Examining the influence of psychopathy, hostility biases, and automatic processing on criminal offenders' Theory of Mind

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ABSTRACT

Theory of Mind (ToM) is a social perceptual skill that refers to the ability to take someone else's perspective and infer what others think. The current study examined the effect of potential hostility biases, as well as controlled (slow) versus automatic (fast) processing on ToM performance in psychopathy. ToM abilities (as assessed with the Reading the Mind in the Eyes Test; RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), was compared between 39 PCL-R diagnosed psychopathic offenders, 37 non-psychopathic offenders, and 26 nonoffender controls. Contrary to our hypothesis, psychopathic individuals presented with intact overall RMET performance when restrictions were imposed on how long task stimuli could be processed. In addition, psychopaths did not over-ascribe hostility to task stimuli (i.e., lack of hostility bias). However, there was a significant three-way interaction between hostility, processing speed, and psychopathy: when there was no time limit on stimulus presentation, psychopathic offenders made fewer errors in identifying more hostile eye stimuli compared to nonoffender controls, who seemed to be less accurate in detecting hostility. Psychopaths' more realistic appraisal of others' malevolent mental states is discussed in the light of theories that stress its potential adaptive function.

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1. Introduction

Psychopathy is a developmental disorder that is characterized by high levels of antisocial behavior, as well as emotional impairments such as callousness and a lack of moral emotions like remorse (Cleckley, 1941; Hare, 2003). The disorder is typically assessed using Hare's Psychopathy Checklist Revised (PCL-R; Hare, 2003). Research has shown this extensively validated instrument to be comprised of two factors (Harpur, Hakstian, & Hare, 1988): Factor 1 describes affective and interpersonal items (e.g., shallow affect, conning/manipulative behavior), whereas Factor 2 reflects impulsive and antisocial lifestyle traits (e.g., parasitic lifestyle, irresponsibility).[1] A very prominent deficit in psychopathic individuals is their lack of empathy (Cleckley, 1941; Hare,

2003), a moral emotion that is believed to inhibit antisocial behavior and promote pro-social behavior (Hoffman, 2000). Empathy is usually defined as the capacity to understand and to some extent share the feelings of another person. A distinction is made between at least two forms of empathy, i.e., cognitive and emotional empathy (Feshbach, 1975). Cognitive empathy refers to the ability to take someone else's perspective, and is closely related, or even synonymous to Theory of Mind (ToM). ToM has been described as the capacity to attribute mental states (e.g., intentions, beliefs, and desires) to others (Premack & Woodruff, 1978). In contrast, emotional empathy equals the ability to be responsive to and share in the emotional state of another person (Blair, 2005).

Research has shown psychopathic individuals to present with notable emotional empathic deficiencies, like a reduced physiological responsiveness to others' distress (Blair, Jones, Clark, & Smith, 1997). Results of studies on cognitive empathy and psychopathy have been a lot more equivocal. For many years, it has been assumed that adult psychopathy is not associated with ToM deficiencies. A study supporting this supposition was conducted by Blair et al. (1996), who did not find performance differences between psychopathic and nonpsychopathic offenders on Happé's advanced test of ToM (Happé, 1994), a test that requires subjects to infer story characters' thoughts, feelings, and intentions. Subsequently, Richell et al. (2003) could also not find deficits in

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[1] Subsequent studies indicate the PCL-R to be described by three factors (Cooke & Michie, 2001), or by a two-factor/four-facet model, in which Factors 1 and 2 have both been divided into two facets, resulting into four components representing 1) interpersonal, 2) affective, 3) lifestyle, and 4) antisocial traits (Bolt, Hare, Vitale, & Newman, 2004). In the present study, however, we decided to adopt a two-factor model as this has been the most widely validated so far.

psychopathic offenders' ToM using the Reading the Mind in the Eyes Test (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), in which subjects are instructed to identify mental states from photographs of the eye region only.

Although seemingly supportive of intact ToM in psychopathy, the results of the studies described above have to be interpreted in the light of some limitations. First, sample sizes in the aforementioned studies were relatively small. Second, no previous ToM research has considered the potential influence of automatic versus controlled processing. Taking this distinction into account could be important as information is thought to be processed via two interacting, yet separable neural routes: an affective, subcortical pathway (depending on limbic structures like the amygdala) that provides a 'quick and dirty' impression; and a slower, cortical route, which is thought to be responsible for deliberate, cognitive processing, providing a more fine-grained, complex interpretation of information (Adolphs, 2002; Johnson, 2005). Imaging research on the RMET suggests that amygdala activation mediates performance on this task in healthy individuals (Baron-Cohen et al., 1999). In addition, patients with acquired bilateral amygdala damage have been found to show impairments on the RMET (Stone, Baron-Cohen, Calder, Keane, & Young, 2003). As psychopathy is associated with amygdala dysfunction, yet does not seem to influence RMET performance, it has been suggested that psychopathic people might compensate for their amygdala dysfunction by using cortical brain regions in the identification of mental states (Richell et al., 2003). Possibly, previous studies could not reveal any psychopathy-specific deficits in ToM as subjects could look at task stimuli for as long as they wanted, enabling them to rely on such compensatory cognitive strategies.

