

**Offenders with Antisocial Personality Disorder**

**Display More Impairments in Mentalizing**

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John Newbury-Helps received funding from University College London and the University of London. Peter Fonagy received funding from the National Institute of Health Research (Senior Investigator Award NF-SI-0510-10228).

The authors wish to acknowledge and express thanks to the following individuals from the Anna Freud Centre for their assistance in collecting data: Rachel Ellis, Sian Granville, Carol Lee, Harriet Mills, Sara Pantaleone and Jessica Stephanous.

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### **Abstract**

This study was designed to test the hypothesis that individuals with antisocial, particularly violent, histories of offending behavior have specific problems in social cognition, notably in relation to accurately envisioning mental states. Eighty-three male offenders on community license, 65% of whom met the threshold for antisocial personality disorder (ASPD), completed a battery of computerized mentalizing tests requiring perspective taking (Perspectives Taking Test), mental state recognition from facial expression (Reading the Mind in the Eyes Test) and identification of mental states in the context of social interaction (Movie for the Assessment of Social Cognition). The results were compared with a partially matched sample of 42 nonoffending controls. The offender group showed impaired mentalizing on all of the tasks when compared with the control group for this study when controlling for demographic and clinical variables and performed poorly in comparisons with participants in published studies, suggesting that limited capacity to mentalize may be part of the picture presented by individuals with histories of offending behavior. Offenders with ASPD demonstrated greater difficulty with mentalizing than non-ASPD offenders. Mentalization subscales were able to predict offender status and those with ASPD, indicating that specific impairments in perspective taking, social cognition, and social sensitivity, as well as tendencies toward hypomentalizing and nonmentalizing, are more marked in individuals who meet criteria for a diagnosis of ASPD. Awareness of these deficits may be helpful to professionals working with offenders, and specifically addressing these deficits may be a productive aspect of therapy for this “hard to reach” clinical group.

*Keywords:* mentalizing, mentalization, perspective taking, social cognition, social sensitivity, social impairments, offending, offenders, antisocial personality disorder

Personality disorder is a recognized mental disorder that is substantially overrepresented in offending populations. Multiple studies demonstrate a high prevalence of personality disorder in offenders in general (Alwin et al., 2006) and in individuals with convictions for violent offenses in particular (McCurran & Howard, 2009). Antisocial personality disorder (ASPD) is the most common personality disorder in criminal justice settings (Craissati et al., 2011; Fazel & Danesh, 2002). Although ASPD may be under-diagnosed in the community (Ogloff, 2006), there is a marked disparity between its prevalence among the general population and among the offending population: in the U.K. prison population, the prevalence of ASPD has been identified as 63% among male remand prisoners, 49% among male sentenced prisoners, and 31% among female prisoners (Singleton, Meltzer, Gatward, Coid, & Deasy, 1998). The contribution of this disorder to violent criminal behavior is clear: ASPD is associated with a significantly increased likelihood of committing violent behaviors (Coid et al., 2006) and is highly predictive of future violence, future reconviction or reincarceration upon release, and recidivism severity (Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996; Wormith, Olver, Stevenson, & Girard, 2007).

Social cognition in general and the capacity to link mental states to behavior in particular is a commonly identified deficit associated with antisocial behavior (e.g., Bateman, Bolton, & Fonagy, 2013; Mize & Pettit, 2008; Tolan, Dodge, & Rutter, 2013). However, the specifics of this relationship appear to be more complex.

The results of studies assessing the ability to understand emotion have been clearest in indicating difficulties for offenders. Tests of facial emotion recognition, while inconsistent, have tended toward showing an impairment in recognizing specific negative affects. For example, deficits have been found in the recognition of sad faces (Blair, Colledge, Murray, & Mitchell, 2001; Dolan & Fullam, 2004; Hastings, Tangney, & Stuewig, 2008), fearful faces (Blair et al.,

2001; Montagne et al., 2005), and expressions of anger and disgust (Jones, Forster, & Skuse, 2007). Some studies reported general impairments in recognizing emotion (e.g., Dolan & Fullam, 2004) and thinking about affect (Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010). However, other studies have found no impairments (Glass & Newman, 2006). The weight of evidence toward a deficit in the recognition of fear and possibly some other negative affects is in line with the amygdala or reward-based theories (Blair, 2005) that suggest that antisocial personality may be associated with a deficit in the recognition of aversive cues from others. This has also been conceptualized as a deficit in nonverbal emotional processing (Shamay-Tsoory et al., 2010).

There is further evidence of impairment in more sophisticated social cognitive capacities underpinning the integration of emotional and mindreading processes. While people with ASPD appear competent in Theory of Mind (ToM) tasks requiring identification of intentions, states of mind, or false beliefs (Blair, 2005; Richell et al., 2003), there are findings suggesting subtle impairments in higher level (e.g., faux pas) ToM tasks (Dolan & Fullam, 2004) and misperception of others' intentions (Widom, 1976). These variations of findings may be attributed to differences in the complexity and sensitivity of measures of social cognition and the size and composition of samples.

