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## Gender Differences in Theory of Mind, Empathic Understanding, and Moral Reasoning in an Offending Population

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Running head: 3 Prosocial Skills According to Gender and Status

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**Gender Differences in Theory of Mind, Empathic  
Understanding, and Moral Reasoning  
in an Offending and a Matched Non-Offending Population**

### Abstract

Previous research suggests that a lack of pro-social skills is characteristic of an offending personality. Two hundred male and female offenders and matched controls completed measures to assess: Theory of Mind, empathic understanding, and moral reasoning. Significant differences between the offenders and the control group, as well as between the male and female participants, were detected in theory of mind, empathic understanding and moral reasoning with offenders scoring lower than the control group, and with males scoring lower than females on most tests. The ability to assess Theory of Mind, empathic understanding, and moral reasoning, and subsequently to identify reduced ability, is not only useful for researchers but will also allow practitioners to tailor existing (or develop new) interventions specific to the needs of individuals. This could be particularly useful in terms of recidivism when applied to those involved in anti-social or offending behaviour.

*Key words: offenders; theory of mind; moral reasoning; empathy; gender*

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3 Human behaviour is said to be underpinned by three individual cognitive abilities -  
4 Theory of Mind (ToM; Premack & Woodruff, 1978), empathic understanding (Davis, 1983),  
5 and moral reasoning (Gibbs et al., 1992). More recently, research has suggested an  
6 association between these skills (Spenser, Betts, & Das Gupta, 2015) and that their combined  
7 utilisation allows for behavioural control (Ma, 2013; Shamy-Tsoory, 2011). As such,  
8 reduced abilities in these skills are thought to be associated with offending behaviours  
9 (Antonowicz & Ross, 2005) and many rehabilitative interventions (aimed at reducing  
10 offending behaviours) have recognised the need to improve upon these skills (Palmer, 2013).  
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22 However, a large number of interventions in the UK are grounded in male research  
23 (Lanctôt, 2018). Bottos (2007) proposed that this may be because women are involved in far  
24 fewer crimes than men, whilst Richardson and Hammock (2007) suggested it was more likely  
25 that the 'roles' traditionally assigned to women presented them with far less opportunity to  
26 indulge in offending behaviours. Yet, although in western society the 'roles' of women have  
27 become more like those of men, female offending patterns have not changed significantly  
28 (Estrada, Nilsson, & Pettersson, 2019). Indeed, the Ministry of Justice continues to record a  
29 difference in male and female offending, with women being responsible for around 25% of  
30 crime in the UK (Criminal Justice Quarterly Update, 2017). This relatively low percentage,  
31 combined with the historic male focus of past research, means that many interventions (even  
32 those claiming to be gender-neutral) may not capture the specificities and complexities of the  
33 female offender (Belknap, Lynch, & DeHart, 2016). This was also the view of the Corston  
34 Report (2007), which called for the development of more gender-responsive programmes and  
35 services for women involved in the Criminal Justice System.  
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54 Despite this lack of female focus, past research into ToM, empathic understanding,  
55 and moral reasoning has observed differences between genders. For example, Calero, Salles,  
56 Semelman, and Sigman (2013), in a study of 9- to 15-year-olds, found that girls performed  
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3 significantly better than boys in all ToM tasks. Similarly, Hiller, Young, and Weber (2014),  
4 using the five-step model of ToM (Peterson, Wellman, & Liu, 2005), found that the young  
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6 adult women demonstrated superior ability in ToM compared to young adult men, and that  
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8 this ability was strongly associated with levels of prosociality. As such, it is claimed that  
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10 women are better able to attribute the mental states of others, and affect more socially  
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12 appropriate responses, than their male counterparts (Blair, 2005; Russell, Tchanturia,  
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14 Rahman, & Schmidt, 2007). In other words, it could be that women are more prosocially  
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16 skilled than men, and therefore more compliant regarding the rules of society. **If this is true, it**  
17  
18 **is one reason why gender specific mediating variables should be considered before simply**  
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20 **applying the causal theories surrounding male offending to female offending (Bennett,**  
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22 **Farrington, & Huesmann, 2005).**  
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29 In addition, measurement of ToM has generally relied on methods that assess from a  
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31 verbal perspective only. As research has shown that females typically perform better than  
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33 males in most verbal tests, this may also explain why females are thought to have a better  
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35 ToM when compared to males (Sagrilo & Ferreira, 2012). Further, given that Blair and Coles  
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37 (2000) reported that ToM requires the recognition and understanding not only of verbal cues  
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39 but also visual cues (on which males typically perform better), any study assessing the  
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41 construct using only verbal stimuli, may obtain findings that are biased towards female  
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43 participants. Hence, to address this limitation, it is considered necessary when considering  
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45 gender to employ measures that assess both verbal and visual ToM.  
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49 **Regarding offending status, most prior studies have found no difference in ToM**  
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51 **between offenders and non-offenders.** For example, Dolan and Fulam (2004), using a battery  
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53 of tasks to assess the ability of 89 male adult offenders (with either DSM IV antisocial  
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55 personality disorder and/or psychopathic diagnoses), found that most of the participants had  
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57 acquired an acceptable level of ToM. One explanation for the disparity between existing  
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3 research and the perceived need for ToM based interventions for offenders, may be that such  
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5 research has largely focused on the cognitive aspects of ToM; that is the ability to recognise  
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7 the mental state of another person. However, Blair and Coles (2000) argued that to respond to  
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9 another's mental state, an observer not only needs to recognise what another may be thinking  
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11 but also to understand the mental state of that person. They noted that this requires affective  
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13 ToM and may explain, at least in part, why many offenders typically 'pass' ToM tasks but are  
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15 still poor at responding to another's mental state. In other words, an offender may recognise  
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17 the thoughts another (e.g., fear or anger) but does not necessarily understand the implications  
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19 of those thoughts. Therefore, to address these limitations a procedure which assesses the  
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21 duality of ToM may well be required.  
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27 Research has also noted gender related ability in empathic understanding. For  
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29 example, Messing, Randoïn, Tissot, Rail, and Fortin (2004) demonstrated that the  
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31 development of empathic understanding varied according to both the gender of the child, and  
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33 of the parent. Noting the gender of both the participant and the parent, these researchers  
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35 asked the children to complete an affective empathy measure, whilst their parent completed a  
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37 scale to assess their own parenting style. A positive association between high levels of  
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39 empathic understanding in female children and an 'empathic' child rearing style in their  
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41 parent(s) was found; thus, suggesting that parenting style, as well as parent to child  
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43 relationships, might play a significant role in the development of empathic understanding in  
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45 children. Such a gender difference in empathic understanding appears to continue into young  
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47 adulthood. With a sample of 60 male and female participants (*M age* = 24.5 years), Rueckert,  
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49 Branch, and Doan (2011) reported that the female participants scored significantly higher  
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51 than the males on the Emotional Quotient (Baron-Cohen & Wheelwright, 2004) and the  
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53 Interpersonal Reactivity Index (Davis, 1980). However, one limitation of these studies may  
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55 be that the measures used were self-report. Makino (2010) criticised self-report measures,  
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3 suggesting that they might not be indicative of how a person feels but rather reflect their  
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5 knowledge of how other people might expect them to feel. Therefore, Rueckert et al.'s  
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7 findings may be a reflection of societally perceived 'gender roles', which suggest that women  
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9 are more people-oriented, helpful, and empathic than men (Rueckert, Branch, & Doan, 2011).

