

# **Socio-Cognitive Determinants of Offending Behaviour**

**Karin Anne Spenser**

**A thesis submitted in partial fulfilment of the  
requirements of Nottingham Trent University  
for the degree of Doctor of Philosophy.  
College of Business, Law and Social Sciences.  
July, 2017**

# Abstract

Prosociality is considered important in the study of offenders and offending behaviours. This is explained by the belief that the risk of offending is lowered if a person is possessed of certain prosocial skills. As a consequence HM Prison and Probation Service has developed several rehabilitative interventions aimed at improving these skills in offenders. However, despite the recognition that psychometric measurements can provide an understanding of individual cognitive abilities, the most recently developed programme does not currently require potential participants to be pre-screened for these skills.

Across four separate studies the overriding aim of this thesis was to establish if certain individual prosocial abilities should be considered when designing new, or when making refinements to existing, interventions aimed at addressing recidivism. To do this, four hundred participants (comprising male and female, offenders and non-offenders) completed seven questionnaires, measuring abilities in Theory of Mind, Empathic Understanding, Moral Reasoning, Executive Functioning (as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control), and levels of Social Capital.

Study 1 focused on the influence of age on the development of prosociality and concluded that it may not be a limiting factor. Study 2 addressed the issue of gender and observed that differences could be detected in specific prosocial skills. Study 3 noted the influence of prosociality on Social Capital, but found no difference in perceived levels between offenders and non-offenders. Finally study 4 offered additional insight into the assessment of prosociality by noting the predictive abilities of Executive Functioning.

Whilst each study adds to the theoretical knowledge surrounding the constructs of prosocial and offending behaviours, the findings may also be of interest to those involved in the designing or delivering of rehabilitative programmes aimed at improving prosocial abilities, thus benefiting society in the goal of lowering levels of recidivism in the UK.

# Table of Contents

<b>Supervisors and Examiners</b> .....	<b>i</b>
<b>Tables and Figures</b> .....	<b>vii</b>
<b>Definitions</b> .....	<b>x</b>
<b>Declaration</b> .....	<b>xi</b>
<b>Statement of Copyright</b> .....	<b>xii</b>
<b>Acknowledgements</b> .....	<b>xiii</b>
<b>Dedication</b> .....	<b>xiv</b>
<b>Chapter One. The Introduction</b> .....	<b>1</b>
1.1: Research Background. ....	1
1.2: Research Rationale. ....	2
1.3: Research Aim.....	6
1.4: Research Objectives.....	6
1.5: Chapter Overview.....	7
1.5.1: Chapter Two - A Literature Review.....	7
1.5.2 Chapter Three - The Methodology.....	8
1.6.3: Chapter Four - Study 1.....	8
1.5.4: Chapter Five - Study 2.....	8
1.5.5: Chapter Six - Study 3.....	9
1.5.6: Chapter Seven - Study 4.....	10
1.5.7: Chapter Eight - The Discussion.....	10
1.6: Unique Contributions.....	11
1.6.1: Study 1.....	11
1.6.2: Study 2.....	11
1.6.3: Study 3.....	11
1.6.4: Study 4.....	12
1.7: Conclusion.....	12
<b>Chapter Two. A Review of the Literature. From Prosociality to     Offending Behaviour</b> .....	<b>14</b>
2.1: Defining Prosocial and Offending Behaviours .....	14
2.2: Acquiring Prosocial or Offending Behaviours.....	16
2.2.1: Genetic Factors.....	17
2.2.2: Dispositional Determinants.....	19
2.2.3: Socio-Environmental Influences.....	20
2.2.4: Cognitive Factors.....	22
2.3: Acquiring Theory of Mind.....	23
2.3.1: The Modularity Theory.....	24
2.3.2: The Rationality-Teleology Theory.....	25
2.3.3: The Theory-Theory Theory.....	26
2.3.4: The Simulation Theory.....	27
2.4: Acquiring Empathic Understanding .....	31

2.4.1: The Dispositional View of Empathic Understanding .....	31
2.4.2: The Socio-Environmental View of Empathic Understanding. ....	32
2.4.3: The Cognitive View of Empathic Understanding.....	32
2.5: Acquiring Moral Reasoning.....	35
2.6: Associations between Theory of Mind, Empathic Understanding, and Moral Reasoning .....	37
2.7: Other Factors Affecting Prosocial and/or Offending Behaviours .....	39
2.7.1: Age Related Prosocial and/or Offending Behaviours. ....	39
2.7.2: Gender Related Prosocial and/or Offending Behaviours.....	43
2.7.3: IQ and Prosocial/Offending Behaviours.....	45
2.9: Social Capital, Theory of Mind, Empathic Understanding, and Moral Reasoning .....	47
2.9.1: Social Capital and Theory of Mind. ....	48
2.9.2: Social Capital and Empathic Understanding.....	49
2.9.3: Social Capital and Moral Reasoning. ....	50
2.10: Executive Functioning, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.....	51
2.12: Conclusion. ....	53
<b>Chapter Three. The Methodology .....</b>	<b>56</b>
3.1: Design .....	57
3.1.1: Study 1: Age related differences in Theory of Mind, Empathic Understanding, and Moral Reasoning.....	58
3.1.2: Study 2: Gender and status related differences in Theory of Mind, Empathic Understanding, and Moral Reasoning. ....	59
3.1.3: Study 3. Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.....	59
Study 3a:.....	59
Study 3b:.....	59
3.1.4: Study 4: Executive Functioning, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.....	60
Study 4a.....	60
Study 4b.....	60
3.2: Measures.....	60
3.2.1: IQ.....	60
3.2.2: Verbal Theory of Mind.....	62
3.2.3: Visual Theory of Mind. ....	64
3.2.4: Self-Reported Empathic Understanding.....	65
3.2.5: Performance-Based Empathic Understanding.....	66
3.2.6: Moral Reasoning .....	68
3.2.7: Social Capital. ....	70
3.2.8: Executive Functioning.....	71
3.3: Participants. ....	73
3.3.1: IQ.....	74
3.4: Procedure. ....	75
3.5: Ethical Approval.....	76