There seem to be differences across the phenotypes of psychopathy. In one study, callous and unemotional traits appeared positively correlated with accuracy of perception of fearful faces and positive emotion, and negatively associated with negative emotion, while impulsive and antisocial traits were not related to emotion recognition or identification of positive emotion, but were positively associated with negative emotion (Del Gaizo & Falkenbach, 2008). In self-report emotional intelligence questionnaires, those identified as callous–unemotional subtype

gave less attention to affective information, while the impulsive–antisocial type had difficulty inhibiting emotions (Malterer, Glass, & Newman, 2008). Another self-report method showed differences between low- and high-anxiety psychopaths, with only the latter showing a deficit in emotional intelligence (Vidal, Skeem, & Camp, 2010).

Much of the social cognition research to date has focused on samples of serious offenders in prison who meet criteria on the Hare Psychopathy Checklist (Hare, 1991). People who meet criteria for ASPD but are not in this “psychopath” subtype have been poorly researched. An exception is the study of Dolan and Fullam (2004), which discriminated between psychopathic and nonpsychopathic subgroups of ASPD and found that those in only the latter subgroup were impaired in their recognition of basic emotions.

This study, along with the pattern of findings reviewed above, suggests that focusing on more severe callous–unemotional offenders with low anxiety and psychopathic features may have led to the underestimation of the importance of social cognitive deficits. In any case, measurement is challenging in this area, with a variety of constructs being tested. It is likely that the multifaceted nature of social cognition frequently results in selective and inadequate measurement (Luyten, Fonagy, Lowyck, & Vermote, 2012). Furthermore, the differences that do exist may be subtle and will be identified only by tests that are relatively demanding.

Mentalization is a social cognitive construct used to explain how people make sense of their social world by imagining their own and others’ mental states, including beliefs, intentions, emotions, and motivations (Fonagy & Luyten, 2009). It is an attachment-based model that emerged from the treatment of individuals with borderline personality disorder (BPD) and was broadened out to include ASPD (Bateman & Fonagy, 2008). The mentalizing model of antisocial behavior is developmental, premised on the dysfunction of the attachment system that

then temporarily inhibits affects regulation and mentalizing abilities. Antisocial behavior and violence tend to occur when an understanding of the mental states of others is developmentally compromised (fragile) and may then be disastrously lost when the attachment system is activated by perceived threats to self-esteem, such as interpersonal rejection or disrespect (Adshead, Fonagy, & Sarkar, 2007). As mentalizing (envisioning the subjective state of the victim) precludes interpersonal violence, individuals with vulnerable mentalizing capacities are potentially dangerous. Indeed, mentalizing has been shown to be a protective factor, reducing aggression in people with violent traits (Taubner, White, Zimmermann, Fonagy, & Nolte, 2013a). Encouraging mentalizing has been shown to reduce school violence (Fonagy, Twemlow, Vernberg, Sacco, & Little, 2005; Fonagy et al., 2009), and mentalization-based treatment (MBT) has demonstrable success in treating symptoms of impulsivity in individuals with comorbid BPD and ASPD (Bateman et al., submitted). Other studies of forensic patients with personality disorders have found that participants who were interviewed about their views of the processes by which therapeutic changes occurred tended to identify realizations that reflected improved mentalizing (Willmot & McMurrin, 2013, 2014b).

The present study was designed to explore mentalizing deficits associated with offending using a multidimensional model of mentalizing (Fonagy & Luyten, 2009; Luyten et al., 2012). These dimensions include the ability to: (a) “read” others’ minds and body language as to their intentions (external mentalizing); (b) take a perspective on oneself in relation to others (internal mentalizing); and (c) comprehend both affective and cognitive aspects of oneself and others (Allen, Fonagy, & Bateman, 2008). Since the capacity is conceptualized as multidimensional, there is no single valid assessment tool that simultaneously assesses multiple dimensions (Choi-Kain & Gunderson, 2008). A variety of tests were selected for validity in assessing differences

across typical populations and covering the basic dimensions of mentalizing. A community sample of offenders on probation for violent and nonviolent offences was compared with a control group to test the hypothesis that the offender group would exhibit greater mentalizing difficulties than the nonoffending group, and to determine the extent to which any differences may be attributed to the offenders' exhibiting characteristics of ASPD.

## **Method**

### **Participants**

Eighty-three males under license conditions following a convicted offense were recruited via Offender Managers in probation services in north-west London. This Offender group was divided into ASPD ( $n = 54$ ) and non-ASPD ( $n = 29$ ) groups using the Personality Assessment Inventory (see below). The offenders were sequentially referred by the probation service until the target number was met. A comparison group of 42 community males without criminal records or ASPD was recruited from north-west London by local advertisement, aiming for an age and educational-level match. All participants had English as a first language. The exclusion criteria were: current use of antipsychotic medication (as psychosis has been suggested to be associated with mentalizing anomalies (Pickup & Frith, 2001)); self-reported use of illicit drugs in the previous 48 hours; a diagnosis of learning disability or pervasive developmental disorder, as extracted from the Offender Management Information System or self-reported for the controls; and a self-reported history of a severe head injury. The assessment procedure was computer administered but was not blind; assessors were aware of group assignment.

## Procedure

The North West London Research Ethics Committee 2 approved the study. Written informed consent was obtained from all participants. A battery of measures and tests was completed at individual appointments, typically in single sessions, in an interview room provided by the probation service for offenders and research lab for community controls. Participants received £15 remuneration in recognition of their time and travel costs.