12 **Unlike ToM, differences in empathic understanding between offenders and non-**  
13 **offenders have been more readily noted.** For example, Bevan (2006), in a study of 106 adult  
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15 male offenders (mean age of 33 years), found a significant association between reduced  
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17 empathic understanding and offending behaviour. More specifically, Bevan noted that some  
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19 offenders exhibited intolerance in response to the distress of their victims, whilst others  
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21 demonstrated a level of excitement or enjoyment. This suggests that whilst the offenders were  
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23 able to comprehend the emotional state of their victim, they lacked affective responses (e.g.,  
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25 shame or guilt) to those emotions (Blair, 2005). This may be explained by feelings of  
26  
27 'entitlement' (Raskin & Terry, 1988); something historically associated with narcissism  
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29 (Baskin-Sommers, Krusemark, & Ronningstam, 2014). In practice, narcissism, coupled with  
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31 a sense of entitlement, may 'give' an offender permission to disregard the law, as well as  
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33 cause him or her to underestimate their chances of being caught when in pursuit of a personal  
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35 goal (Hepper, Hart, Meek, Cisek, & Sedikides, 2014). However, such findings are generally  
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37 based on self-report measures of empathic understanding. Therefore, to better understand  
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39 abilities in empathic understanding in male and female, offending and non-offending,  
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41 populations, additional research using a performance-based measure is needed.  
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49 Lastly, regarding moral reasoning, implicit within Kohlberg's (1969) Stages of Moral  
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51 Judgement is the belief that morality is equally applicable to men and women (Nisan &  
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53 Kohlberg, 1982). However, Kohlberg claimed that the average female attained a moral  
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55 judgment rating of level three, whilst males reached an average of level four; thus,  
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57 concluding that females are inferior to men in relation to moral reasoning. Gilligan (1982)  
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3 questioned the validity of Kohlberg's claim, arguing that his reliance on a male normative  
4 sample resulted in both a theory and a measurement system that were insensitive to the  
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6 traditional female concerns of responsibility and care. She noted that males tend to subscribe  
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8 to a morality of rights or justice, whilst females value care, sensitivity, and responsibility to  
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10 people, and only when both were integrated could moral reasoning be properly assessed. This  
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12 was supported MacKinnon and Fiala (2015) who noted that some measures of moral  
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14 reasoning were biased towards men. Consequently, a measure reflecting both care and justice  
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16 orientations may be needed.  
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22 Further, some studies have found a strong negative relationship between moral  
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24 reasoning and criminal behaviours. Kohlberg (1969, p. 33), for example, argued "...that  
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26 children under nine, some adolescents, and adult criminals typically reasoned at stages one  
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28 and two; whereas individuals who have achieved a higher level of moral reasoning engaged  
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30 in responsible, consistent, and predictable behaviour". In a study of young male offenders ( $n$   
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32 = 60,  $M age = 19.53$  years,  $SD = 0.79$ ) Palmer and Begum (2006) provided empirical support  
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34 for this, finding that they reasoned in a way that maximised their own needs and desires,  
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36 whilst minimising any negative consequences; thus, equating to Kohlberg's moral stage two.  
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38 However, past research in this area has largely focused on young, male offenders and, as  
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40 noted above, the prison estate nowadays includes a noteworthy proportion of female  
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42 offenders and has no upper age limit; and so, to investigate differences in abilities in MR  
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44 according to gender and offending status, a more representative age group is needed.  
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49 Therefore, to address the limitations identified in Spenser et al. (2015), and to better  
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51 understand abilities in ToM, empathic understanding, and moral reasoning according to  
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53 gender, as well as an age representative offending status, the following study will include both  
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55 male and female offenders and non-offenders, aged 18- to 55- years. The following  
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3 hypotheses are made:  
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- 8 • Hypothesis 1. There will be significant gender related differences in (a) verbal  
9 ToM, (b) visual ToM, (c) empathic understanding, and (d) moral reasoning.  
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- 12 • Hypothesis 2. There will be significant offending status related differences in (a)  
13 verbal ToM, (b) visual ToM, (b) empathic understanding, and (d) moral  
14 reasoning.  
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- 18 • Hypothesis 3. There will be an interaction between gender and offending status  
19 regarding (a) verbal ToM, (b) visual ToM, (c) empathic understanding, and (d)  
20 moral reasoning.  
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- 23 • Hypothesis 4. An association will be found between Verbal ToM and Visual ToM.  
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### 29 **Methodology**