<b>Chapter Four: Study 1. Age Related Development of Theory of Mind, Empathic Understanding, and Moral Reasoning</b> .....	77
4.1: Age Related Development of Theory of Mind. ....	78
4.2: Age Related Development of Empathic Understanding .....	82
4.3: Age Related Moral Reasoning .....	86
4.4: Methodology.....	88
4.4.1: Design.....	88
4.4.2: Participants .....	89
4.5: Results .....	90
4.6: Discussion.....	103
4.6.1: Theory of Mind .....	104
4.6.2: Empathic Understanding .....	106
4.6.3: Moral Reasoning. ....	108
4.7: Conclusion.....	111
<b>Chapter Five: Study 2. ‘Gender’ and ‘Status’ Related Differences in Theory of Mind, Empathic Understanding, and Moral Reasoning</b> .....	112
5.1: Theory of Mind.....	115
5.1.1: Theory of Mind according to differences in gender. ....	115
5.1.2: Theory of Mind according to differences in status .....	116
5.2: Empathic Understanding.....	118
5.2.1: Empathic Understanding according to differences in gender. ....	118
5.2.2: Empathic Understanding according to differences in status.....	120
5.3: Moral Reasoning.....	121
5.3.1: Moral Reasoning according to differences in gender. ....	121
5.3.2: Moral Reasoning according to differences in status. ....	123
5.4: Methodology.....	124
5.5: Results.....	124
5.5.1: Verbal Theory of Mind.....	128
5.5.2: Visual Theory of Mind .....	130
5.5.3: Verbal and Visual Theory of Mind.....	131
5.5.4: Self-Report Empathic Understanding.....	131
5.5.5: Performance-Based Empathic Understanding.....	133
5.5.6: Self-Report and Performance-Based Empathic Understanding.....	135
5.5.7: Moral Reasoning. ....	135
5.6: Discussion.....	136
5.6.1: Verbal Theory of Mind.....	137
5.6.2: Visual Theory of Mind. ....	139
5.6.3: Verbal and Visual Theory of Mind.....	140
5.6.4: Self-Report Empathic Understanding.....	141
5.6.5: Performance-Based Empathic Understanding.....	142
5.6.6: Self-Report and Performance-Based Empathic Understanding.....	144
5.6.7: Moral Reasoning. ....	144
5.8: Conclusion.....	146

<b>Chapter Six: Study 3. Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital</b> .....	148
6.1: Socio-Environmental Influences of Social Capital. ....	149
6.2: Social Capital and Prosociality. ....	151
6.2.1: Social Capital and Theory of Mind. ....	151
6.2.2: Social Capital and Empathic Understanding. ....	152
6.2.3: Social Capital and Moral Reasoning. ....	154
6.3: Social Capital and Offending Behaviour. ....	155
6.4: Methodology.....	157
6.5: Results. ....	157
6.5.1: Study 3a.....	159
6.5.2: Study 3b.....	160
6.6: Discussion.....	161
6.6.1: Social Capital and Theory of Mind. ....	161
6.6.2: Social Capital and Empathic Understanding. ....	164
6.6.3: Social Capital and Moral Reasoning. ....	165
6.6.4. Differences in Social Capital according to Status (offenders and non- offenders).....	167
6.7: Conclusion. ....	169
<b>Chapter Seven: Study 4. Executive Functioning, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.</b> .....	171
7.1: Differences in Executive Functioning according to Status. ....	173
7.2: Executive Functioning and Prosociality. ....	175
7.2.1: Executive Functioning and Theory of Mind.....	176
7.1.2: Executive Functioning and Empathic Understanding. ....	179
7.1.3: Executive Functioning and Moral Reasoning.....	182
7.1.4: Executive Functioning and Social Capital.....	184
7.3: Methodology.....	186
7.3.1: Design.....	186
7.3.2: Participants, Materials, and Procedure. ....	190
7.4: Results. ....	190
7.4.1: Study 4a.....	190
7.4.2: Study 4b.....	193
7.5: Discussion.....	198
7.5.1: Differences in Executive Functioning According to Status (Study 4a).....	198
7.5.2: The Predictive Ability of Working Memory, Inhibitory Control, and Cognitive Flexibility(Study 4b) .....	201
7.6: Conclusion. ....	212
<b>Chapter Eight. The Discussion</b> .....	214
8.1: Summary of Findings and Contribution to the Literature. ....	215
8.1.1: Study 1.....	215
8.1.2: Study 2.....	218
8.1.3: Study 3a and 3b. ....	222
8.1.4: Study 4a and 4b. ....	226

8.3: Practical Implications of Studies 1 to 4. ....	232
8.3.1: Study 1.....	234
8.3.2: Study 2.....	235
8.3.3: Study 3a and 3b. ....	236
8.3.4: Study 4a and 4b. ....	237
8.4: General Considerations, Limitations and Future Studies. ....	238
8.4.1: Population.....	238
8.4.2: Replication. ....	239
8.4.3: Limitations and Future Studies. ....	240
8.6: Conclusion. ....	242
<b>References</b> .....	<b>246</b>
<b>Appendices</b> .....	<b>310</b>
<b>Copies of Ethical Approval</b> .....	<b>311</b>
<b>Consent Form</b> .....	<b>327</b>
<b>Debrief Document</b> .....	<b>329</b>
<b>Measures</b>	
<b>Basic Theory on Mind Task</b> .....	<b>331</b>
<b>Measures</b> .....	<b>339</b>