Another factor that has been overlooked in previous research is the potential influence of offenders' cognitive processing style on ToM performance. Anger and violent behavior are common characteristics in forensic samples, and individuals high on these traits show difficulty ignoring hostile stimuli (Cohen, Eckhardt, & Schagat, 1998; Smith & Waterman, 2004). Moreover, both aggression and psychopathy have been found to relate to the presence of hostile attributional biases, i.e., the more elevated these traits are in individuals, the more hostile intent is perceived from others in ambiguous situations (Dodge, 1980; Vitale, Newman, Serin, & Bolt, 2005). Possibly, preferential attending to hostile stimuli and the incorrect attribution of malevolent intentions to others, could interfere with correctly inferring others' mental states in psychopathy.

The current study aimed to build on previous research on ToM by administering the RMET to a group of offenders (varying in their degree of psychopathy) and a group of non-offender subjects. We took a number of precautions in order to overcome the aforementioned limitations. First, we took the possibility into consideration that psychopathic people only present with ToM deficits under conditions where stimuli have to be processed fast. In order to examine this prediction, we presented half of the RMET stimuli rapidly, whereas subjects could look at the other half of the task stimuli without any time restrictions. We expected psychopathic individuals to show impairments on the RMET in comparison with nonoffenders, yet only when stimuli were presented quickly (Hypothesis 1). Second, we investigated whether offenders' ToM performance might be distorted by a cognitive 'hostility bias.' In order to test this hypothesis, we changed a number of incorrect answering options in the RMET, making sure that the alternatives subjects could choose from varied in their degree of hostility. We predicted offenders' performance on the RMET to be distorted by a bias towards more hostile answering options, reflected by a tendency to choose for more hostile answering alternatives when making mistakes (Hypothesis 2). As psychopathy has been found to positively relate to the perception of hostility (Vitale et al., 2005), we predicted this effect to be strongest in the psychopathic offender group, as compared with the nonoffenders.

2. Method

2.1. Participants

We recruited 85 male criminal offenders with Cluster B personality disorders (PDs) from six forensic psychiatric centers and a prison. Thirty-six of these participants were participating in a randomized clinical trial (RCT) on the effectiveness of Schema Therapy versus Treatment as Usual in forensic patients with Cluster B PDs (Bernstein et al., 2012). The inclusion and exclusion criteria for this RCT aimed to select a group of patients whose personality pathology was the primary focus of treatment. The inclusion criteria were (a) the presence of a DSM-IV Antisocial, Narcissistic, Borderline, or Paranoid PD, or a PD not otherwise specified with at least five cluster B PD traits; and (b) a good understanding of the Dutch language. Exclusion criteria were (a) the presence of current psychotic symptoms, (b) schizophrenia or bipolar disorder, (c) current drug or alcohol dependence (but not abuse), (d) low intelligence (i.e., IQ < 80), (e) serious neurological impairment, (f) an autistic spectrum disorder, and (g) fixated pedophilia. In order to create in this respect a homogeneous sample, the subjects who did not participate in the RCT ($n = 49$) were recruited using the same inclusion and exclusion criteria as described above.

In the entire offender group, there was no RMET data available on the first nine subjects due to a programming error, resulting in a sample of 76 forensic subjects. The forensic sample was divided into a psychopathic and a non-psychopathic group using the European PCL-R cut-off of 25 (Cooke & Michie, 1999; this cut-off also happened to be the median PCL-R score in the current sample). Twenty-six healthy male controls were additionally recruited from the general population. An inclusion criterion for this group was a) good understanding of the Dutch language. Exclusion criteria were a) the presence of any axis I disorder; b) the presence of threshold minus two criteria for any DSM-IV PD; c) the presence of a PD diagnosis Not Otherwise Specified (i.e., fulfillment of five or more criteria of different PD diagnoses), d) low intelligence (i.e., IQ < 80), (e) serious neurological impairment, (f) an autistic spectrum disorder, and (g) a level of self reported psychopathy higher than one SD above the general population mean.

Table 1 shows an overview of participant characteristics. All of the control subjects had Dutch nationality. In the forensic sample, ten different nationalities were represented, with the most prevalent being

Table 1
Sample characteristics ($N = 102$).

	Psychopathic offenders ($n = 39$)		Nonpsychopathic offenders ($n = 37$)		Nonoffenders ($n = 26$)	
	M (SD)	Range	*M (SD)*	Range	*M (SD)*	Range
Age (years)	38.6 (9.7)	23–65	39.3 (10.2)	24–64	35.6 (13.5)	18–57
IQ	95.1 (11.6)	80–120	96.6 (11.1)	80–121	101.2 (12.5)	80–128
PCL-R total	29.7 (3.1)	25.0–36.8	18.5 (3.9)	11.0–24.0	–	–
PCL-R F1	12.2 (2.8)	6.0–16.0	8.5 (3.1)	3.0–16.0	–	–
PCL-R F2	13.9 (2.5)	7.2–18.0	7.6 (3.6)	1.0–14.0	–	–
% correct RMET short	58.5 (13.3)	27.8–83.3	61.4 (12.6)	38.9–88.9	61.3 (10.2)	38.9–77.8
% correct RMET long	65.7 (13.0)	38.9–88.9	64.1 (12.5)	38.9–94.4	66.9 (14.6)	22.2–94.4

Note. PCL-R = Psychopathy Checklist-Revised; F1 = Factor 1; F2 = Factor 2; % correct RMET = percentage of correctly identified trials on the Reading the Mind in the Eyes Test.