30 A two-way, between groups, analysis of covariance (ANCOVA), controlling for both  
31 IQ and age, was conducted to explore the impact of gender and offending status on the four  
32 dependent variables: (i) verbal ToM; (ii) visual ToM; (iii) performance-based empathic  
33 understanding, and (v) moral reasoning. Lastly, associations between verbal and visual ToM  
34 using Pearson Product-Moment Correlation Coefficient were investigated.  
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### 42 **Participants.**

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44 One hundred male offenders (aged 18 to 55 year-olds;  $M = 27.38$ ,  $SD = 7.095$ ) were  
45 recruited from a male adult prison in England and 100 female offenders (aged 18- to 55-  
46 years;  $M = 30.24$ ,  $SD = 10.57$ ) were recruited from a female adult prison in England. Age  
47 matched controls of 100 males and 100 females were recruited from the general and student  
48 populations in England (aged 18 to 55 years;  $M$  (male) = 27.89,  $SD = 8.55$  and  $M$  (female) =  
49 31.46,  $SD = 10.78$ ) who reported not having a criminal record. The samples were self-  
50 selected as all participants volunteered to take part; having responded to identical posters  
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3 placed on either wing noticeboards in the prisons or prominent public places (such as  
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5 libraries, community centre notice boards and the university intranet). As per the recruitment  
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7 criteria, all participants were English speaking. Except for the student participants, who were  
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9 given research credits for taking part, no other form of compensation was given to any of the  
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11 participants.  
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#### 14 **Measures.**