## **Supervisors and Examiners**

Director of studies ..... Dr Lucy Betts – Nottingham Trent University  
1<sup>st</sup> Supervisor..... Professor Ray Bull – University of Derby  
2<sup>nd</sup> Supervisor..... Professor Belinda Winder – Nottingham Trent University  
External Examiner ..... Professor Graham Towl - Durham University  
Internal Examiner..... Dr Jens Binder – Nottingham Trent University

# **Tables and Figures**

	<b>Page</b>
<b><u>Figures</u></b>	
<b><i>Chapter 3</i></b>	
Figure 3.1: Example of a photograph taken from Baron-Cohen, Wheelwright, Hill, Raste and Plumb (2001). With permission.	65
<b><i>Chapter 4</i></b>	
Figure 4.1: Mean score in verbal Theory of Mind by age group	95
Figure 4.2: Mean score in visual Theory of Mind by age group	96
Figure 4.3: Mean score in self-reported Empathic Understanding by age group	96
Figure 4.4: Mean score in performance-based Empathic Understanding by age group	97
Figure 4.5: Mean score in Moral Reasoning by age group	98
<b><i>Chapter 5</i></b>	
Figure 5.1: Estimated Marginal Means for verbal Theory of Mind	124
Figure 5.2: Estimated Marginal Means for visual Theory of Mind	125
Figure 5.3: Estimated Marginal Means for self-report Empathic Understanding	126
Figure 5.4: Estimated Marginal Means for Performances-based Empathic Understanding	127
Figure 5.5: Estimated Marginal Means for Moral Reasoning	128

## ***Chapter 7***

Figure 7.1: Hypothesised Path Analysis for Executive Functioning to predict Theory of Mind, Empathic Understanding, Moral Reasoning and Social Capital	183
--	-----

Figure 7.2: Significant Path Coefficients	186
---	-----

## **Tables**

### ***Chapter 4***

Table 4.1: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by age group	92
---	----

Table 4.1: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by age group	93
---	----

Table 4.2: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores across whole data set	94
--	----

### ***Chapter 5***

Table 5.1: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by Gender and Status	121
---	-----

Table 5.2: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores across the Whole Data Set	122
--	-----

### ***Chapter 6***

Table 6.1: Descriptive Statistics for verbal and visual Theory of Mind, self-reported and performance-based Empathic Understanding, Moral Reasoning, and Social Capital,	
--	--

across the whole data set.	151
Table 6.2: Correlations between verbal and visual Theory of Mind, self-report and performance-based Empathic Understanding, Moral Reasoning, and Social Capital.	152
Table 6.3: Descriptive Statistics for Social Capital according to Status.	153
 <i>Chapter 7</i>	
Figure 7.1: Latent Variable and Measurable Variable Relationship	189
Table 7.2: Descriptive statistics for Working Memory, Cognitive Flexibility and Inhibitory Control scores by Status Group	191
Table 7.3: Descriptive statistics for Working Memory, Cognitive Flexibility and Inhibitory Control Scores across Whole Data Set	192
Table 7.4: Results for Path Analysis for Executive Functioning to predict Theory of Mind, Empathic Understanding, Moral Reasoning and Social Capital.	196
Table 7.4: Standardised Path Coefficients	197
 <i>Chapter 8</i>	
Table 8.1: Summary of Significant Findings in Study 1.	205
Table 8.2: Summary of Significant Findings in Study 2.	208
Table 8.3: Summary of Significant Findings in Studies 3a and 3b.	212
Table 8.4: Summary of Significant Findings in Study 4b.	216

## **Definitions**

*The word 'status' throughout this thesis refers to whether the participant is an offender or non-offender and the word 'gender' throughout this thesis refers to whether the participant is male or female.*

## **Declaration**

*This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration with any other person. I further state that no substantial part of my thesis has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at Nottingham Trent University or any other University or similar institution. It does not exceed the prescribed word limit for the relevant Degree Committee.*

## **Statement of Copyright**

*This work is the intellectual property of the author. You may copy up to 5% of this work for private study, or personal, non-commercial research. Any re-use of the information contained within this document should be fully referenced, quoting the author, title, university, degree level and pagination. Queries or requests for any other use, or if a more substantial copy is required, should be directed in the owner(s) of the Intellectual Property Rights.*

## **Acknowledgements**

*With thanks to all of my supervisors and examiners but especially Lucy whose patience was appreciated and Ray whose belief in me enabled me to bring this thesis to completion. Thank you also to University of Derby for showing such flexibility and HMPPS for allowing me to use their prisons in my research.*

# **Dedication**

*For Simon and Will*

# Chapter One

## The Introduction

*‘... nature teaches the spectators to take on the situation of the sufferer, and teaches the sufferer to go some way in taking on the situation of the spectators...the effect of this is to lower the violence of his passion’ (Smith, 1790, p. 10).*

### **1.1: Research Background.**

Prosocial behaviour is said to define humanity (Simpson & Van Vugt, 2009). As a consequence, an understanding of prosocial behaviour, as well as the constructs that support it, is important when considering research and practice within the Criminal Justice System (Lam, 2012). In particular, research exploring prosociality is considered key in the study of offenders and offending behaviours (Towl & Crighton, 2010); something explained by the assertion that the risk of offending behaviour is lowered if a person is possessed of certain prosocial skills (Prior & Paris, 2005). Further, it has been suggested that the absence of, or reduced functioning in prosociality may contribute to the emergence of offending behaviours (Farrington, 2010; Palmer, 2013).