## Measures

### **Measures of personality, mental health, and intellectual functioning.**

*Personality Assessment Inventory (PAI)*. The Antisocial and Borderline subscales of the PAI (Morey, 1991) were employed to identify personality disorder features. The antisocial subscale taps into three facets of the syndrome: Antisocial Behaviors corresponds to conduct problems that characterize the DSM definition of ASPD; Egocentricity includes the self-centeredness and narcissism thought often to lie at the core of psychopathic features; and Stimulus-Seeking involves a low tolerance of boredom and tendency to seek thrills and excitement. The cut-off point of 80 was used to differentiate the offenders into two groups, those with and without ASPD. The Borderline subscale was used to limit contamination from mentalizing deficits associated with comorbid BPD features (Paris, 1997).

These subscales are reliable and valid (Morey, 1991): In terms of external validity, the Antisocial subscale correlates highly with the Hare Self-Report Psychopathy Scale ( $r = .82$ ), and both the Antisocial and Borderline scales correlate with the respective Minnesota Multiphasic Personality Inventory scales ( $r = .60$  for antisocial and  $r = .70$  for borderline).

**Brief Symptom Inventory (BSI).** The BSI is a 53-item self-report symptom inventory which identifies the status of psychological symptoms over the past 7 days (Derogatis & Melisaratos, 1983). It has been normed on adult male nonpatients, making it suitable for the present study. Nine factors of mental health are measured (with internal consistency coefficient alphas ranging from .71 for Psychoticism to .85 for Depression). The Global Severity Index (GSI) score, with a test–retest reliability coefficient of .91 over a 2-week period, was the measure used in this study.

**Wechsler Test of Adult Reading (WTAR).** The WTAR, which comprises a list of 50 words that have atypical grapheme-to-phoneme translations (Wechsler, 2001), was used to assess verbal intellectual functioning. Unlike many intellectual and memory abilities, reading recognition is relatively stable in the presence of cognitive declines associated with normal aging or brain injury. It is normed with the Wechsler Adult Intelligence Scale (WAIS-III), has excellent internal consistency, and the test–retest coefficients indicate a high degree of temporal stability. The raw score (0–50) can be converted to an estimated verbal IQ (depending on age: mean IQ = 100,  $SD = 15$ ).

### **Mentalization tasks.**

**Perspective Taking Task.** The Perspective Taking Task is a computer simulated task designed to test theory of mind in adolescents and adults (Dumontheil, Apperly, & Blakemore, 2010). The task was written in E-Prime 2.0 (Psychology Software Tools, Inc.) and presented on a laptop computer. Participants are read instructions, presented with a  $4 \times 4$  set of compartments with 8 of the 16 compartments containing a different object, and receive an auditory instruction to move an object as quickly as possible in a specified direction to an empty compartment using

the computer mouse (see Figure 1). There are 48 trials in each of two conditions that are presented in a fixed sequence and each condition lasts 5.5 minutes.

*Insert Figure 1*

The two conditions, Director and No-Director, aim to assess the ability to consider a third-person perspective. The Director condition, when the instructions to move objects are given from the perspective of an agent who can only see a limited number of objects on display and an accurate response requires participants to take into account the Director's (a cartoon figure on the opposite side of the display) perspective. So when the Director says "biggest", this object is not the same as the largest object from the participant's perspective. Control trials do not entail conflict between perspectives of the participant and the agent (the "biggest" is the same from both perspectives). In experimental trials, participants therefore need to interpret instructions and can respond correctly only if they inhibit their egocentric bias. Participants are shown the different perspectives of themselves and the Director in relation to "closed" compartments as part of the instructions. In the No-Director condition, participants are told that the director has gone and they will hear instructions to move objects again and that these refer only to the objects in the clear slots and to ignore objects in slots with grey backgrounds. Both Director and No-Director conditions require a mixture of executive functions to be carried out under time pressure. In addition, the Director condition requires Level 1 perspective taking, that is, the ability to represent what another person can see. This ability is a core component of internal mentalizing because participants need to compute the perspective of the agent; in order to predict and explain another person's behavior, individuals generally make inferences about the other's knowledge or beliefs on the basis of their visual access.

Participants are measured for their accuracy in a repeated measures design by condition (Director present vs. No-Director) and trial type (Experimental vs. Control). The measure has been shown to be sensitive to differences in performance between the conditions and the trial types across different age groups. The outcomes for this assessment are the percentage of errors in four types of trials: (a) Director Experimental; (b) Director Control; (c) No-Director Experimental; (d) No-Director Control. We calculated an overall mentalization outcome measure for this task that considered the ratio of perspective-taking errors (Director-Experimental) relative to all errors in the task (*Perspective Taking Error Rate*).<sup>1</sup>

***Movie for the Assessment of Social Cognition (MASC).*** The MASC is a video-based test used to evaluate subtle mindreading difficulties (Dziobek et al., 2006). In this study, we used the multiple-choice version of the instrument (MASC-MC). It comprises a laptop presentation of a 15-minute dubbed film with instructions presented on slides. The participant is asked to try to understand what the four characters depicted in the film are feeling and thinking. In the course of the film, the video is paused 43 times and 45 multiple-choice questions are asked concerning the characters' intentions, feelings, and thoughts, as well as 6 control questions for which no mentalizing is required (see Figure 2). Responses are digitally recorded.

