Interest scores in the primary analyses.[3]

2.2.4. Sacrificial moral dilemmas

We administered 24 trolley-like moral dilemmas used by Harrison et al. (Harrison et al., 2012), which were adapted from Greene et al., 2001 moral vignettes. Each dilemma described a morally challenging scenario and asked participants whether they would perform an action to save a greater number of people (i.e., the utilitarian response) or refrain from an action so as not to harm an individual (i.e., the deontological response). Some research suggests that the degree of physical force necessary in dilemmas influences participants' moral judgments (Greene et al., 2009). For instance, some of the vignettes described scenarios that produced physical harm (i.e., pushing a man off a bridge to stop a trolley), whereas others did not (i.e., pulling a level to re-direct a trolley). Consistent with the existing literature, we distinguished *personal* dilemmas, vignettes that entail physical contact, from *impersonal* moral dilemmas, vignettes that do not. Only 17 of the dilemmas were directly analogous to (Greene et al.'s, 2001) moral dilemmas that distinguished "personal" from "impersonal" dilemmas, so the remaining seven moral vignettes were excluded because they did not cleanly fall into one of the two aforementioned categories. Of these 17 moral dilemmas ($\alpha = 0.54$), ten ($\alpha = 0.43$) were deemed to be personal and 4 ($\alpha = 0.34$) were deemed to be impersonal. Responses to the dilemmas were coded such that higher responses represented utilitarian decisions.

2.2.5. Shipley-Hartford Institute of Living Scale (Zachary, 1991)

Because lower levels of verbal intelligence among forensic samples (Sanders et al., 1995) may inflate the relationship between psychopathy and morality judgment measures, we administered The Shipley-Hartford Institute of Living Verbal Intelligence Scale. The scale consists of 40 items in which participants are required to choose a synonym of a given word. We administered this measure as a pure "power" test—that is, without time limits.

3. Results

Responses to personal and impersonal moral dilemmas were significantly and positively correlated, this association was medium in magnitude ($r = 0.34$, $p < 0.001$). Personal moral dilemmas were not significantly related to DIT-2 N2 scores ($r = -0.07$, $p = 0.37$), whereas impersonal moral dilemmas were significantly and negatively associated with DIT-2 N2 scores ($r = -0.17$, $p = 0.03$); this latter association reflects a small to medium inverse relationship between N2 scores and utilitarian responses to impersonal moral dilemmas. N2 scores significantly and negatively correlated with Personal Interest scores, $r = -0.64$, $p < 0.001$, but did not significantly relate to sacrificial moral dilemmas.

3.1. Relations between psychopathy and moral judgment indices

Table 1 presents the correlations between psychopathy measures and moral judgment variables (see Supplemental material for descriptive data). With regards to Kohlbergian moral reasoning, PPI-R FD and LSRP F1 were significantly negatively correlated with DIT-2 N2 scores ($r = -0.18$, $p = 0.02$; $r = -0.29$, $p < 0.001$, respectively); the effect sizes of these associations were small to medium in magnitude. In addition, LSRP F1 scores were significantly positively correlated with DIT-2 Personal Interest ($r = 0.24$, $p = 0.002$) scores. There were no other statistically significant relations between psychopathy subdimensions and DIT-2 variables.

By and large, psychopathic traits did not significantly relate to utilitarian judgment. The only significant correlation found was between LSRP F2 scores and responses on the personal dilemmas ($r = 0.15$, $p = 0.05$), suggesting that the antisocial and lifestyle features of psychopathy were modestly associated with *more* utilitarian decision-making in personal dilemmas. No other psychopathy subdimension or factor was significantly related to performance on personal or impersonal dilemmas.

[2] The first offender sample was taken from the PPI-R manual and the second was taken from Poythress et al., 2010.

[3] N2 scores and P scores were highly correlated ($r = 0.93$, $p < 0.001$). Nevertheless, the relationship between each facet of psychopathy and DIT-2 P scores were virtually identical to those for N2 scores.

Table 1
Correlations between psychopathy and moral decision-making variables.