It has been recognised within the Criminal Justice System that punishment alone does not always reduce offending behaviours (Nagin & Snodgrass, 2013). To address this HM Prison and Probation Service (HMPPS), as part of the Criminal Justice System, has developed a number of rehabilitative interventions aimed at

improving levels of prosociality in offenders (Palmer, 2013). However, evidence relating to the success of these programmes has been mixed (Harper & Chitty, 2005). For example, whilst early findings relating to the Enhanced Thinking Skills (ETS) programme demonstrated a statistically significant reduction in reconviction rates at the one year mark (Friendship, Blud, Erikson, & Travers, 2002), research at two years found little or no difference between those who took part in the programme and those who did not (Falshaw, Friendship, Travers, & Nugent, 2003; Cann, Falshaw, Nugent, & Friendship, 2003; Cann, 2006; McDougall, Clarbourn, Perry, & Bowles, 2009). In 2009 ETS was replaced by the Thinking Skills Programme (TSP), and whilst early reports suggest a positive impact on the attitudes of participating offenders, the gradual roll out of the programme within the prison estate means that data relating to recidivism is unavailable (Gobbett & Sellen, 2014). However, the theoretical premise, that programmes aimed at improving prosocial abilities in offenders have a positive effect on reoffending levels, remains robust (Prior & Paris, 2005). It is from this view that the aims and objectives of this thesis were developed.

## **1.2: Research Rationale.**

Prosociality is commonly described as any voluntary, intentional behaviour that produces a beneficial outcome for the recipient where the cost to the donor is not considered (Grusec, Goodnow, & Kuczynski, 2000). Of particular interest to this thesis, is the notion that an adequate level of prosocial understanding is necessary for effective and non-criminal social adaptation (Spenser, Betts, & das Gupta, 2015). However, prosociality is not a singular construct but rather requires the acquisition of a number of key skills (Sharp, 2008). This thesis will focus on three of those key skills: Theory of Mind (Premack & Woodruff, 1978); Empathic Understanding

(Shamay-Tsoory, Tomer, & Aharon-Peretz, 2005); and, Moral Reasoning (Gibbs, Basinger, & Fuller, 1992), which are said to work in combination to facilitate socially appropriate behaviour. Indeed, when utilised successfully, these skills are said to enable people to exercise self-control when tempted to do wrong, and feel guilt and remorse about any perceived wrongdoing (Singer & Klimecki, 2014).

As noted in section 1.1 of this chapter, the theoretical knowledge relating to prosocial behaviour underpins a number of rehabilitative interventions within HMPPS. In particular, TSP considers a number of cognitive factors that are related to prosociality (Ministry of Justice, 2010); three of which appear to mirror the constructs of Theory of Mind, Empathic Understanding, and Moral Reasoning:

- (i) firstly, the ‘Stop and Think’ principle aims at helping offenders to ‘see’ situations from a number of different perspectives in order to resolve issues and solve problems (Lösel & Beelmamm, 2005).
- (ii) secondly, the offender is encouraged to recognise and manage his or her own emotions, as well as those of others, and subsequently make more effective and controlled life decisions (Solomon, 2007).
- (iii) lastly, in order to make moral decisions from a socially acceptable perspective, the offender is encouraged to consider behaviours from the point of view of society, as well as his or her own personal values (Ward & Nee, 2009).

Also noted earlier in this chapter, TSP was introduced in 2009 following, and in partial response to, the lack of success in relation to ETS (Sadlier, 2010).

However, there are a number of potential issues in relation to TSP (Spenser et al., 2015) that are relevant to the current thesis. Firstly, whilst it is recognised that psychometric measurements can provide an understanding of individual cognitive

abilities (Towl & Crighton, 2010) TSP does not require potential participants to be pre-screened in these areas. Instead the programme appears to assume that all partakers have a similar, albeit reduced, level on which the programme can build (Spenser et al., 2015). The second and third issues are related to gender and age. As with many other interventions adopted by the HMPPS, TSP is considered ‘gender neutral’ (Sadlier, 2010). However, Corston (2007, p.3) recommended the creation of a “distinct...woman-centred ... approach” to the rehabilitation of female offenders. It should therefore be considered that gender differences in Theory of Mind, Empathic Understanding, and Moral Reasoning may exist. Similarly, in terms of age, whilst the acquisition of Theory of Mind, Empathic Understanding, and Moral Reasoning is thought to begin in early childhood (Grusec et al., 2000; Smith, Cowie, & Blades, 2003), it is not fully understood whether each construct continues to change across adolescence and into adulthood (Smith et al., 2003). As a result it is not known how the age of a participant might affect his or her ability to make prosocial improvements.

Taking a wider perspective, there are two further areas of specific interest to this thesis: Social Capital and Executive Functioning. As part of the TSP programme offenders are encouraged to build Social Capital (Ministry of Justice, 2010). This notion was underpinned by Adler and Kwon (2002) who noted that the quantity and quality of relationships ‘owned’ by a person can be influential in terms of his or her behaviour. However, Frith and Frith (2006) stated that to build social relationships, an individual must be equipped with a number of cognitive skills: Theory of Mind, Empathic Understanding, and Moral Reasoning. Therefore a potential association between Social Capital and Theory of Mind, Empathic Understanding, and Moral Reasoning should not be overlooked.

With regard to Executive Functioning, this construct is described as the multidimensional control system that coordinates and manages a number of cognitive skills including Theory of Mind, Empathic Understanding, and Moral Reasoning (Diamond, 2013). However, Executive Functioning is said to be underpinned by three separate abilities: (i) Working Memory (Gordon & Olsen, 1998), (ii) Cognitive Flexibility (Welsh, Butters, Hughes, Mohs, & Heyman, 1991), and (iii) Inhibitory Control (Hala, Hug, & Henderson, 2003). Therefore, the influence of Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning, is of further interest within this thesis.

However, research relating to Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as Social Capital and Executive Functioning, and their collective importance in terms of offender rehabilitation, is limited. As a consequence, the need to pre-screen for abilities in each of the constructs, as discussed in the previous paragraphs, remains undetermined. The current author suggests that the establishment of empirical evidence in relation to these gaps in the literature will contribute to the understanding of prosociality in general, and offending behaviours in particular. Further, the findings may assist future practitioners in the modification or development of interventions related to the improvement of prosocial behaviours in offenders; and, as such, may have implications in relation to levels of recidivism in the UK. This forms the basic research rationale for this thesis.