*Insert Figure 2*

The design includes traditional mentalizing concepts such as first- and second-order false belief, deception, faux pas, persuasion, metaphor, sarcasm, and irony. Furthermore, the emotional valence varies, as does the conversational content and the use of body language. The nonmentalizing control questions assess memory, general comprehension, and attention. The

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<sup>1</sup> Perspective Taking Error Rate was calculated as:  $\text{Director Experimental errors \%} \div (\text{Director Experimental errors \%} + \text{Director Control errors \%} + \text{No-Director Experimental errors \%} + \text{No-Director Control errors \%}) \times 100$ .

multiple choice format provides a correct mentalization score (0–45) with subdivisions of feelings (0–18), intentions (0–19), and thoughts (0–8); correct control responses (0–6); and three types of mentalizing mistakes reflecting inferences that constitute (a) “Less Mentalization”, (b) “Excessive Mentalization”, and (c) “No Mentalization” (i.e., concrete explanations without mental insight). All of these raw scores were converted to percentages for analysis. The differences in correct response rates for mentalizing and control items were calculated as a proportion of total correct scores and this adjustment did not add anything to the analysis.

The MASC has proved to be sensitive to social impairments in a variety of psychiatric populations and has good indices of reliability and strong face validity (Preissler, Dziobek, Ritter, Heekeren, & Roepke, 2010; Sharp et al., 2011). It was used in this study to assess affective and cognitive aspects of mentalizing.

*Reading the Mind in the Eyes Test, Revised Version (RMET).* The RMET is used to detect subtle individual differences in social sensitivity (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). It involves presenting participants with a series of 36 photographs of the eye region of male and female faces using a slide presentation on a laptop computer. Four descriptors of complex mental states are displayed, one at each corner of the photograph: the correct answer and three foils of the same emotional valence (see Figure 3). Participants are instructed to read all four words, choose the one that best describes what the person in the photo is thinking or feeling, and mark their choice on a multiple choice answer sheet. A glossary of all the terms used in the test is provided for reference and participants work through the test at their own pace. As a control for facial recognition and attention, participants are asked to identify the gender of the person (male, M, or female, F).

*Insert Figure 3*

This test, which usually takes around 10 minutes to complete, is widely used in research and has successfully differentiated mentalizing impairments in a number of clinical populations (Fertuck et al., 2009; Frick et al., 2012). The measure is the number of correct identifications of mental state (0–36) expressed as a percentage. The differences in correct response rates for mentalizing and control items were calculated as a proportion of total correct scores, although this adjustment did not add anything to the analysis. In this study, the measure was employed to assess mentalizing based on external cues for both cognitive and affective features (Nolte et al., 2013; Rutherford et al., 2012).

### **Data Analysis**

In preliminary analyses we examined differences between demographic characteristics of the three groups of the study and their representativeness of the population of offenders. The combined mentalization assessment data were checked for normality using the Shapiro-Wilk test with the mentalization measures. There were mild deviations from normality on two of the test scores: RMET ( $p = .54$ ), MASC ( $p = .096$ ), and the Perspectives ( $p = .048$ ). Parametric tests were used and residuals were examined for evidence of violations of assumptions. Where the diagnostic tests suggested a risk of bias, analyses were repeated with nonparametric tests, which on all occasions confirmed the results of the parametric analyses.

Study hypotheses were tested in the following steps:

First, we compared obtained scores with scores obtained in published studies using *t*-tests. These comparisons are based on published figures and are not replicated here but the results of the tests of significance are reported and the full analyses are available from the authors. We then compared mentalizing scores between the groups of the present sample,

predicting group  $\times$  condition interaction effects, with group differences emerging in test conditions requiring mentalizing using repeated measures analyses of variance (ANCOVAs), controlling for possible confounding influence from demographic and clinical covariates. Initially, we tested the overall Offender vs. Control contrast and then post-hoc contrasts comparing Offender ASPD with Control groups and Offender non-ASPD with Control groups with appropriate Bonferroni adjustments. On tests where multiple subscales were available, we used multivariate analyses of covariance (MANCOVAs) with the same contrasts and covariates as on single scales. Finally, multinomial logistic regressions were used to assess the predictive value of the measures of mentalizing performance on group difference.

## Results

Table 1 presents a demographic and clinical profile of the participants by group and shows any significant differences between groups. The groups were well matched on age ( $M = 37.1$  years) and ethnicity. However, despite the recruitment efforts to achieve a matched control group, there were significant between-group differences in years in education and IQ scores. In subsequent analyses, both were used as covariates. As would be expected, there was a significant difference between groups in the self-rated measure of ASPD (endorsing items indicative of being impulsive, a risk-taker, self-centered, skeptical, and unsympathetic to others in interpersonal relationships), with 65% of participants in the offender group scoring over the baseline suggesting a clinical diagnosis ( $n = 54$ ). Offenders with ASPD had higher GSI scores than the other groups. Interestingly, self-rated borderline traits differentiated the groups, such that the Offender ASPD group had significantly greater self-reported BPD scores than the

controls and the Offender non-ASPD group had significantly lower BPD scores than the controls.

*Insert Table 1*

Table 2 shows how the offender group compares with the London-wide offender profile in terms of risk and the violence of their crime.

