

BRIEF REPORT

Psychopathy and Fear:
Specific Impairments in Judging Behaviors That Frighten OthersAbigail A. Marsh and Elise M. Cardinale
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Psychopathy is a disorder associated with antisocial behavior and deficits in responding to emotional stimuli, particularly fear-related stimuli. This research demonstrates that these deficits extend to judgments about behaviors that cause fear in others. We assessed whether psychopathy is associated with the ability to identify the emotional consequences of social behaviors and with judgments about these behaviors' acceptability. We found that psychopathy, as indexed by the Psychopathic Personality Inventory, is associated with impairments in identifying behaviors that cause fear and in judging the moral acceptability of these behaviors. Ratings of emotional consequences and moral acceptability were also correlated, such that individuals who less accurately identified behaviors that cause fear also judged these behaviors to be more morally acceptable. Psychopathy scores mediated the relationship between these two variables. These findings suggest that understanding that frightening others is unacceptable relies on understanding this type of behavior's emotional consequences, and have significance for understanding the relationship between psychopathy, empathy, and antisocial behavior.

Keywords: psychopathy, fear moral judgment, empathy, emotion recognition

In his book, *Without Conscience*, Robert Hare recounts an interview with an incarcerated psychopathic rapist in which the rapist discussed the nature of his crimes and why he found it difficult to empathize with his victims. He stated, "They are frightened, right? But, you see, I don't really understand it. I've been scared myself, and it wasn't unpleasant" (Hare, 1993, p. 44).

This comment is consistent with the idea that psychopathy is associated with fundamental impairments in fear responding. Among the emotional deficits associated with psychopathy is a fearless temperament, which entails difficulty processing various fear-relevant stimuli (Lykken, 1995). For example, in response to an impending threat, psychopaths exhibit reduced electrodermal responses, potentiated startle, Pavlovian conditioning, and passive avoidance (Birbaumer et al., 2005; Patrick, 1994; Blair et al., 2004). Psychopathic individuals also report reduced subjective experiences of fear but not of other emotions (Marsh et al., 2011b). However, psychopaths engage disproportionately often in antisocial behaviors likely to frighten others (Hare, 1993; Reidy, Zeichner, & Martinez, 2007). The present researchers employed a novel task to link fear-processing deficits in individuals with high psychopathic traits to these individuals' predilections for engaging in

behavior that frightens others. We hypothesized that the fear-processing deficits that characterize psychopathy (as measured using the Psychopathic Personality Inventory) extend to difficulty identifying behaviors that cause fear, which in turn predicts impairments in understanding the wrongness of these transgressions.

Psychopathy not only impairs responses to frightening events, it also impairs recognition of and responding to *others'* fear. For example, psychopathic traits are linked to specific impairments in identifying fearful facial expressions. A recent meta-analysis demonstrated that psychopaths' fear-recognition deficits are greater than for any other emotional expression, and are not related to gender, age, or how generally difficult fearful expressions are to identify (Marsh & Blair, 2008). It should be noted that this meta-analysis, as well as another recent meta-analysis (Wilson, Demetrio, & Porter, 2008) also found deficits for other emotions, particularly sadness. Fear recognition deficits may extend to other fearful cues, like body poses (Muñoz, 2009). Pictures of fearful, but not angry, facial expressions also generate less autonomic arousal in psychopaths than in controls (Blair, 1995). And whereas viewing fearful expressions causes increased amygdala activation in healthy participants, the same is not true in psychopathic participants (Jones, Laurens, Herba, Barker, & Viding, 2009; Marsh et al., 2008). The amygdala is thought to play an important role in processing fear representations (Phelps et al., 2001). Most studies assessing fear recognition in psychopathy use measures other than the Psychopathic Personality Inventory (PPI) to assess psychopathy, but a recent study replicated the association between psychopathy and fear recognition deficits in a community sample assessed using the PPI (Del Gaizo & Falkenbach, 2008).