### **1.3: Research Aim.**

Given that an obvious consequence of acceptable prosocial functioning is the inhibition of aggression, and other behaviours that are harmful to another person (Eisenberg, Spinrad, & Eggum, 2010), the overriding aim of this thesis was to establish if specific factors should be considered when designing new, or when making refinements to existing, interventions aimed at reducing levels of recidivism. Those factors are Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as Social Capital and Executive Functioning, as determined by working Memory, Cognitive Flexibility, and Inhibitory Control.

### **1.4: Research Objectives.**

The research objectives of this thesis were:

1. To establish an understanding of how age is related to the ongoing development of Theory of Mind, Empathic Understanding, and Moral Reasoning.
2. To establish if abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning are related to status and gender, across a representative age group.
3. To establish:
  - a. if Theory of Mind, Empathic Understanding, and Moral Reasoning are associated with Social Capital, and
  - b. if levels of Social Capital can vary according to status.
4. To establish:
  - a. if Executive Functioning, as determined by abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control predicts

abilities in Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital, and

- b. if differences in Working Memory, Cognitive Flexibility, and Inhibitory Control can vary according to status.
- c. if Executive Functioning, as determined by abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control predicts abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning in an offending population.

## **1.5: Chapter Overview.**

### **1.5.1: Chapter Two - A Literature Review.**

The literature review in chapter two suggests that prosociality can be driven by a range of motivations. An appreciation of the theoretical frameworks underpinning prosocial and offending behaviours is described. In particular, the key psychological paradigms: (i) genetic factors, (ii) dispositional determinants, (iii) socio-environmental influences, and (iv) cognitive abilities, are discussed in the context of prosocial and offending behaviours. Evidence is submitted to support the premise that cognitive abilities represent the greatest cogency. It is suggested that from this perspective individuals are able to recognise and understand the goals and desires of another, as well as note that any subsequent actions may have an emotional and moral consequence for both parties (Prinz, 2007). It is noted that three key cognitive skills are needed to enable this process: (i) Theory of Mind, (ii) Empathic Understanding, and (iii) Moral Reasoning (Eggum et al., 2011; Sharp, 2008; Spenser et al., 2015). A discussion relating to the acquisition and maintenance of Social Capital, and in particular its relationship to Theory of Mind, Empathic

Understanding, and Moral Reasoning, follows (Cole & Griffiths, 2007). Finally, the coordinated management of Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital is discussed. Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, is considered in terms of their ability to co-ordinate and manage Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital (Diamond, 2013).

### **1.5.2 Chapter Three - The Methodology.**

Chapter three presents the research design, methods of data collection, and data analysis considered to be the most suitable in addressing the research objectives noted in subsection 1.4 of the current chapter.

### **1.6.3: Chapter Four - Study 1.**

As noted in section 1.1 of the current chapter, a number of the most recent rehabilitative programmes designed to address the problem of offending behaviours recognise the need to improve underdeveloped levels of prosociality in many of those who commit crimes (Antonowicz & Ross, 2005; Palmer, 2013). However, to the current author's knowledge, previous research has not considered if Theory of Mind, Empathic Understanding, and Moral Reasoning (as related to prosocial behaviours) are able to further develop during the life span of an individual. Therefore, chapter four, study 1, addresses this issue.

### **1.5.4: Chapter Five - Study 2.**

A number of studies have focused singularly on Theory of Mind (McCrae & Costa, 1990), Empathic Understanding (Batson, 1987), and Moral Reasoning (Kohlberg, 1978), as well as the interaction between two of these constructs: (i) Theory of Mind and Empathic Understanding (Lawson, Baron-Cohen, & Wheelwright, 2004); (ii) Theory of Mind and Moral Reasoning (Astington, 2004);

and (iii) Empathic Understanding and Moral Reasoning (Eisenberg-Berg & Mussen, 1978). However, although some researchers have considered a theoretical association amongst Theory of Mind, Empathic Understanding, and Moral Reasoning (Eisenberg, 2010; Hoffman, 2000; Stams et al., 2006), to the current author's knowledge, few have considered all three constructs, from an empirical perspective, within a single study (Lane, Wellman, Olson, La Bounty, Kerr, 2010; Spenser et al., 2015). Further, empirical research in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning in female offenders has largely been neglected (Bottos, 2007), despite the recommendations of Corston (2007). Chapter five (study 2) therefore considers possible differences in abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning according to status and gender.

#### **1.5.5: Chapter Six - Study 3.**

The term 'Social Capital' has been adopted to describe the relationships that people have with each other. Chen et al. (2015), for example, describe Social Capital as the broad network of connections, accumulated during a person's life-time, that are resource-rich, durable, and reciprocal. McKenzie, Whitley, and Weich (2002) noted that the relationship between Social Capital and certain cognitive skills, such as Theory of Mind, Empathic Understanding, and Moral Reasoning, is difficult to determine. However, whilst neuroscience provides evidence of an association between Social Capital and Theory of Mind (McCabe, Houser, Ryan, Smith, & Trouard, 2001), Empathic Understanding (Damasio, 2004), and Moral Reasoning (Sanfey, Rilling, Aronso, Nystrom, & Cohen, 2003), psychological studies considering the ability of each relate to Social Capital according to status are limited. Chapter six, study 3a addresses this issue, whilst study 3b considers differences in levels of Social Capital between the offender group and the non-offender group.