*Insert Table 2*

The offender group distribution for level of risk differs significantly from the London Offender Profile ( $\chi^2(3) = 52.3, p < 0.0001$ ). Proportionally, the sample contained three times as many offenders assessed as being in the “high and very high” risk tier category compared with the London-wide profile. The sample also included a higher proportion of offenders convicted of a crime that included violent or aggressive acts, although this difference was not significant. There were no significant differences within the present offender sample of those with and without ASPD in relation to the severity of their risk or crime.

### **Perspectives Task**

Performance in the Perspectives task is displayed in Table 3 for the offender groups and the controls and the differences between conditions were as predicted from the development sample (Dumontheil et al, 2010).

*Insert Table 3*

A repeated measures  $2 \times 2 \times 2$  analysis of covariance was performed on the error rates on the Perspectives task, with group (between subjects) and Director vs. No-Director and Experimental vs Control (repeated measures) factors and with IQ (WTAR), years of education, BPD, and GSI scores as covariates. The analysis yielded a significant two-way interaction for

Group  $\times$  Director ( $F(1,114) = 8.32, p = .005, \eta^2 = .068$ ). The mean error rates displayed in Table 3 shows that error rates on the task were lower for the offender group than the control group when looking from the participants' own perspective and, in the condition where the Director's perspective had to be adopted, errors were more frequent in the offender group. The predicted three-way interaction between Group  $\times$  Director  $\times$  Experimental was significant ( $F(1,114) = 9.75, p = .002, \eta^2 = .079$ ), showing that the impact of having to adopt the Director's perspective on the differences between error rates in the Experimental (distractor) versus Control (no distractor) condition was greater for the offender group than the control group.

To simplify further analysis of the results, a single difference in error rate variable task was calculated for this task, the Perspective Taking Error Rate, which reflected the percentage of total errors associated with taking the Director's perspective in the Experimental condition (see Method). Using the error rate as the outcome variable, a further ANOVA to identify the difference between the offender group and control group, while also considering the influence of IQ (WTAR), years of education, BPD and GSI scores confirmed that the offender group made proportionally more errors associated with perspective taking than the control group ( $F(1,115) = 7.2, p = .008, \eta^2 = .059$ ) (see Figure 4). This same outcome measure was then used in an ANCOVA to compare the controls with offender groups with and without ASPD. The overall model showed there were significant differences ( $F(1,114) = 3.8, p = .026, \eta^2 = .063$ ), and a post-hoc test showed that there was an effect with more errors for both the non-ASPD sub-group ( $p = .011$ ) and the ASPD subgroup ( $p = .024$ ) when compared with the controls.

*Insert Figure 4*

In sum, the results confirmed a tendency toward an egocentric bias in the offenders compared with controls, controlling for demographic and clinical differences, with significantly

more errors in the Experimental (distractor) than the Control (no distractor) situation, and more errors in the Director than the No-Director condition; this applied to both those with and without ASPD.

### **Movie for the Assessment of Social Cognition**

The same analytic approach was adopted with the MASC data and using the same covariates: first, we considered the raw means for correct answers for the offender and control groups, which permitted comparison with the nonclinical control groups of other studies (Dziobek et al., 2006; Montag et al., 2010; Smeets, Dziobek, & Wolf, 2009; Wilbertz, Brakemeier, Zobel, Harter, & Schramm, 2010).<sup>2</sup> We then confirmed these differences using the ratio of mentalizing errors to total errors. Table 3 displays mean percentage correct responses to test and control questions in the current study.

Overall, the offender sample made more errors than both the control group in our study ( $t(119) = -2.74, p = .007$ ) and the controls in previous studies ( $t(160) = -8.46, p < .000$ ); only 1% of the current sample performed at the mean level of the pooled control groups. At the same time, performance on the questions that did not require mentalizing in the control condition was not significantly poorer for the offender sample than for the comparator group ( $t(119) = 1.06, p = .29$ ).

Comparison of performance of the offender and control groups in an ANCOVA revealed that the offender sample gave significantly fewer correct answers than the control group to the test questions ( $F(1,118)=7.3, p=.008, \eta^2=.058$ ) but gave slightly (although not significantly)

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<sup>2</sup> These control groups had a combined  $N = 81$  with a mean correct mentalization score of 75.7 ( $SE = 0.81$ : calculated by a weighted average of the 4 studies).

more correct answers on the control questions ( $F(1,118) = 1.11, p = .295, \eta^2 = .009$ ). The offender group obtained lower mentalization scores (calculated as the ratio of test responses to total correct responses) ( $F(1,118) = 6.35, p = .013, \eta^2 = .051$ ). When the two offender subgroups were compared with the controls, the model was also significant ( $F(1,117) = 4.2, p = .018, \eta^2 = .067$ ) and, on post-hoc tests, it was the ASPD group that scored fewer correct answers ( $p = .005$ ).