Some have suggested that the emotional deficits observed in psychopathy are related to impaired moral judgments (Blair, 1995;

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Glenn, Iyer, Graham, Koleva, & Haidt, 2009). Emotion's role in influencing moral judgments is well established (Greene, Somerville, Nystrom, Darley, & Cohen, 2001; Haidt, 2001). Standard moral reasoning paradigms often pit alternatives with equivalent outcomes against one another. For example, a respondent may choose to save five people by switching an oncoming train onto an alternate track, killing a person standing on the alternate track; or, alternately, pushing that person in front of the train to stop the train and save the five. The outcomes of these two actions are identical, but pushing someone in front of the train is widely regarded as the less acceptable option. This may result not from logical justification but from this alternative's greater emotional impact. Emotional responses to moral transgressions can be inferred from reaction times when moral transgressions are judged to be appropriate. These judgments are made in the context of a countervailing emotional response, and the emotional interference is thought to result in longer reaction times (Greene et al., 2001).

Do emotional deficits impair psychopaths' moral judgments? Some evidence suggests that they do. Psychopathy is associated with atypical patterns of moral judgments and intuitions regarding harm in both clinically assessed offenders (Aharoni, Antonenko, & Kiehl, 2011) and in community samples (Glenn et al., 2009; Gray, Jenkins, Heberlein, & Wegner, 2011). Blair and colleagues have demonstrated that psychopaths are less likely than nonpsychopaths to distinguish between moral and conventional violations (Blair, 1995). One difference between these two types of violations is that moral violations such as assault cause victims distress, whereas conventional violations such as talking out of turn merely defy social conventions or rules. However, other evidence is equivocal. Psychopaths' judgments of moral violations alone may not differ from nonpsychopaths' (Blair, 1995). And some studies have failed to find evidence that psychopathy affects moral judgments. For example, psychopathy was not found to impair reasoning about the distinction between personal and impersonal trolley-type moral scenarios (Cima, Tonnauer, & Hauser, 2010).

This issue may be resolvable by returning to the issue of specific-versus-general emotional deficits. Just as psychopaths' judgments and responses to emotional facial expressions are not impaired for all emotion types, their judgments of emotionally evocative behaviors such as moral transgressions may not be impaired for all types of transgressions. The relationship between psychopathy and moral judgments might therefore be expected to vary across tasks. Judgments of transgressions that specifically elicit fear may be most significantly impaired in psychopathy. This is consistent with theories that psychopaths engage in violent transgressions because they fail to appreciate the distress that these transgressions cause (Blair, 2005).

Early affect-based conceptualizations of moral judgments held that, when a person connects his or her personal experience of pain to a victim's pained reaction, the act that caused the pain is judged to be morally wrong (Turiel, 1983). Theoretically, someone who has never experienced pain would be less likely to judge transgressions that cause others pain to be morally wrong. Recent work by Danziger and colleagues (Danziger, Prkachin, & Willer, 2006) supports this possibility, suggesting empathy for others' pain may be attenuated in individuals with congenital insensitivity to pain (CIP). Perhaps, then, for the same reasons, individuals who do not experience fear normally are also less likely to recognize that causing fear in others is morally wrong. They may even be

impaired to the extent that they cannot identify that these transgressions will cause others to experience fear. It should be recalled here that psychopathy not only impairs responses to fearful expressions, but the ability to simply identify them as fearful. And the ability to correctly identify fearful expressions predicts a person's likelihood of responding prosocially to others' distress (Marsh, Kozak, & Ambady, 2007). This suggests that responses to others' distress are associated with an ability to correctly identify others' distress. Thus, psychopathy may impair the ability to both identify and judge transgressions that cause fear.

However, no empirical evidence yet assesses whether the inability to correctly identify whether a behavior causes fear impairs reasoning about the moral acceptability of that behavior. The present research assesses the relationship between these two variables, and between these variables and psychopathy. We used a novel paradigm based on verbal statements to address three principal questions in a nonclinical sample: First, does psychopathy impair the ability to identify transgressions that cause others fear? Second, does psychopathy impair judgments about the moral acceptability of frightening others? And third, are impairments in these two judgments related to one another?

Method

Participants

Thirty-eight individuals, aged 18 to 51 years ($M = 24.0$, $SD = 7.3$; 16 males and 22 females) were recruited from the Georgetown University community and participated in this study in exchange for \$10.