#### **1.5.6: Chapter Seven - Study 4.**

It is recognised that Theory of Mind, Empathic Understanding, and Moral Reasoning are needed for successful prosociality and that the cognitive management of these three constructs is complex (Chernyak & Kushnir, 2014). Executive Functioning (as determined by Working Memory, Cognitive Flexibility, Inhibitive Control) is said to be useful in coordinating this process (Borkowski & Burke, 1996); thus enabling a person to control and self-regulate in order to adapt to any situation in which they might find themselves (Marques, Pereira, Goes, & Barros, 2015). Study 4a therefore considers status related differences in Working Memory, Cognitive Flexibility, and Inhibitory Control. Further, despite evidence highlighting the importance of self-regulation in terms of social development, to the current author's knowledge, previous research has not considered the ability of Working Memory, Cognitive Flexibility, and Inhibitory Control, to predict Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital. In chapter seven study 4b addresses this issue,

#### **1.5.7: Chapter Eight - The Discussion.**

Chapter eight discusses the findings relating to the four studies, within the context of current theories and research. An improved knowledge and better understanding of the effects of age, status, and gender, with regard to abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning, are outlined. The relationship between Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital, as well as an appreciation of the predictive nature of Executive Functioning is established. Finally, implications of the findings in terms of their potential impact on existing, or new, rehabilitative interventions aimed at reducing levels of recidivism by increasing prosocial awareness are noted.

## **1.6: Unique Contributions.**

Reducing the level of recidivism in the UK is an important goal for the Criminal Justice System (Delves & Norfolk-Whittaker, 2013). In considering the importance of Theory of Mind, Empathic Understanding, and Moral Reasoning in relation to offending behaviours, this thesis offers the following unique contributions to the literature.

### **1.6.1: Study 1.**

Firstly, as noted previously, past research is mixed with regard to the ability of Theory of Mind, Empathic Understanding, and Moral Reasoning to change across adolescence and into adulthood (Smith et al., 2003). Study 1, in considering 69 male non-offenders, across three age groups, addresses this issue and adds to the literature by concluding that age may not be a limiting factor in the promotion of prosocial behaviours.

### **1.6.2: Study 2.**

Vessels and Huitt (2005) proposed that early deficiencies in prosociality may be addressed by ‘programmes’ which focus on developing certain cognitive skills. The overriding aim of this thesis is to establish if differences in Theory of Mind, Empathic Understanding, and Moral Reasoning can be identified between a cohort of 200 male and female offenders and 200 male and female non-offenders, across a representative age range. Study 2 adds to the literature by being the first to consider these variables in a single study according to status and gender; and concludes that differences in are detectable.

### **1.6.3: Study 3.**

Venkatanathan, Karapanos, Kostakos, and Gonçaves (2013) noted that high levels of Social Capital are associated with compliance to societal norms and social

control. Study 3a and 3b, to the current author's knowledge, are the first to note the influence of Theory of Mind, Empathic Understanding, and Moral Reasoning on Social Capital, as well as to establish within a single study that individual levels of the construct do not differ according to status.

#### **1.6.4: Study 4.**

Borkowski and Burke (1996) noted that Executive Functioning was a useful tool in the management and coordination of the skills required for prosociality. Study 4a is, to the current author's knowledge, the first to assess the ability of Executive Functioning, as measured by Working Memory (Gordon & Olsen, 1998), Inhibitory Control (Hala et al., 2003), and Cognitive Flexibility (Welsh et al., 1991), to predict levels of Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital. Study 4b notes differences in abilities between offenders and non-offenders in Working Memory, Cognitive Flexibility, and Inhibitory Control. Further, study 4b, to the current author's knowledge, is the first to consider the predictive, as opposed to the associative, relationship between these constructs and so offers further insight relating to the assessment of social functioning.

#### **1.7: Conclusion.**

The main aim of this thesis is to establish if Theory of Mind, Empathic Understanding, and Moral Reasoning should be considered when designing new, or making refinements to, interventions aimed at the improvement of prosocial awareness in offenders. This chapter began by describing the background to, and the rationale for, that aim. Further, it was noted that the risk of offending is lowered if a person acquires, to an appropriate level, Theory of Mind, Empathic Understanding, and Moral Reasoning (Prior & Paris, 2005). The success of rehabilitative

programmes aimed at reducing offending behaviours through the promotion of prosociality was also commented upon (Harper & Chitty, 2005). However, it was the paucity of empirical studies in relation to the effects of age, status, and gender on these constructs that moulded the first two objectives of this thesis. The need for research considering the theoretical relationships of Social Capital and Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, to Theory of Mind, Empathic Understanding, and Moral Reasoning, according to status and gender, shaped the final two objectives.

Lastly, the unique contributions offered by all four studies within this thesis are noted. Whilst each adds to the theoretical knowledge surrounding the constructs of prosocial and offending behaviours, the findings may also be of particular interest to those involved in designing or delivering rehabilitative programs, aimed at reducing levels of recidivism, by improving prosocial abilities. As noted by McNeill, Farrall, Lightowler, and Maruna (2012, p. 10) “a broadening of ‘the desistance agenda’ is long overdue”. The present thesis provides a unique view of Theory of Mind, Empathic Understanding, and Moral Reasoning, and their possible involvement in the acquisition and development of prosocial and/or offending behaviours. The subsequent amelioration of knowledge relating to social functioning and offending behaviours, may be of ultimate benefit to both the individual and society as a whole, in the goal of lowering levels of recidivism in the UK. A review of the current literature follows.

## **Chapter Two**

### **A Review of the Literature**

#### **From Prosociality to Offending Behaviour**

According to Lam (2012), the concept of prosocial behaviour is highly important when considering research and practice within the Criminal Justice System. The importance of prosociality is explained by the assertion that the risk of offending behaviour is lowered if a person, during their formative years, is exposed to and acquires a number of key prosocial skills (Prior & Paris, 2005). Conversely, it is suggested that the absence of, or reduced functioning in these skills, may contribute to the emergence of offending behaviours (Farrington, 2010; Palmer, 2013). As a consequence, the aim of many current rehabilitative programmes is to improve upon an assumed underdeveloped level of prosociality in those who commit crimes, in order to address the problem of offending behaviours (Antonowicz & Ross, 2005; Palmer, 2013). Despite this interest, opinions are mixed within the literature as to the definition of prosocial or offending behaviours (Pakes & Winstone, 2010), as well as how they are acquired (Dunfield & Kuhlmeierref, 2013). This chapter begins by discussing the definitions of each.