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17 Participants completed four measures to assess ability in verbal and visual ToM,  
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19 empathic understanding, and moral reasoning.  
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22 **Verbal ToM:** The Social Stories Questionnaire (SSQ, Lawson, Baron-Cohen, &  
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24 Wheelwright, 2004) was chosen to measure verbal ToM. This measure consists of ten  
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26 vignettes, each divided into three sub-sections containing either: a blatantly offensive  
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28 utterance, a subtly offence utterance, or no offensive utterance, which is made by one  
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30 character to another. Participants were asked to tick 'yes' (and identify the dialogue line in  
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32 which it appeared) if they thought a section contained an utterance which might upset or  
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34 offend another character and 'no' if they thought it was void of any offense. Participants were  
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36 awarded one mark for each target utterance correctly identified, to a maximum of 30 marks.  
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38 In the current study the internal consistency (Cronbach's alpha coefficient) was  $\alpha = .72$ .  
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43 **Visual ToM:** The 'Reading of the Mind in the Eyes test' revised version (Baron-  
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45 Cohen et al., 2001) was chosen to measure visual ToM. This measure consists of 36  
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47 photographs (each of a face with only the eyes showing) split across 3 levels: 12 positive  
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49 emotions, 12 negative emotions, and 12 neutral emotions. Four words were associated with  
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51 each set of eyes and participants were asked to pick the one they thought best described what  
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53 the person in the photograph was thinking or feeling; only one was deemed to be 'correct'. In  
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55 the current study the internal consistency was  $\alpha = .61$ .  
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3           **Performance-Based Empathic Understanding.** The Emotional Intelligence Test  
4 (MSCEIT; Mayer, Salovey, & Caruso, 2002) was chosen to assess performance-based  
5 empathic understanding. This assesses the four-branch model of emotional intelligence  
6 (perceiving emotions, using emotions, understanding emotions, and regulating emotions). It  
7 consists of 141 questions that are divided among 8 tasks (2 for each branch). Participants  
8 received credit for correct answers. In the current study the internal consistency was  $\alpha = .76$ .

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10           **Moral Reasoning.** The Socio-Moral Reflection Measure (SRM-SF, Gibbs, Basinger,  
11 Fuller, & Fuller, 1992) assessed participants' moral judgment, including contract, affiliation,  
12 life, property, law, and legal justice. Participants noted the level of importance they  
13 attributed to each of 11 statements (e.g., "Do you think that the truth should be told at all  
14 times?") using a three-point scale (very important, important, and not important). They were  
15 then asked to give a short reason as to why they had attributed that level of importance to an  
16 item. Participants were awarded credit according to their answer. The measure has been  
17 found, in past research, to discriminate between offenders and non-offenders (Palmer &  
18 Begum, 2006). In the current study the internal consistency was  $\alpha = .93$ .

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20           Written consent was obtained from all participants in line with both the National  
21 Offenders Management Services (NOMS) and the University's ethical approval procedure.  
22 Participants in both the offender and control groups were tested individually in an empty  
23 room in either the prison or university. The lead author sat in the room with the participant to  
24 provide help with reading the stories or statements if required. When no help was needed,  
25 she remained silent, out of the participant's direct line of vision, and at a suitable distance to  
26 protect the participant's privacy. In the offender group the door to the room remained open at  
27 all times and a prison officer was stationed outside the room to ensure safety; the officer was  
28 not in the participant's direct line of vision and a suitable distance was maintained to protect  
29 the participant's privacy. Each participant was given standard verbal instructions and told  
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3 that the session was not timed but should be completed as quickly as possible. The  
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5 presentation of the measures was counterbalanced to control for order effects.  
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## 10 **Results.**