Materials

Moral judgments task. The stimulus set consisted of 100 emotionally evocative statements (including 20 statements each that elicited anger, disgust, fear, happiness, and sadness). Emotionally evocative statements are an ecologically valid and sensitive means of eliciting specific emotional responses in neurocognitive testing (Blair et al., 2008). The stimulus set was generated by undergraduates (not the same participants described above) who provided statements that one person might say to another to make the recipient feel each target emotion. A second group of 17 undergraduates viewed the resulting 451 statements in randomized order and assessed the extent to which each would evoke each of five emotions. For each statement, we then calculated four t -values that compared the average magnitude for the intended emotion with that of the other four emotions. We then selected the 20 statements from each emotion category with the highest average t -values, which indicated the maximally elicited ratings of the intended emotion relative to the other emotions (mean t -values: anger = 6.78, disgust = 10.96, fear = 7.45, happiness = 52.11, sadness = 9.79).¹ Sample statements include: anger ("I broke your phone on purpose," "You are a disgrace"), disgust ("I never wash my hands," "Your lunch smells rotten"), fear ("I could easily hurt you," "You better watch your back"),

¹ Five fear-eliciting safety warnings (e.g., "There is a bee on your back") were replaced by fear-eliciting statements that could not be construed as helpful.

happiness (“I bought you a present,” “You are the nicest person I know”), sadness (“I don’t want to be friends anymore,” “You’re not invited to my party”). Note that these statements were generated to elicit the target emotion, rather than simply to describe behaviors that would elicit the target emotion. For example, the statement, “I could easily hurt you,” is a threat that could elicit fear in the target. Statements were edited to clarify meaning and to equalize word count among the five emotion categories ($ps > .10$).

Psychopathic Personality Inventory (PPI). Psychopathy was assessed using the PPI (Lilienfeld & Andrews, 1996). The PPI is a 187-item self-report-based dimensional measure of psychopathy that is designed for use in community samples. The PPI was initially validated in a sample of 635 undergraduates (Lilienfeld & Andrews, 1996) and has also been validated in forensic populations (Poythress, Edens, & Lilienfeld, 1998). These studies provide excellent evidence for the reliability and validity of the PPI and its predictive validity for other measures of psychopathy and antisocial behavior. We selected this instrument because its validity in community samples has been well established, and because unlike the Psychopathy Checklist-Revised (PCL-R), scoring this instrument does not require the use of file information, which is important for generating accurate PCL-R scores and which cannot typically be acquired in a community sample. In addition, the PCL-R is intended for use only in populations in which it has been fully validated, namely adult and adolescent forensic populations and sex offenders (Hare, 1991).

Procedure

Participants viewed the 100 statements in randomized order twice using a task programmed in Superlab on a Macintosh desktop computer. During the first viewing, participants rated the extent to which it would be morally acceptable to make each statement to another person. Responses were collected using a scale with four response options: 1 = Never acceptable, 2 = Rarely acceptable, 3 = Usually acceptable, 4 = Always acceptable. The term “morally acceptable” was selected to focus participants on the effect of each statement on the target. The term “moral” is most frequently applied to harm-based violations typically associated with fear, but moral evaluations also apply to violations that generate sadness, anger, and disgust, such as fairness-, authority-, and purity-based violations (Glenn et al., 2009). Presumably, causing happiness is broadly considered morally acceptable.

During the second viewing, participants identified the emotion each statement would elicit in a forced-choice paradigm with five emotion-response options. The task was self-timed. Following the completion of the task, participants completed the PPI and a demographics measure.

Results

Emotion Judgments

Our first question was: Is psychopathy associated with deficits in identifying statements that cause fear? To address this question, we first calculated participants’ PPI scores ($M = 367$, $SD = 37.8$, range = 284–451). This distribution was roughly normally distributed (skewness = 0.168, $SEM = 0.383$; kurtosis = -0.078 ,

$SEM = 0.750$) and was similar to those of other recent community samples of young adults (e.g., Edens, Buffington, Tomicic, & Riley, 2001; Uzieblo, Verschuere, & Crombez, 2007; Wilson, Demetriooff, & Porter, 2008).

Next, we calculated each participant’s accuracy for identifying the five kinds of statements using an unbiased hit-rate analysis (Wagner, 1993; Marsh, Kozak, & Ambady, 2007). This is a procedure that determines accuracy by assessing both raw accuracy, or how frequently a stimulus is identified correctly compared to how often it appears (hits divided by the number of stimuli of that type), and differential accuracy, or how frequently a response category is used correctly compared to how often it is used (hits divided by the total number of uses of that type of response). These two proportions are multiplied (akin to a chi-square) and then the difference between the resulting value and the accuracy that would be expected by chance is computed. The resulting unbiased hit-rate value, a proportion, is then arcsine-transformed. We also calculated overall agreement as to the emotions generated by the statements, which on average was high ($M = 81.5%$) compared to picture-based tasks (Britton, Taylor, Sudheimer, & Liberzon, 2006).