#### **2.1: Defining Prosocial and Offending Behaviours**

Penner, Dovidio, Piliavin, and Schroeder (2005), described prosocial behaviour as any action which is intended to *help* another human being. Warneken and Tomasello (2009) added that such acts must also be the result of an *unselfish* concern for the wellbeing of that person. Building on this, Schöpke and

Rauschmayer (2014) suggested that an individual must not be coerced into prosocial acts, but instead have the *freedom to choose* whether or not to engage in such behaviours. Yet, it is evident from past research that some prosocial behaviour is, at least in part, self-serving. For example, Andreoni (1990) suggested that the expectation of positive emotions, which are often produced as a result of ‘helping’ someone else, may be enough to promote prosocial behaviours in some people; this he termed the ‘warm glow’ theory. Reciprocal or mutualistic prosociality can also explain the reasoning behind some prosocial actions. Reciprocal prosociality is an action that arises from feelings of gratitude or obligation, which often come as a consequence of being the recipient of a ‘good deed’ (Algoe & Haidt, 2009; Nicholson, Deboeck, Farris, Boker, & Borkowski 2011), whilst mutualistic prosociality occurs when two or more individuals benefit from working together (Jensen, Vaish, & Schmidt 2014). Determined by individual differences with egoistical, practical, sympathetic, or moral origins, Padilla-Walker and Carlo (2014) concluded that the thought processes behind helping behaviours can be particularly difficult to infer.

However, the current author posits that prosociality is probably a more encompassing construct that not only defines the basic parameters of behaviour, but also details the varying motivations therein. Grusec, Davidov, and Lundell’s (2002, p. 2) proposition that prosocial behaviour is “a voluntary, intentional action, that produces a positive or beneficial outcome for the recipient, regardless of whether that action is costly, neutral, or beneficial to the donor” appears to satisfy all determinants and will therefore be adopted within this thesis.

Offending behaviours are similarly complex in nature, and therefore also difficult to define. Despite being slightly aged, one theory that remains important is

that of Andrews and Bonta (1998). These researchers proposed that offending behaviours fall into four key categories:

- (i) those that are prohibited by the state and punishable under the law;
- (ii) those that violate the norms of religion and moral development, and are believed to be punishable by a supreme spiritual being;
- (iii) those that violate the norms of custom and tradition and are punishable by a community; and
- (iv) those that may be psychologically rewarding to the actor but inflict pain or loss on others.

As this thesis is concerned with individuals who have committed a crime, it is behaviours that are prohibited by the state and punishable under UK law that are most relevant. Yet, even within this category the ‘deeds’ themselves may be varied; ranging from minor antisocial behaviours to quite serious criminal acts, which led Smart (2004) to conclude that a precise explanation of offending behaviour is difficult to establish. Therefore, as with prosociality, the current author argues that a broader definition of offending is required and for the purposes of this thesis, such behaviours are defined as actions which cause, or may cause harm, harassment, alarm, or distress to others, as recognised by the laws of England and Wales (Squires, 2008).

## **2.2: Acquiring Prosocial or Offending Behaviours**

As noted in the introduction to this chapter, opinions are mixed with regard to the acquisition of prosocial and offending behaviours. Simpson and Beckes (2010), for example, considered that such behaviours were the likely result of *genetic factors*. Hilbig, Glöckner, and Zettler (2014) disagreed, suggesting that *dispositional*

*determinants* were the most influential, whilst Gelfand and Hartman (1984) maintained that such behaviours were the result of *socio-environmental influences*. In contrast, Raviv, Bar-Tal, and Lewis-Levin (1980) focused on *cognitive abilities* in relation to the acquisition of prosociality or offending behaviours.

In the following sub-sections of this chapter the genetic factors, dispositional determinants, and socio-environmental influences for prosocial and offending behaviours will be examined. Whilst this thesis will recognise that each contributes to an understanding of prosocial and offending behaviour, it will be suggested that in isolation and as separate explanations, they are limited. Therefore, the main focus of this thesis will be the cognitive abilities associated with the acquisition of prosocial or offending behaviours; an approach rationalised by past research. For example, Prinz (2007) suggested that for an individual to act in a prosocial way, he or she must be able to ‘*recognise*’ the thoughts, desires and beliefs of another, as well as ‘*understand*’ that any actions taken may have an emotional and/or moral consequence; something thought to require cognitive abilities (Eggum et al., 2011).

### **2.2.1: Genetic Factors.**

Wilson (1975) documented examples of ‘helping’ behaviours within the animal kingdom to support the theory that prosocial behaviour in humans is a pre-programmed genetic function, rather than a learned ability. One example was Rice and Gainer’s (1962) research involving rats. These researchers placed one rat on the floor of a cage, whilst a second was suspended in the air. By pressing a bar, the rat on the floor of the cage was able lower the suspended rat to the ground. This was later repeated but the second rat was replaced with a block of foam. The researchers noted that the rats on the floor of the cage pressed the bar more often for the suspended rat, especially when the animal was exhibiting signs of distress, than for

the 'silent' block of foam. Sober and Wilson (1998) used these findings to explain similar behaviours in humans by suggesting that groups with a larger number of people, willing to act prosocially, had more chance of survival than a group comprised mainly of self-interested individuals. However, one limitation of these studies is that they were based on observed behaviours and did not empirically demonstrate a genetic tendency toward prosociality.