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12 The mean scores and the *SD* indicated that all the scores were located close to the  
13 relevant mean (Table 1).  
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19 Insert Table 1 approximately here.  
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24 Testing was then conducted to check for normality, linearity, univariate and  
25 multivariate outliers, homogeneity of variance-covariance matrices and multicollinearity. The  
26 Kolmogorov-Smirnov procedure was used to assess the distribution of the scores. For each of  
27 the dependent measures the results indicated violation of the assumption of normality.  
28 However, the box plots indicated the existence of a small number of outliers which may have  
29 been the cause of the violation. The normal Q-Q plots for each of the dependent measures  
30 produced reasonably straight lines in each case, suggesting a near normal distribution.  
31 Therefore, it was decided to reject the option of transformation. However, as Levene's Test  
32 of Equality of Error Variances indicated that the assumption of equality of variance had been  
33 violated for each of the measures,  $p > .05$ , and after following Tabachnick and Fidell's  
34 recommendations (2013), a more stringent value of  $p$  was adopted,  $p < .025$ .  
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49 A series of two-way, between groups ANCOVA (controlling for age and IQ), was  
50 conducted to explore the impact of gender and status on the four dependant variables.  
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53 **Verbal ToM:** Hypothesis 1a was supported as there was a significant main effect of  
54 gender,  $F_{(5, 394)} = 106.075, p = .000$ . The effect size was small (partial eta squared = .212).  
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57 Post-hoc comparisons using Tukey's HSD test indicated that the scores for the male group ( $M$   
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= 9.75,  $SD = 5.35$ ) were lower than the female group ( $M = 14.38$ ,  $SD = 4.66$ ). Similarly, hypothesis 2a was supported as there was a significant main effect of offending status,  $F_{(5, 394)} = 69.921$ ,  $p = .000$ . The effect size was small (partial eta squared = .151). Post-hoc comparisons using Tukey's HSD test indicated that the scores for the offender group ( $M = 10.32$ ,  $SD = 6.09$ ) were lower than the non-offender group ( $M = 13.81$ ,  $SD = 4.25$ ).

Hypothesis 3a was partially supported as there was a statistically significant interaction between gender and offending status,  $F_{(5, 394)} = 61.236$ ,  $p = .000$ . However, it was found that verbal ToM was dependant on offending status for males, but for females this was not case.

**Visual ToM:** Hypothesis 1b was not supported as there was no significant main effect of gender,  $F_{(5, 394)} = 4.578$ ,  $p = .033$ . The effect size was small (partial eta squared = .011). In contrast, hypothesis 2b was supported as there was a significant main effect of offending status,  $F_{(5, 394)} = 69.921$ ,  $p < .001$ ; the effect size was medium (partial eta squared = .322). Post-hoc comparisons using Tukey's HSD test indicated that the for the offender group ( $M = 19.16$ ,  $SD = 8.04$ ) were lower than the non-offender group ( $M = 28.9$ ,  $SD = 8.26$ ). Hypothesis 3b was not supported as the interaction between gender and offending status was not significant  $F_{(5, 394)} = .547$ ,  $p = .46$ .

**Verbal and Visual ToM:** The relationship between verbal ToM and visual ToM was investigated using Pearson's product-moment correlation coefficient. Hypothesis 4 was supported as there was a moderate relationship between the two variables,  $r_{(398)} = .522$ ,  $p = .000$ .

**Empathic Understanding:** Hypothesis 1c was supported as there was a significant main effect of gender,  $F_{(5, 394)} = 47.783$ ,  $p < .00$ . The effect size was small (partial eta squared = .108). Post-hoc comparisons using Tukey's HSD test indicated that the scores for the male group ( $M = 115.12$ ,  $SD = 24.89$ ) were lower than the female group ( $M = 129.40$ ,  $SD = 20.70$ ). Hypothesis 2c was also supported as there was a main effect of offending status,  $F$

(5, 394) = 80.183,  $p < .001$ . The effect size was small (partial eta squared = .169). Post-hoc comparisons using Tukey's HSD test indicated that the scores for the offender group ( $M = 113.67$ ,  $SD = 21.80$ ) were lower than the non-offender group ( $M = 130.85$ ,  $SD = 20.97$ ). Hypothesis 3c was also supported as the interaction was significant,  $F_{(5, 394)} = 11.367$ ,  $p = .001$ .

**Moral Reasoning:** Hypothesis 1d was not supported as the effect of gender was not significant,  $F_{(5, 394)} = 3.299$ ,  $p = .07$ . However, hypothesis 2d was supported as there was a significant main effect of status,  $F_{(5, 394)} = 262.853$ ,  $p < .001$ . The effect size was medium (partial eta squared = .400). Post-hoc comparisons using Tukey's HSD test indicated that the scores for the offender group ( $M = 274.75$ ,  $SD = 33.95$ ) was lower than the non-offender group ( $M = 325.15$ ,  $SD = 27.17$ ). Hypothesis 3d was not supported as the interaction effect between gender and status was not statistically significant,  $F_{(5, 394)} = 1.352$ ,  $p = .246$ .

## Discussion.

The current study examined possible effects of gender and offending status on ToM, empathic understanding, and moral reasoning across a representative age range.