Because psychopathy was assessed as a continuous variable, we next conducted a simultaneous multiple regression analysis to assess whether total psychopathy scores can be predicted from accuracy for identifying the emotional outcomes of the statements. The results indicated an inverse relationship between psychopathy and the accurate identification of statements that cause fear and happiness (see Table 1). Raw Pearson’s correlations confirmed these results; psychopathy was negatively correlated with the ability to correctly identify fear-causing statements, $r(36) = -.49$, $p < .001$, as well as happiness-causing statements, $r(36) = -.58$, $p < .001$.

We performed a median-split calculation on PPI scores for the purpose of comparing responses to each kind of statement within the high-scoring and low-scoring subgroups. *T* tests confirmed that participants with low psychopathy scores identified fear-causing statements more accurately than anger- and sadness-causing statements, but less accurately than disgust- and happiness-causing statements (all $ps < .001$). Similar patterns were observed in participants with high psychopathy scores, except that these participants did not identify fear-causing statements any more accurately than sadness-causing statements, $t(18) = 1.45$, $p > .10$ (see Table 2). It should also be noted that, consistent with the results of

Table 1
Predicting Psychopathy From Emotion Recognition and Judgments of Moral Acceptability

Predictor variable	Emotion recognition		Moral acceptability	
	β	<i>t</i>	β	<i>t</i>
Anger	-0.048	-0.225	-0.103	-0.494
Disgust	0.341	1.553	-0.322	-2.034
Fear	-0.456	-2.451*	0.626	3.042*
Happiness	-0.551	-3.026*	0.061	0.450
Sadness	-0.038	-0.195	0.242	1.364

Note. Emotion recognition: $F(5, 32) = 5.31$, $p < .001$. Moral acceptability: $F(5, 32) = 4.81$, $p < .005$.

* $p < .05$.

Table 2
Emotion Recognition and Judgments of Moral Acceptability by PPI Score

	Low PPI		High PPI	
	Mean	RT (msec)	Mean	RT (msec)
Emotion recognition				
Anger	0.379*	3463	0.314*	3625
Disgust	1.137*	2519	0.965*	2978*
Fear	0.850	3102	0.633	4016
Happiness	1.272*	2218*	1.174*	2855*
Sadness	0.603*	3376	0.544	4180
Acceptability judgment				
Anger	1.674*	3751	1.897	4560
Disgust	2.166*	4192*	2.232*	4911
Fear	1.566	3313	1.877	4547
Happiness	3.729*	2865*	3.753*	3452*
Sadness	2.329*	3781*	2.682*	4464

* Significantly different from fear-causing statements within-group, $p < .05$.

the Pearson's correlation, high scorers, as defined by the median split, identified fear-causing statements significantly less accurately than low scorers, $t(36) = 2.46, p < .05$. In summary, our analyses addressing our first question indicate that, as hypothesized, psychopathy is associated with deficits in identifying statements that cause fear as well as happiness.

Acceptability Judgments

Our second question was: Does psychopathy impair judgments about the moral acceptability of frightening others? To address this question, we conducted a second simultaneous multiple regression analysis that assessed whether the acceptability ratings of each of the five kinds of emotional statements predicted psychopathy scores. Results indicated that psychopathy scores were predicted only by judgments of the acceptability of fear-causing statements (see Table 1). The results were confirmed by Pearson's correlation analyses, which showed that participants with higher psychopathy scores judged frightening people to be more morally acceptable, $r(36) = .58, p < .001$. No significant associations were observed between psychopathy and judgments about the acceptability of angering, disgusting, or saddening others, or making others happy.

We again used a median-split calculation on PPI scores to compare responses to each kind of statement within the high-scoring and low-scoring subgroups. *T* tests confirmed that participants with low psychopathy scores found it less morally acceptable to frighten people than to make any other kind of statement (all $ps < .05$). Those with high psychopathy scores saw no moral difference between statements that would anger people and those that would frighten them, $t(18) = 0.37, p > .50$ (see Table 2). Judgments about the acceptability of fear-causing statements were again significantly different, $t(36) = 3.50, p < .05$, across high-scoring and low-scoring groups defined by the median split.