The subscales of the MASC permit greater specificity in identifying the nature of possible mentalizing impairments and performance between the offender group and control group on these subscales. A multivariate ANCOVA, which included all the MASC subscales, yielded a significant group difference (Wilks' Lambda = .89,  $F(6,120) = 2.22, p = .047, \eta^2 = .11$ ). The adjusted means and standard errors are shown in Table 3 also displaying the results of the univariate ANCOVAs performed. The offender group obtained lower scores on Feelings items, marginally lower scores on Intentions and Thinking items, marginally higher scores on the No Mentalization subscale, and markedly higher scores on the Less Mentalization subscale. A further MANCOVA was performed to examine whether the offender sub-groups compared differently with the controls. Again, the overall model was significant (Wilks' Lambda = .83,  $F(7,120) = 1.8, p = .049, \eta^2 = .09$ ) with a similar pattern of scoring for both the ASPD and non-ASPD groups as described above. However, the post-hoc analyses revealed that it was the ASPD group that had significantly lower scores for Feelings ( $p = .003$ ) and higher scores for Less Mentalization ( $p = .002$ ). The ASPD group also scored significantly higher for No Mentalization than the controls, while the non-ASPD group was no different.

This pattern of results suggest that offenders find it most difficult to make accurate inferences about what others are feeling (and, to a lesser degree, what others are thinking and intending) and have a particular tendency to hypomentalize (fail to mentalize) when making

these judgments. While these characteristics are shared by the whole offender group, the ASPD sub-group also had greater difficulty with any kind of mentalizing.

### **Reading the Mind in the Eyes Task**

As with the Perspectives task and the MASC, difference in performance between the offender group and control group using the same covariates was analyzed with an ANCOVA and considered alongside other relevant studies using *t*-tests, including several small forensic samples (Elsegood & Duff, 2010; Richell et al., 2003) (male prisoners and psychopathic male prisoners: Richell et al., 2003; male child sex offenders: Elsegood & Duff, 2010). Contrary to the original study using this instrument (Baron-Cohen et al., 2001), correlations showed relationships between correct answers and IQ (WTAR) ( $p < .001$ ). Adjusted means for both groups are shown in Table 3. Although the original study reported performance at ceiling level on the control items (gender of face) for a nonclinical sample, the average accuracy in both our groups was only around 95%, underscoring the challenging nature of the tasks in this battery for the current sample.

Performance by the offender group on the RMET was significantly poorer on the ANCOVA than that achieved by the control group ( $F(1, 118) = 12.7, p = .001, \eta^2 = .1$ ) and that reported in the measure development study ( $t(135) = -4.88, p < .001$ ). Furthermore, the performance of the offender sample was similar to that achieved by high-performing people with autism from the original study, and inferior to the forensic samples previously tested (as described above). When the model included both the offender subgroups, the ANCOVA showed differences ( $F(1,117) = 7.5, p = .001, \eta^2 = .12$ ), with the non-ASPD group being a little weaker ( $p = .039$ ) and the ASPD group very much poorer ( $p < .001$ ).

### Comparing and Combining Mentalization Variables

The correlation between the key mentalization measures was modest once age, IQ, years in education, BPD and mental health were controlled for: ( $r_{\text{(MASC vs. RMET)}} = 0.21$ ,  $r_{\text{(Perspectives vs. RMET)}} = 0.11$ ,  $r_{\text{(MASC vs. Perspectives)}} = -0.12$ ). To compare the extent to which these variables in combination helped discriminate between the offender groups and the control group, a logistic regression model was fitted to the data. In the first step of the model, covariates were entered (age, IQ, PAI Borderline, and GSI scores). Then, the three key mentalizing tasks' variables were entered with likelihood ratio as criteria. This was carried out first for the whole offender group with the controls as the reference and then repeated for the two offender groups; the results of the analysis are presented in Table 4.

*Insert Table 4 here.*

The model predicting offender status improved significantly by adding the mentalization variables to the model (Likelihood Ratio Test:  $\chi^2(3, N = 118) = 24.24, p < .000$ ). When the three mentalizing scores were entered, RMET ( $p = .003$ ) and the Perspectives ( $p = .011$ ) tasks made significant contributions to the prediction.

When the two offender groups were contrasted with controls separately, the non-ASPD offenders were predicted by poorer scores on the RMET ( $p = .02$ ) and the Perspectives ( $p = .016$ ) tasks, while the ASPD offenders were poor on all three measures and struggled more than the non-ASPD group to mentalize on the MASC ( $p = .046$ ) and the RMET ( $p = .002$ ) tasks. The Likelihood Ratio Test revealed that the three mentalization variables made a significant contribution to the multinomial model,  $\chi^2(8, N = 118) = 62.71, p < .000$ .

## Summary

There is evidence from all three of the mentalization tasks employed that offenders have greater difficulty in mentalizing compared with the general population. The best-fitting model for predicting offenders comprised correct scores on the MASC, the RMET, and the Perspectives task (as independent predictors), together with age, IQ (WTAR), mental health severity, and borderline traits. Furthermore, the same mentalization tasks were significantly more powerful in predicting those offenders who scored above the cut-off for ASPD on a self-reported measure. There is also some evidence that offenders tend to hypomentalize and that those with ASPD have a further inclination to nonmentalize.

## Discussion

The results supported the hypothesis that individuals with histories of offending behavior exhibit greater difficulties with mentalizing than do nonoffending controls. While the predictive strength of the mentalization measures was modest, the findings add to the literature that offenders have nuanced social impairments, specifically suggesting that offenders underestimate others' feelings and intentions, and are weaker at taking another's perspective and determining their mental state. Furthermore, those offenders with ASPD found even more difficulty mentalizing.