	Trolley-like moral dilemmas				DIT-2 moral reasoning variables			
	Impersonal Dilemmas		Personal Dilemmas		N2 Score		Personal Interest Score	
	r	Partial *r* (*VI*)	*r*	Partial *r* (*VI*)	*r*	Partial *r* (*VI*)	*r*	Partial *r* (*VI*)
PPI-R								
FD	−0.11	(−0.06)	−0.09	(−0.01)	−0.18*	(−0.19*)	0.17	(0.15)
SCI	−0.14	(−0.21*)	−0.03	(−0.05)	−0.03	(−0.01)	−0.05	(0.06)
C	0.08	(−0.02)	0.01	(−0.04)	−0.08	(−0.07)	−0.05	(0.01)
LSRP								
Factor 1	−0.04	(−0.04)	0.05	(0.05)	−0.29**	(−0.26**)	0.22**	(0.19*)
Factor 2	0.03	(−0.05)	0.15*	(0.13)	0.03	(0.01)	−0.07	(−0.04)

Higher scores on the trolley-like moral dilemmas indicate utilitarian responses. Partial correlations in parentheses indicate correlations after controlling for verbal intelligence. VI = Verbal Intelligence; PPI-R = Psychopathic Personality Inventory-Revised; LSRP = Levenson Self-report Psychopathy Scale; FD = Fearless Dominance; SCI = Self-centered Impulsivity; C = Cold-heartedness; DIT-2 = Defining Issues Test, Second Edition 15.
* $p < 0.05$
** $p < 0.01$

Controlling statistically for verbal intelligence (see Table 1) yielded essentially no changes in the relations between psychopathy and moral judgment; we examined whether each of these partial correlations significantly differed from the zero-order correlation using a test of significance between dependent correlations (Lee & Preacher, 2013), and found no significant differences. Instead, PPI-R SCI became more strongly negatively associated with utilitarian decision-making on impersonal dilemmas ($r = -0.21$, $p = 0.01$).

3.2. Corrections for restriction of range

We took several steps to address the possibility that our use of a non-clinical sample attenuated the magnitudes of our findings. Specifically, because the range of psychopathy scores was potentially truncated, the current results may underestimate the relations between psychopathy and moral reasoning. To address this possibility, we first conducted *t*-tests and Levene's and Kolmogorov-Smirnov (K-S) tests to examine differences in the means and variances of psychopathy scores, respectively, between the current sample and two samples potentially characterized by (a) higher mean levels of psychopathic traits and (b) greater variability in psychopathic traits.

Our undergraduate sample's means and variances of psychopathy scores in some cases differed significantly from those of the normative (i.e., community, forensic) samples (see Supplemental Table 1 for a summary). Psychopathy scores were more variable in the community sample but the present sample was more variable than the forensic sample. Given differences in the variability of psychopathy scores between the present and community samples, we corrected for restriction of range to address the possibility that our analyses were underpowered to detect significant effects. To do so, we employed a widely-used formula for correcting correlation estimates (see (Hunter & Schmidt, 1990)).[4] Doing so resulted in no statistically significant changes in correlations, suggesting that the relations between psychopathy and moral decision-making (a) did not hinge on the variability of psychopathy scores and (b) were not moderated by sample type.

[4] With respect to psychopathy, we used the three aforementioned normative samples as proxies for the "unrestricted" samples. Using this formula, we computed the unrestricted correlation (i.e., the "true" *r* value) by imputing the unrestricted standard deviation for each PPI-R and LSRP subscale from the normative datasets, the restricted correlation (i.e., the *r* value between each psychopathy subscale and intelligence index), and the restricted standard deviation (i.e., the standard deviation for each psychopathy subscale). The final unrestricted correlation represents the correlation corrected for the restricted range in our sample.

4. Discussion

Overall, our findings provide minimal evidence that psychopathic individuals suffer from an overarching moral knowledge deficit, as the relations between psychopathy and moral judgment were largely non-significant and modest at best. Our findings offered preliminary evidence for preferential relations between Factor 2 traits and decreased post-conventional reasoning, but again these effects were modest in magnitude. Notably, we did not correct for multiple comparisons (i.e., a Bonferroni correction). Doing so would have yielded largely nonsignificant results and would have provided even stronger support for the null hypothesis.