Relationship Between Accuracy and Moral Judgments for Fear

Our third question was: Are impairments in identifying fear-causing statements associated with more lenient judgments about

the acceptability of making these statements? Our results indicated that fear was the only emotion for which both accuracy judgments and acceptability judgments were significantly related to psychopathy. Thus, we next assessed the relationship between the two types of judgments for fear-causing statements. Across all participants, we calculated the correlation between accuracy judgments and acceptability judgments of fear-causing statements. These variables were negatively correlated, $r(36) = -.40, p < .05$, indicating that participants who were worse at identifying frightening statements found those statements to be more morally acceptable. A Sobel test determined that the relationship between accuracy judgments and acceptability judgments was mediated by psychopathy, $t = 2.58, p < .01$. In addition, the results of a partial correlation analysis indicate that psychopathy scores predicted acceptability judgments even after controlling for the effects of accuracy judgments, $r(36) = .49, p < .005$.

Response Times

Sometimes moral transgressions are judged to be appropriate against a countervailing emotional response, and this emotional interference is thought to cause participants to exhibit longer reaction times (Greene et al., 2001). If individuals with higher psychopathy scores fail to generate an appropriate affective response to fear-based moral transgressions, they would not be expected to show this effect. In other words, participants with higher psychopathy scores should not show increased response times for trials in which they judge a fear-causing transgression to be appropriate.

To test this hypothesis, we calculated for each participant the correlation between his or her log-transformed mean response times and the numeric responses (1–4) he or she provided in response to each statement (response times < 200 ms were first removed, $N = 3$). Thus, a negative correlation indicated that participants responded more slowly when judging the action to be less acceptable, and a positive correlation indicated that the participant responded more slowly when judging actions to be more acceptable (consistent with an emotional interference effect). We performed a Fisher transformation on these coefficients to normalize their distribution and compared the resulting coefficients across high and low psychopathy scorers. Participants with low psychopathy scores showed a greater emotional interference effect, *Fisher Z* = 1.267, than participants with high psychopathy scores, *Fisher Z* = 0.328. The mean value for low scorers was significantly different from zero, $t(17) = 4.89, p < .001$, consistent with the presence of an emotional interference effect. By contrast, the mean value for high scorers was not significantly different from zero, $t(18) = 1.13, p > .20$, suggesting the lack of an emotional interference effect. Mean values for low scorers and high scorers were significantly different from one another, $t(35) = 2.06, p < .05$. In sum, this pattern of results suggests that psychopathic traits are associated with reduced emotional inference when responding to fear-causing transgressions.

Discussion

Psychopathy is a puzzling disorder characterized by affective deficits and a predilection for antisocial behavior. The results of this research link these two essential aspects of psychopathy, showing that impaired fear responding may be associated with

impaired judgments of transgressions that frighten others. Our data suggest that psychopathy is associated with an impaired ability to determine that statements generally characterized to be frightening, like threats, cause fear, which may in turn be linked to impaired judgments about the acceptability of frightening people.

In answer to our first question, "Does psychopathy impair the ability to identify transgressions that cause others fear?" we found that participants with higher psychopathy scores were specifically impaired in correctly identifying which statements would cause a target to experience fear or happiness. In answer to our second question, "Does psychopathy impair judgments about the moral acceptability of frightening others?" we found that, relative to low psychopathy scorers, high psychopathy scorers also judged causing fear to be more acceptable. High psychopathy scorers considered fear-causing transgressions to be no worse than anger-causing transgressions, whereas low psychopathy scorers judged fear-causing transgressions as the most serious. And in answer to our third question, "Are impairments in these two judgments related to one another?" we found that the extent to which participants had trouble identifying fear-causing statements predicted how acceptable they found these statements to be, and this effect was mediated by psychopathy. Finally, reaction-time data demonstrated that participants with higher psychopathy scores showed no evidence of an emotional interference effect when judging fear-causing transgressions to be acceptable. This conforms to theories that deficient fear responding is the root of psychopathic personality traits, which increase risk for engaging in antisocial behavior (Lykken, 1995).