**Verbal ToM:** By using a 'Faux Pas' task that simultaneously assessed both cognitive and affective ToM, the present study adds to the literature by finding, in a single study, an effect of gender, with the males scoring lower on verbal ToM than the females. This might be explained by considering variations in the amount of supportive and emotional talk that parents and older siblings have with younger children, with such communications favouring girls over boys (Brown & Dunn, 1996). According to Leaper, Anderson, and Sanders (1998), this may be all that is needed to give girls an advantage over their male counterparts regarding their developing ToM. Similarly, Hughes (1998) proposed that parents may 'train'

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3 female offspring to think more carefully than males about social interactions, by making the  
4 thoughts, beliefs, and feelings of others the focus of discussions.  
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8 The present study also importantly differs from most past research in that it found an  
9 effect of offending status; with the offenders scoring lower on verbal ToM than the non-  
10 offenders. One explanation for this difference from prior work may relate to the traditional  
11 methods used to assess ToM. Richell et al. (2003), for example, used a measure that  
12 considered only emotional recognition and not both emotional recognition and understanding;  
13 Shamay-Tsoory et al. (2005) suggested that Richell et al.'s study was an assessment of  
14 cognitive ToM and not cognitive and affective ToM. Blair and Coles (2000) stated that both  
15 cognitive and affective ToM are needed for the recognition and understanding of another  
16 person's cues, this may explain why offenders typically 'pass' ToM tasks but are still poor at  
17 responding to another's mental state. Further, the main aim of Richell et al. (2003) was to  
18 compare abilities in ToM between two offender groups; a psychopathic group and a non-  
19 psychopathic group, and not to identify differences in ability in ToM between offenders and  
20 non-offenders. Therefore, it could be that both offender groups (the psychopath and the non-  
21 psychopath) had similar, possibly reduced, abilities in ToM.  
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40 **Visual ToM:** The current study did not find a significant effect of gender on visual  
41 ToM. However, it did find an effect on visual ToM of offending status, with the offender  
42 group scoring lower than the non-offender group. Regarding gender, Bolger, Hornickel,  
43 Cone, Burman and Booth (2007) noted that boys appear to outperform girls in tasks where  
44 they are presented with a visual stimulus; whilst girls outperform boys in tasks where there is  
45 a verbal stimulus. Using Functional Magnetic Resonance Imaging they measured the brain  
46 activity in 31 boys and 31 girls (aged 9 to 15 years) as they performed spelling and writing  
47 tasks delivered in two sensory modalities: verbal and visual. Burman and Booth also found  
48 that the boys showed significantly greater activation in the language areas of the brain, when  
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3 presented with a visual stimulus, when compared to the girls. The reverse was also true in  
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5 that the girls outperformed the boys when the stimulus was delivered by means of the written  
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7 word. The present study used 'Reading the Mind in the Eyes' test (Baron-Cohen et al., 2001)  
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9 that involves looking at photographs of eyes whilst simultaneously matching the observed  
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11 expressions to one of the four written descriptors. Consequently, the measure assessed both  
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13 verbal and visual stimuli. As such, it is possible that the differing stimuli compensated for  
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15 each other and future research may wish to identify a task that bypasses language and  
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17 assesses ToM in a purely visual manner; thus, reducing the number of executive demands  
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19 placed upon the participant (Roux & Uhlhaas, 2014).  
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24       Regarding the effect of offending status on visual ToM, one explanation may be that  
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26 delayed cognitive development, possibly caused by a background where abuse, conflict,  
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28 neglect, and negative attitudes predominate (Towl & Crighton, 2010), may have an impact on  
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30 ToM (Happé & Frith, 1996). Keenan and Ward (2000) noted that individual experiences  
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32 within the family, and/or larger social environments, are experienced from both a verbal and  
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34 a visual standpoint. Schurz et al. (2015), stated that visual perspective taking is a fundamental  
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36 feature of the human social brain, and aids a more accurate representation. Therefore, it could  
37  
38 be contended that a delayed or reduced development in relation to ToM might feasibly affect  
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40 both verbal and visual perspective taking. To the current authors' knowledge, the present  
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42 study is the first to demonstrate an effect of offending status in visual ToM.  
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47       **Empathic Understanding:** The current study found a significant effect of gender for  
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49 performance-based empathic understanding with the female group scoring higher than the  
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51 male group, and an effect of offending status on performance-based empathic understanding  