In the absence of a recognized overall measure of mentalizing, this study deployed a range of tasks assessing different dimensions of mentalizing, all of which were found to make a unique contribution. The Perspectives task is cognitive in orientation. It requires participants to represent what another person can see and to use this information about the other's perspective when following instructions. In doing so, participants need to inhibit their egocentric bias. The

original study using this task in a nonoffending female population found that perspective-taking performance improved with age. Dumontheil et al (2010) hypothesized that this improvement might be due, not so much to an increased efficiency in perspective taking, but to a change with age in the propensity for individuals to take account of another person's perspective. Our results found a close match between the relatively young and poorly educated offender group of our sample and the adolescent group in their study. In the context of offence-related antisocial behavior, it may be helpful to formulate an element of this association as linked to the delayed or impaired development of mentalizing strategies. There is mixed evidence for an alternative explanation being the recognized impulsiveness of offenders (Farrington, 1995). This might account for the poor performance across both test types, but does not explain the difference between the Director and No-Director conditions, which are equally susceptible to impulsive responses.

The MASC is a broader naturalistic test of mentalizing, requiring relatively complex social judgments. The *hypomentalizing* found across the offender group and the *nonmentalizing* found in the ASPD subgroup in this study both add to and contrast with findings from other research. People with ASPD have been found in some studies to have nuanced impairments in mentalizing (Dolan & Fullam, 2004) and to have difficulty in recognizing certain emotions (Blair, 2001; Hastings et al., 2008). On the other hand, the MASC has discriminated between different types of mentalizing difficulties across varied psychopathologies: *hypomentalizing* in bipolar disorder (Montag et al., 2010) and paranoid schizophrenia (Montag et al., 2011), and *hypermentalizing* in BPD (Sharp et al., 2011). It was unexpected that the high levels of borderline psychopathology in our ASPD group did not realize any tendency to hypermentalize; quite the opposite, their impairment in reduced mentalizing was greater than the non-ASPD

offenders. This might be explained by the age and clinical differences between the samples in Sharp et al. (2011) and our study (the former being adolescent psychiatric inpatients).

Hypomentalyzing and nonmentalyzing arise from a reduction in mental state awareness and are likely to be associated with problems in the perspective taking, inhibitory control, and mental flexibility that are considered necessary for basic empathy (Decety & Jackson, 2004).

The RMET has been used with offender populations with mixed results. Our study is inconsistent with observations of male prisoners, who appeared not to show any impairment on the RMET. It is possible that psychopathy does not impair RMET performance (Richell et al., 2003) and is likely to be more characteristic of inmates than non-imprisoned offenders, although the more impulsive offending in our sample may be associated with inferior RMET performance. The discrepancy between these findings, together with the greater difficulty experienced by our ASPD offenders in this task, point to the underlying heterogeneity of the offending group and the need for identifying numerous models to account for offending.

### **Theories and Treatment: Offenders, ASPD, and poor Mentalizing**

The subtly impaired blend of perspective taking and difficulty in reading others' mental states shown by the offender group is consistent with the mentalization literature and other theories of antisocial behavior.

The mentalizing model of antisocial behavior is developmental, premised on the activation of the attachment system, which temporarily inhibits arousal and affect regulation capabilities (Fonagy, 1991). While the attachment system was not deliberately manipulated in this study and there is no reason to believe this source of stress played a role in the results, mentalizing deficits can be considered more broadly. It is interesting that the original

Perspectives task study (Dumontheil et al., 2010) suggested that mentalizing ability matured with age well into the third decade. This developmental understanding may be placed alongside a model in which mentalizing is recognized as being domain and context specific. Specifically, the evolutionary idea that a feeling of “social safeness” (Gilbert, 2005, 2009) is a prerequisite of successful mentalizing means that social roles and relationships need to be assessed for an appreciation of where mentalizing fails (Liotti & Gilbert, 2011).

The complex interactions inherent in this model allow for individual differences based on developmental and situational variables, and may help to explain why it is so problematic to separate the ongoing controversy between “social skills deficit” and adaptive “enhanced mentalization” explanations of antisocial behavior (Sutton, Smith, & Swettenham, 1999). The findings of this study could also be consistent with other theories. Poor mentalizing and egocentricity may relate to the callous disregard for others found in the psychopath phenotype of ASPD, that is, a deliberate strategy or unconscious defense to ignore, downplay, or manipulate the mental states of others. This tendency to hypomentalize or nonmentalize social interactions may complement explanations of an empathy deficit (Blair, 2001) or a lack of emotional processing (Patterson & Newman, 1993). Alternatively, perhaps this may be better understood as “mindreading without empathizing” (Baron-Cohen, 1995).

These ideas are speculative, and further research of the underlying processes is needed to link this study’s outcomes to these theories. However, at a clinical intervention level, help with strengthening the ability to identify other people’s emotions and intentions and take an intentional stance toward the self could assist with social functioning and reduce the risk of antisocial strategies. Antisocial behavior and violence tend to occur when an understanding of the mental states of others is compromised in certain situations, and may then be disastrously lost

when the attachment system is stimulated. It has been posited, therefore, that mentalizing protects against violence (Bateman & Fonagy, 2008), and indeed it has been shown to be a protective factor for people with violent traits in reducing aggression (Taubner, White, Zimmermann, Fonagy, & Nolte, 2013b). This seems particularly relevant for potential treatment implications given the higher than average violent crime profile for the offending group examined here.