These results suggest that individuals with high psychopathy scores may be more willing to, for example, threaten others in part because they don't recognize that threats are statements that cause fear. This is consistent with previous findings that psychopathy affects judgments of simple transgressions associated with harm (Aharoni, Antonenko, & Kiehl, 2011; Blair, 1995; Glenn et al., 2009; Gray et al., 2010). Both Blair and Glenn and colleagues suggest empathy deficits to be the source of aberrant judgments of harmful behaviors in psychopathy. The present study provides evidence that this is the case. Empathy is typically described as an emotional response to the actual or inferred emotion of another, particularly another's fear or distress. Empathy's most basic requirement is the simple ability to represent another's emotional state (Nichols, 2001). Theories that posit moral judgment impairments in psychopathy rest on the assumption that emotional representations of the consequences of certain moral violations are impaired (Blair, 2005; Glenn et al., 2009). We demonstrated this to be true. Individuals who could not identify fear as the emotional consequence of a behavior also were more likely to judge that behavior to be morally acceptable.

These individuals also scored higher in psychopathy. Higher psychopathy scores were associated with more difficulty simply identifying frightening behaviors as such, and with judgments that frightening others is less morally wrong. And, in keeping with prior research showing that psychopathy impairs the ability to process fear-relevant stimuli more than other emotional stimuli, psychopathy was linked to impaired judgments about frightening transgressions more than other transgressions. High psychopathy scorers also failed to show differences in reaction times as a function of their judgments of acceptability. Reaction times in low scorers, by contrast, increased with acceptability judgments. These results parallel previous findings using trolley scenarios, in which

reaction times increase when moral violations are judged to be acceptable. This parallel must be drawn with caution, as moral judgments like trolley scenarios involve complex judgments and diffuse affective responses, and may not be associated with psychopathy the same way as simpler moral judgments (Cima, Tonauer, & Hauser, 2010). That said, our results suggest that high psychopathy scorers may have failed to generate an appropriate emotional response to fear-causing statements. One possibility is that, when judging emotionally evocative transgressions, typical respondents generate an empathic emotional response, which may then be used to gauge the moral acceptability of the behavior. Individuals who score high in psychopathy may not be able to generate a strong empathic fear response. This could explain their failure to show an emotional interference effect.

This accords with the notion that a person in whom the fear response is absent, weakened, or distorted, might have difficulty understanding fear responses in others. And a wealth of behavioral, physiological and neuro-imaging studies support the idea that psychopaths suffer an impaired fear response. This pattern of impairments has been suggested to reflect dysfunction in the amygdala (Blair, 2005), a suggestion supported by the results of recent neuro-imaging studies (Jones et al., 2009; Marsh et al., 2008; Rilling et al., 2006). Dysfunction in this region has been implicated in moral reasoning impairments in psychopathy (Harenski, Harenski, Shane, & Kiehl, 2010; Harenski, Kim, & Hermann, 2009; Marsh et al., 2011a).

The results of our partial correlation analysis suggests that psychopathy scores can explain moral judgments about causing fear over and above what can be explained from accuracy scores. In other words, high psychopathy scorers have difficulty recognizing behaviors that cause fear, but even when they do recognize a behavior causes fear, they may be less likely to see this behavior as problematic. Individuals with high psychopathy scores may exhibit deficits in moral judgments that go beyond simple accuracy issues. This deficit may reflect a generally weaker empathic fear response in reaction to fear-eliciting items. A weaker representation of the emotional consequence of fear-eliciting behaviors might be associated with impaired accuracy and with more lenient moral judgments in high psychopathy scorers. Alternately, this deficit may be associated with other features of the psychopathic personality profile, which future testing may be better able to pinpoint.

It should be noted that psychopathy was also associated with impaired identification of happiness-causing statements. There are at least two possible interpretations of this finding. The first is that it results from statistical artifact. As is the case in facial expression recognition studies (e.g., Marsh, Kozak, & Amber, 2007; Muñoz, 2009), happiness provided the only positive emotional category, making judgments of these statements inherently easier. The standard error within groups was reduced for responses in this category, lowering the threshold for finding significant between-group comparisons. Another possibility is that this correlation is genuine and reflects a relationship between psychopathy and judgments of others' positive emotions. Perhaps failure to feel happiness would reduce the likelihood that a person would engage in prosocial behaviors that make others happy. However, further exploration would be required to confirm this possibility.