Some research (e.g., (Bartels & Pizarro, 2011)) and popular conception (Furnham et al., 2009) notwithstanding, our results were consistent with a recent meta-analysis that revealed little support for robust relations between psychopathy subdimensions and moral judgment (Marshall et al., 2016). Although our investigation yielded mostly null findings, negative findings play a crucial role in psychological science, especially when studies are adequately powered (Ferguson & Heene, 2012). Specifically, in the case of this study, our results call into question the view that psychopathy is linked to profound moral reasoning deficits.

One explanation for our largely null findings is our use of an undergraduate sample (Borg & Sinnott-Armstrong, 2013). For instance, an axiom in the psychopathy field is that forensic samples comprise individuals with more pronounced and varied psychopathic features whereas undergraduate samples do not, rendering the study of psychopathic traits in undergraduate samples invalid. Because of this criticism, we examined the possibility that our null findings resulted from decreased variability in psychopathic traits. We found that controlling for restriction of range in psychopathy scores did not yield statistically significant changes in our findings, indicating that our use of undergraduates did not affect adversely our power to detect significant effects.

Alternatively, perhaps previous positive findings were due largely to differences in a third variable. For instance, the lower levels of verbal intelligence among forensic samples (Sanders et al., 1995) may inflate the relations between psychopathy and morality-related variables, consistent with Lykken's, 1991 proposal that moral judgment measures are a proxy for verbal intelligence. Our findings were not supportive of this possibility. In contrast, controlling for verbal intelligence slightly increased the relations between psychopathy and moral judgment, pointing to a suppressor effect.

An additional explanation for the reported small relationship between psychopathic traits and deviant morality is that psychopathic individuals do not suffer from an incapacity to reason in moral situations, at least when examining hypothetical measures of moral

judgment. Fittingly, Johns & Quay, 1962 described psychopathic individuals as "know[ing] the words, but not the music (p. 217)." In other words, the current findings cohere with the emerging picture that psychopathic individuals possess intact moral understanding but not care to act in accordance with such knowledge (Cima et al., 2010). Similarly, other work has corroborated the possibility that psychopathic individuals do not suffer from a profound moral deficit using alternative measures of moral judgment (Aharoni, Sinnott-Armstrong, & Kiehl, 2012; Aharoni, Sinnott-Armstrong, & Kiehl, 2014).

Still, this explanation presumes that the measures typically used to assess moral judgment accurately track aberration in moral judgment (Kahane, Everett, Earp, Farias, & Savulescu, 2015). An unexpected and, to our knowledge, previously unreported finding of the present study is that responses to sacrificial moral dilemmas, which ostensibly assess differences in utilitarian and deontological moral judgment, display surprisingly low intercorrelations. This troubling finding raises a separate question of whether sacrificial moral dilemmas validly detect abnormal moral judgment. If sacrificial dilemmas are questionable in their internal consistency (Kahane et al., 2015), then those who exhibit heightened levels of psychopathic traits may possess a moral deficit that has gone largely undetected by the most common way of testing it.[5] Researchers should both attempt to assess the psychometric properties of sacrificial dilemmas (e.g., (Laakasuo & Sundvall, 2016)) and also work to develop alternative measures of moral decision-making, especially those with higher ecological validity than the commonly used hypothetical reasoning indices used here.

In summary, our findings provide further evidence that psychopathic individuals may not suffer from a pronounced incapacity to make moral judgments. Our findings raise the possibility that individuals who exhibit pronounced psychopathic traits are more capable of understanding morality than traditionally assumed. Nonetheless, we found preliminary evidence that psychopathic individuals may at times draw on largely unsophisticated reasons when making moral decisions. Ultimately, our findings point to a number of avenues for future research and provide further evidence that unidimensional models of psychopathic morality may require reexamination.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.paid.2017.03.034.

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[5] In light of the low reliabilities, we also examined the correlations between psychopathy components and utilitarian moral judgment measures while correcting for attenuation in exploratory analyses. In doing so, three additional correlations became significant (see Supplementary material) at a threshold of $p < 0.05$, but likely would not survive Bonferroni correction; only two of these three correlations were in the predicted direction.

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