# Attentional bias towards positive and negative images amongst offenders and non-offenders with intellectual disabilities

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## Aims

The aims of this study were:

(a) to examine attentional bias towards positive and negative images amongst men with intellectual disabilities, some of whom had a history of criminal offending, and

(b) to explore the relationship between attentional bias, empathy and distorted cognitions

## Method

**Participants.** Forty-two men with intellectual disabilities with a history of committing indictable offences, $M_{age} = 32.39$, $SD = 12.39$, $M_{IQ} = 63.45$, $SD = 4.45$, and 44 men with intellectual disabilities without any known history of criminal offending behavior, $M_{age} = 40.77$, $SD = 14.30$, $M_{IQ} = 60.29$, $SD = 5.04$, were invited to take part in this study.

**Design and Procedure.** Using a simple between-subjects design, comparisons were made between our two groups of participants. We also carried out correlations between attentional bias, empathy and distorted cognitions. This project received a favourable opinion from an NHS Research Ethics Committee.

Participants were invited to complete measures of empathy and distorted cognitions. Empathy was measured using the 40-item version of the Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004). In order to capture distorted or pro-offending cognitions, participants were asked to complete a modified version of the How I Think Questionnaire (HIT; Barriga et al. 2004) which had been modified further for people with intellectual disabilities by shortening the Likert response scale and by changing some of the items in an attempt to improve understanding.

Participants were also invited to complete a dot-probe task using pictures. Twenty-four images were selected, with eight being positive, eight being negative, and eight considered neutral from the International Affective Picture System (Lang et al. 2008). Pairs of images were presented on a computer screen for 500 milliseconds, followed by the appearance of a dot. Participants were asked to respond by pressing a button on a response box related to the position of the dot (Figure 1). The presentation order of pairs of pictures was randomised.

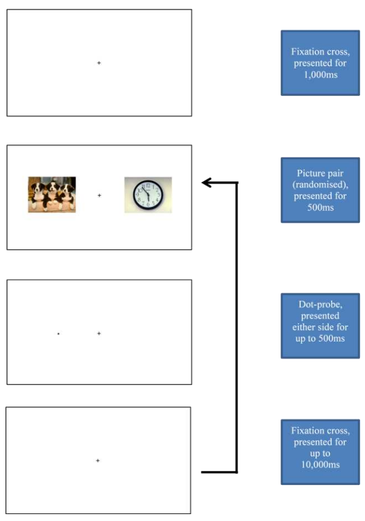


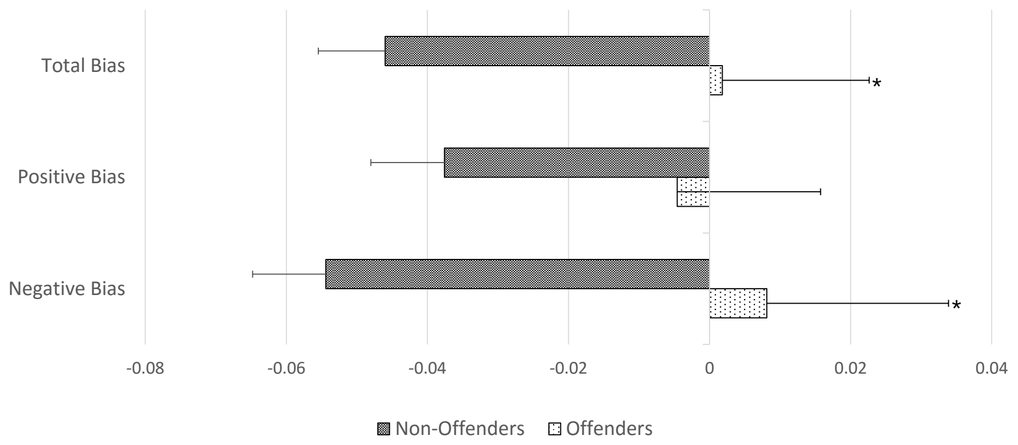

Figure 1: Schematic representation of the dot-probe task. Participants completed 368 trials grouped into 8 blocks of 46 trials. One hundred and twelve of these trials included a pair of neutral pictures. Two lots of 128 trials included either a negative-neutral or a positive-neutral pair of pictures.

The dot-probe task was programmed using PsychoPy v1.75.01 software (Peirce, 2007) and presented using a Toshiba Satellite Pro C850-1K4 laptop running Windows 7 with a 15" screen. A DirectIN High Speed Button box manufactured by Empirisoft was used to record participant responses.

## Results

Offenders with intellectual disabilities had a significantly higher Full Scale IQ than non-offenders, $t(84) = 3.05, p = .003$. Controlling for Full Scale IQ, offenders with intellectual disabilities had a significantly greater bias toward negative images than non-offenders, $F(1,83) = 6.29, p = .014$. Overall, offenders had a significantly greater attentional bias toward affective pictures, whether positive or negative, $F(1, 83) = 5.92, p = .017$, Figure 2.

Figure 2: Attention bias toward positve and negative images for both offenders and non-offenders with intellectual disabilities




Again, having controlled for IQ, offenders with a history of criminal behavior endorsed significantly more pro-offending cognitive distortions, $F(1, 83) = 11.44, p = .001$, and reported having significantly less general empathy, $F(1, 83) = 3.37, p = .039$, than non-offenders, Table 1.

Table 1: Means and standard deviations for both the How I Think Questionnaire and the Empathy Quotient for offenders and non-offenders with intellectual disabilities

| | Offenders | Non-Offenders |
|---|---|---|
| | *M* = (SD) | *M* = (SD) |
| HIT Questionnaire Total | 2.14** (.54) | 1.83 (.46) |
| Empathy Quotient | 31.69*(8.08) | 36.36 (10.06) |

*p<.05, **p<.01

There was a significant positive correlation between the HIT and attentional bias toward negative images, $r(86) = .28, p = .004$, as well as positive images, $r(86) = .21, p = .03$ and global attentional bias, $r(86) = .32, p = .001$. There was a significant negative relationship between empathy and attentional bias toward negative images, $r(86) = -.19, p = .04$.

Having initially controlled for IQ within a regression model, $B = -.008$, $\beta = -.79$, $t = -.72$, $p = .47$, both Global Attentional Bias, $B = 1.01$, $\beta = .21$, $t = 2.02$, $p = .046$, and empathy, $B = -.014$, $\beta = -.25, t = -2.32$, $p = .02$, significantly predicted distorted cognitions, explaining 11% of the variance.

## Conclusion

Offenders and non-offenders allocated their attentional resources toward affective visual stimuli differently. Offenders paid more attention to affective stimuli, especially negative pictures. While offenders reported more distorted cognitions and less global empathy than non-offenders, as a combined group, both empathy and attentional bias predicted offence supportive beliefs.

Using innovative techniques to augment attentional bias may be helpful for this population.