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53 with the offender group scoring lower than the non-offender group. In addition, a significant  
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55 interaction was found. One possible explanation for the effect of gender may be attributed to  
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57 levels of the hormone testosterone. Whilst, testosterone is responsible for the development of  
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3 male gender characteristics, it has also been linked to reduced empathy in both genders  
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5 (Batrinos, 2012). For example, Harris, Rushton, Hampson, and Jackson (1996), with a sample  
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7 of 155 male and 151 female participants, found that a lower level of testosterone acted as a  
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9 predictor of empathic understanding measure in men and women. However, although  
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11 testosterone is found in both men and women, men have approximately ten times as much of  
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13 the hormone as their female counterparts. So, it might be contended that men will be less  
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15 empathic than women (Baron-Cohen, 2002). Considering this, Hermans, Ramsey, and van  
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17 Honk (2008) examined the association between testosterone levels and emotional mimicry  
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19 (the ability to mimic the thoughts, beliefs, and feelings of another person). They found that a  
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21 single dose of testosterone was enough to significantly decrease emotional mimicry in the  
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23 female participants which led Hermans et al. to conclude that the naturally higher baseline of  
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25 testosterone in males could be an explanation for their reduced ability to mimic emotions.  
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31 The present study also found that the offender group scored lower than the non-  
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33 offender group on performance-based empathic understanding. Whilst this is in keeping with  
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35 past research, historically studies considering empathic understanding have relied on self-  
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37 report measures (Blair, 2005). As mentioned above, such tests may be influenced by demand  
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39 characteristics (Makino, 2010). Therefore, by using a performance-based measure, that may  
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41 result in a truer realisation of abilities in empathic understanding, the present study adds to  
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43 the literature.  
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47 **Moral Reasoning:** No main effect according to gender was found in the present study;  
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49 however, a main effect according to status was found; with the offender group scoring lower  
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51 than the non-offender group on measures for moral reasoning. The present study addresses  
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53 the existing controversy regarding gender moderated moral reasoning. For example, Gilligan  
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55 (1982) asserted that women tend to resolve moral dilemmas using a care approach, whilst  
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57 men tend to use a justice approach. However, Clopton and Sorell (1993) suggested that such  
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3 differences may be due to the various types of dilemmas women and men encounter in their  
4 daily lives, rather than to the way in which men or women might approach a problem. To  
5 address this issue, Clopton and Sorell restricted the types of dilemma used in their study to  
6 those relating to parenting. Using this type of dilemma, they found that men and women did  
7 not differ in their use of care or justice reasoning when the dilemma type was restricted; thus,  
8 supporting the conclusion that male and female differences in moral reasoning probably  
9 result from differences in circumstances rather than from gender characteristics. Friesdorf,  
10 Conway, and Gawronski (2015), following their meta-analysis of 40 studies, in which the  
11 6100 male and female participants were asked a number of questions posing various moral  
12 dilemmas (including decisions about murder, torture, lying, abortion, and animal research)  
13 noted that differences in gender related morality were due to women having a stronger  
14 emotional aversion to harmful actions, rather than an actual difference in cognitive reasoning  
15 abilities, when compared to men. Further, Friesdorf et al. suggested that these studies, in  
16 assuming that moral behaviour is dependent on affective processes, often ignored the  
17 consequences of actions. So, by using less emotive dilemmas (and thus controlling for  
18 emotions), they proposed that no evidence for gender differences might be found. Therefore,  
19 by using a gender-neutral assessment of moral reasoning the present study adds importantly  
20 to the literature, finding an effect for moral reasoning according to offending status with the  
21 offenders achieving lower on the measure for moral reasoning than the non-offenders. In the  
22 context of Kohlberg's theory, the present findings revealed that offenders, on average,  
23 reached Stage 2, whilst the non-offenders were found to reason at Stage 3. Although such a  
24 finding was identified by Palmer and Begum (2006), their study considered only adolescent  
25 offenders. In contrast, the participants in the current study ranged from 18 to 55 year of age;  
26 thus, addressing a more representative age group in terms of the prison estate, and so adding  
27 to the literature.