Based on the Bateman and Fonagy (2008) model, impaired mentalizing is triggered by threat and leads to a temporary retreat to the coping mechanism used during the original development of attachment; usually, shutting oneself off from considering the other person's mind. In discussing the challenges of developing MBT for people with ASPD, Yakeley (2014) reflects on how such patients find it difficult to identify their own internal states of mind as well as finding thinking about other's needs alien but, nonetheless, describes some success with the adaptation of MBT. A study of the processes of change for an attachment-based model of therapeutic change with forensic inpatients with a primary diagnosis of personality disorder, suggested that a key change, as described by participants, was improved mentalizing through enhanced trust, empathy and perspective-taking (Willmot & McMurrin, 2014a).

The findings of this study suggests that the development of mentalization-focused interventions may benefit offenders who are often trapped in attachment-based negative spirals of social and emotional deprivation emanating from childhood, which create vulnerabilities for developing mental disorders.

### **The role of IQ, Age, and Mental Health**

The significant roles of IQ, age, and mental health in this study merit attention. IQ seems to have a positive influence on performance in the mentalization tasks deployed. This is consistent with previous studies on the MASC (Dziobek et al., 2006) but is contrary to conclusions that the RMET is not susceptible to IQ bias (Baron-Cohen et al., 2001). However, the poor literacy levels found in our sample meant that the WTAR, a verbal IQ test, might not have been the best measure of IQ, and these observations should therefore be treated with caution. Age contributed to the best model predicting offending. It is possible that age is to some extent a proxy for mentalizing, in that it has been shown that mentalizing capability increases with age into early adulthood (Dumontheil et al., 2010). The GSI was also a significant predictor; given the high levels of ASPD in the offender group and the known comorbidity of ASPD with other Axis I mental disorders (Swanson, Bland, & Newman, 1994; Ullrich & Coid, 2009), this relationship was expected.

### **Limitations**

This study has several limitations. The recruitment method relied on referrals from Offender Managers, which may have led to some sample bias, indicated by the relatively high level of risk associated with being referred to the study compared with London-wide comparisons. The heterogeneity of the offender group may have masked other differences, despite taking account of likely confounding factors. The offender ASPD group was identified through a self-report questionnaire rather than a clinical assessment. The associations of offending with mentalizing were small once covariates were controlled for and need replicating in larger samples before these conclusions can be expanded on. Further, the possibility of inverse

causality—that is, that antisocial histories and offending behavior makes an individual less mindful—may provide a plausible alternative account, which only a longitudinal design could test.

The measurement of such a broad construct as mentalizing is not yet well established and the tests are laboratory based; they do not meet the standards of measurement in a clinical setting. Although the discriminant validity of the measures used was encouraging, the MASC and Perspectives tasks have not been used with an offender sample before and there may be unknown confounds associated with their design. For example, the Perspectives task is based on an authority figure (the Director), which may trigger negative reactions in offenders. The MASC is based on a “middle-class” dinner party, and the demographically diverse sample of offenders may not relate to the language and social rules presented in the story. As identified, the likelihood of individual differences in the contexts that precipitate mentalizing difficulties means that these tasks may be measuring only a narrow range of situations, thus limiting their generalizability.

More fundamentally, while the measures were intended to assess mentalizing, it may be that other deficits were being identified. For example, there is disagreement as to whether mentalizing can be separated from executive functioning, which is the ability to direct attention and comprehend and integrate information (Happé & Frith, 1996; Jarrold, Butler, Cottington, & Jimenez, 2000). A criterion for the measures used in this study was that demands for executive function were balanced across conditions. However, the challenge of achieving this balance in practice is acknowledged and possible interference from this factor was possible.

### **Possible Further Research**

Given the high degree of hypomentalizing, nonmentalizing, and impairment in perspective taking found in the offender group, the interaction of these specific types of mentalizing impairment with ASPD may be useful to consider in future research.

The mentalizing model suggests that a stress condition may lead to a temporary reduction in mentalizing, which may be greater than that found in this study; future designs with this population might consider the role of anxiety.

Further work is required to gain a more complete understanding of mentalizing profiles in individuals who exhibit antisocial behavior. This study showed differences between offenders with and without ASPD, but there are probably further variations across the ASPD phenotypes, which need exploring. Furthermore, there are professional implications for developing more integrated treatment packages across the criminal justice, health, and social care sectors that jointly target the types of mentalizing impairments tentatively pointed to, as well as supporting more specific interventions in psychological therapies. Finally, the study contributes to developing an effective measure of mentalizing by showing how an integrated set of computerized tasks can be used to assess a range of mentalizing processes.

### **Conclusion**

This study used a computerized battery of measures to explore mentalizing in male offenders. The results indicate that offenders appear to have specific mentalizing impairments compared with the general population and that these are more severe among offenders with ASPD. The specific mentalizing difficulties identified were perspective taking, hypomentalizing, nonmentalizing, and “reading the mind in the eyes”. If these mentalizing

impairments are key processes in ASPD, these findings have the potential to improve clinical interventions and risk assessment for public safety.

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