Psychopathy may also be associated with impairments in recognizing the emotional consequences of interpersonal statements or behaviors that were not tested in this study. The emotions that

were the focus of this study were selected to mirror the “basic” emotions included in standard tests of facial emotion recognition. However, future studies might explore a variety of other emotions to determine whether failure to identify the negative emotional consequences of other behaviors corresponds to moral judgments of those behaviors. For example, psychopathy has been associated with deficits in attributing guilt to fictional characters (Blair et al., 1995), and one characteristic of psychopathy is failure to experience guilt or remorse (Hare, 1993). We might apply the present study design to assess whether psychopathy is associated with failure to appreciate the wrongness of guilt-inducing behaviors. We could also assess the relationship between psychopathy, pain perception, and moral judgments. Pain perception has been the focus of a number of recent studies of the mechanisms underlying empathy (e.g., Danziger, Prkachin, & Willer, 2006; Decety, Michalska, & Akitsuki, 2008). Although deficient perceptions of pain in psychopathy have not previously been identified, fear can be defined as an emotion associated with the anticipation of harm or pain. Thus, psychopathy might plausibly be associated with impaired moral judgments about inflicting pain. In a related vein, it would be interesting to create a paradigm that includes behaviors that psychopaths typically exhibit (e.g., aggression, deceit, theft, conning) and assess the emotions that participants high and low in psychopathy perceive these behaviors to elicit.

One limitation of this study is the reliance on self-report data for psychopathy assessments. Psychopathy can be assessed using a variety of measures, including self-report scales like the PPI, which are generally administered to healthy community samples (Poythress, Edens, & Lilienfeld, 1998), and clinician-assessed measures like the PCL-R, which are designed for forensic and inpatient samples (Hare, 1991). The PCL-R is typically considered the most established and “trustworthy” measure of psychopathy (Poythress et al., 2010). There are inherent weaknesses in self-report measures, including that they require some level of insight and honesty from respondents, and that the component subscales of instruments like the PPI may not be isomorphic with PCL-R factor subscales (Malterer, Lilienfeld, Neumann, & Newman, 2010). In part, due to this fact, we did not focus our analyses on psychopathy subscales. However, the PCL-R has weaknesses as well. It is only validated for use in institutionalized samples, and completing it requires reference to file data that is not usually available in community samples. The scale also does not include items related to anxiety or fear, which results in some investigators supplementing this scale with specific measures of anxiety (e.g., Glass & Newman, 2006). Nevertheless, to better understand the relationships between psychopathy, moral judgments, and fear, it will be important to replicate the present results in clinical or forensic samples or in larger community samples using a variety of measures of psychopathy, including the PCL-R. This would permit assessment of the correspondence between task performance and psychopathy factor scores. It would also allow us to examine whether our results would extend to violent institutionalized individuals.

We selected the self-report measure employed in this study because it has been validated in large community samples (Poythress, Edens, & Lilienfeld, 1998) and total scores on this measure are moderately to strongly correlated with other measures of psychopathy, such as the PCL-R (Malterer et al., 2010; Poythress et al., 2010). Equally importantly, prior studies using the PPI have provided evidence that high scores on this measure are associated with patterns of responding that are similar to those observed in

forensic samples (Del Gaizo & Falkenbach, 2008; Gordon, Baird, & End, 2004). Using a nonclinical sample also permits a wide range of psychopathy scores that are unconfounded by the variables inherent to institutionalized samples, including possible effects of institutionalization on neural and cognitive functioning. Finally, our sample was small-to-moderate in size. However, examining our effect sizes suggests that even a larger sample would not have yielded different patterns of significance.

Conclusions

Assessing the emotional states of others is fundamental to empathy. Kennett has theorized that empathy provides a rich and perhaps singular source of information that moral agents need to gauge the effects of their actions (Kennett, 2002). Prior studies have demonstrated that impairments in recognizing fear from nonverbal cues like facial expressions are associated with antisocial behavior (Del Gaizo & Falkenbach, 2008; Marsh & Blair, 2008; Muñoz, 2009). The present study confirms that impairments in recognizing frightening transgressions predict impaired moral reasoning about these behaviors. It also demonstrates the relationship between these judgments and psychopathy, a disorder that impairs how fear-related stimuli are processed and is associated with persistent antisocial behavior.

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