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3 **Interaction between gender and offending status:** With regard to any interaction  
4 between gender and offending status, the results varied according to the outcome measured.  
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6 For visual ToM and moral reasoning, no significance was found. Regarding verbal ToM,  
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8 significance was found for male participants only. However, significance was found for all  
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10 groups regarding empathic understanding.  
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14 The findings relating to empathic understanding may be reflective of the measure  
15 adopted. Makino (2010) suggested that the traditional method of assessing empathic  
16 understanding (e.g., using a self-report measure) may not be representative of how a  
17 participant actually feels, but rather reflect his or her beliefs relating to how society expects  
18 them to feel. An example of this was found by Klein and Hodges (2001) who noted that when  
19 the participants were told the true nature of the study, no gender differences were identified in  
20 empathic understanding. However, the women in their study scored more highly than the men  
21 when the reasons for the research were withheld. Therefore, it may be that the interaction  
22 between gender and offending status relating to empathic understanding as identified by the  
23 performance-based measure used in the present study, are a truer reflection of ability;  
24 something that could be further differentiated by offending status.  
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28 Language development may offer one explanation as to why an interaction between  
29 gender and offending status, in relation to verbal ToM, was found only in the male groups.  
30 Findings have suggested that men are less lingually advanced than their female counterparts  
31 (Wallentin, 2020), which is said to be further exaggerated by offending status (Winstanley,  
32 Webb, & Conti-Ramsden, 2019). Apperly and Butterfill (2009), and more recently  
33 Meinhardt-Injac, Daum, Meinhardt and Persike (2018), noted that reflexive-cognitive  
34 processes (language) is required to understand the mental state of another person. Thus,  
35 differing abilities in language may account for the present findings.  
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3 Lastly, when considering the non-significant findings relating to visual ToM and moral  
4 reasoning, one explanation may be found in cognitive flexibility and inhibitory control.  
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6 Cognitive flexibility allows a person to make simultaneous judgments, from multiple and  
7 sequentially shifting situations, and so 'make sense' of everyday interactions, whilst  
8 inhibitory control allows the individual to suppress his or her own immediate responses long  
9 enough to allow for a considered response (Spenser, Bull, Betts & Winder, 2019). Research  
10 suggests that both are closely associated with personality (Odacı & Cikrikci, 2019).  
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12 Personality is said to be influenced by heredity, environment, and situation (Hopwood et al.,  
13 2011), which may include, but is not limited to, gender and offending status. Therefore, the  
14 omission of other factors, beyond gender and offending status, may go some way to explain  
15 the findings in the present study. Nevertheless, these findings do lend some support to the  
16 proposal that male offending and female offending is mediated by a number of different  
17 factors that can differ across gender.  
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33 To summarise, differences in perspective taking and decision making according to  
34 offending status have been of interest to researchers for several years; specifically, in the  
35 context of reducing offending levels through rehabilitative programmes (Vessels & Huitt,  
36 2005). Whilst the current study was not without limitations; specifically, it did not  
37 differentiate between crime categories, measure individuals serving sentences of more than  
38 six months or include those with community disposals (something future studies may wish to  
39 address), to the knowledge of the authors it is first to examine for differences in ToM,  
40 empathic understanding, and moral reasoning, in a sample of both male and female, offenders  
41 and non-offenders, across a representative age group, in a single study. As a result, the  
42 conclusion that offenders may differ in their abilities regarding ToM, empathic  
43 understanding, and moral reasoning when compared to a matched group of non-offenders,  
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3 and that male offenders may differ in their abilities regarding verbal ToM and performance-  
4 based empathic understanding when compared to female offenders, adds to the literature.  
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8 Finally, the current authors suggest that to maximise the success of interventions  
9 aimed at reducing offending behaviours by improving prosocial abilities, assessment of  
10 individuals' abilities in ToM, empathic understanding, and moral reasoning may well be of  
11 benefit. That is, if offenders score below the established norm in measures for these skills it  
12 may not be unreasonable to expect that he or she may benefit from an intervention aimed at  
13 improving prosocial abilities. In addition, and perhaps most pertinently, if and when reduced  
14 abilities in ToM, empathic understanding, and / or moral reasoning are identified,  
15 practitioners may wish to group individuals with similar abilities together and / or tailor  
16 interventions to meet the specific needs of that sample. Overall, it is posited that  
17 consideration of these factors may be of benefit in terms of reducing levels of recidivism in  
18 the UK and beyond.  
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**Table 1. Descriptive Statistics by Gender and Offending Status**

	Male Offenders			Male Non-Offenders			Female Offenders			Female Non-Offenders		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
<b>Verbal ToM</b>	100	6.03	4.16	100	13.20	4.05	100	14.34	4.96	100	14.42	4.40
<b>Visual ToM</b>	100	18.76	6.01	100	27.74	5.60	100	19.56	9.66	100	29.54	4.63
<b>Empath. U.</b>	100	109.69	24.89	100	120.55	19.78	100	117.66	17.45	100	141.15	16.63
<b>Moral R.</b>	100	273.63	39.75	100	320.56	29.83	100	275.87	27.12	100	329.75	29.49
<b>Age</b>	100	27.82	9.87	100	26.97	8.55	100	29.12	8.00	100	27.82	9.87
<b>IQ</b>	100	87.02	10.05	100	90.58	10.28	100	88.38	10.77	100	88.88	13.07