Early twin studies attempted to address this issue. For example, Rushton (2004), in a study of 174 pairs of monozygotic twins and 148 pairs of dizygotic twins, assessed for a genetic contribution to prosocial behaviour. Using the Social Responsibility Questionnaire (Berkowitz & Daniels, 1964) to measure self-reported altruism, empathy, and aggression, these researchers claimed that 42% of the variance was due to the twins' genes, 23% to a common environment, and the remainder to a non-shared environment. Similarly, Moffitt, Caspi, Harrington, and Milne (2002) considered a number of contemporary studies from the Netherlands, Britain, Norway, Sweden, Australia, and the USA. Using a quantitative modelling technique, this researcher suggested heritability rates of approximately .50. However, although twin studies are considered to be of high validity and reliability, the question remains as to whether other factors may influence individuals to act in a prosocial or offending manner (Webster-Stratton, Reid, & Beauchaine, 2011). Indeed, the heritability theory of prosocial and/or offending behaviour does not take into consideration dispositional determinants. Therefore, to fully evaluate the factors that are involved in the acquisition of prosocial or offending behaviour, such dispositional differences must be considered.

### **2.2.2: Dispositional Determinants.**

According to Gosling, Augustine, Vazire, Holtzman, and Gaddis (2011) personality is the manifestation of dispositional determinants peculiar to a person. This thesis will therefore discuss dispositional determinants in terms of personality. The Five Factor Model of Personality was proposed by Costa and McCrae in 1985. The model contends that personality can be specified in terms of five broad traits: extraversion, agreeableness, conscientiousness, neuroticism, and intellect. Eisenberg et al. (1989) observed that prosocial acts, such as spontaneous sharing and cooperation, were performed by individuals who were more extroverted or assertive; assertive behaviour being a sub-category of extroversion (Midlarsky & Hannah, 1985).

Taking a different stance, Hilbig et al. (2014) suggested that conscientiousness and agreeableness were most closely associated with prosocial behaviour in humans. Conscientiousness describes the propensity for self-control and the ability to abide by social rules (Roberts, Fillmore, & Milich, 2011), whilst agreeableness involves a communal orientation toward others and includes the ability to sympathise and empathise (Nettle & Liddle, 2008). Taken together, agreeableness and conscientiousness may contribute to prosocial relationships with others (Courbalay, Deroche, Descarreaux, Prigent, O'Shaughnessy, & Amorim, 2016). However, it may be that those who are more extroverted, conscientious, and/or agreeable simply find themselves in situations where they can put their prosociality to use more often than less sociable individuals. In terms of offending behaviours, Eysenck and Eysenck (1991) stated that people who scored highly for neuroticism were characterised as reacting strongly to unpleasant environmental stimuli which made them 'moody' and anxious, whilst those with high scores for psychoticism were described as callous,

aggressive, and lacking in empathy for others. High scores in both, Eysenck and Eysenck postulated, can sometimes affect an individual's ability to control their actions and so result in offending behaviours.

However, one limitation related to the dispositional theory is that it does not take into consideration socio-environmental differences. For example, Heider (1958), in his Theory of Personal Attribution, suggested that in addition to personality an individual's interpretation of events can also influence his or her subsequent behaviour. Heider proposed the involvement of two key factors; *internal attribution* which implies that the person's behaviour is the consequence of individual factors such as genetics and personality and *external attribution* which considers the person's behaviour in respect of the environment in which they live. Heider noted that internal attributions are often overestimated, and environmental factors neglected, when attempting to explain human behaviours.

### **2.2.3: Socio-Environmental Influences.**

White and White (1977) suggested that an interaction with the social environment allows for the learning and internalisation of culture, language, habits, manners, and other social competencies. Over time most individuals come to appreciate, to some extent, the norms and values to which they are exposed, and learn to make sense of social interactions within a cultural context (Searle, 2001). Obedience to societal norms generally follows; thus giving rise to prosocial behaviours (Sanstock, 2014), which are considered essential for social order (Sharp, 2008).

This 'learning' process has been a focus for developmental psychologists for a number of years. Bowlby (1969), for example, suggested that the bonds formed between an individual and a significant other determine the level of commitment a

person has to the norms and values of the group to which he or she belongs. As a consequence, 'social bonds' are said to provide informal controls that influence future behaviours (Salvatore & Taniguchi, 2012). Although this suggests that prosociality is absorbed vicariously, it is recognised that the skill can also be conveyed through intentional teaching and instruction. For example, Eisenberg, Fabes, and Spinrad (2006) proposed that a child's ability to exhibit prosocial behaviours, such as helping, sharing, comforting, and cooperating, is strengthened by occurrence, labelling, and parental reward. This was supported by Altay and Gure (2012), who noted that rewarded behaviour is likely to occur again, whilst punishment may prevent the repetition of undesirable actions. Sibling relationships are also important to this process as they often serve as social partners, role models, and foils (McHale, Kim, & Whiteman, 2006).

In a wider social context, Catalano and Hawkins (1996) suggested that any bonds formed with the wider community are also critical in terms of developing prosocial and/or offending behaviours. The informal social controls that arise from these bonds are said to be characterised by a sense of obligation, expectation, trustworthiness, and social norms; this is known as Social Capital (Putnam, 2000). Indeed, Sampson and Laub (2005) noted that offending behaviours are more probable when Social Capital is missing, weakened, or broken, whilst Wentzel (2014) suggested that such actions may be the result of attachments to antisocial peers, and a commitment to the 'values' of that group. Therefore, it may be that whilst Social Capital is thought to be important in defining the forces that guide norms and conventions, it can be related to either prosocial or offending behaviours. This notion will be further discussed in section 2.9 of the current chapter, and also in chapter six.

However, as with the genetic factors and dispositional determinants of prosocial and/or offending behaviours, socio-environmental theory, as a standalone explanation, is similarly incomplete. According to Eggum et al. (2011) what and how an individual ‘thinks’ is the greatest influence on how he or she behaves. In other words, human behaviour is associated with the ability to manipulate cognitively the stored representations of events and situations. This may go some way in explaining why individuals with similar genetic, dispositional, and socio-environmental backgrounds, can sometimes behave in very different prosocial and/or offending, ways. As such, cognitive abilities may be important with regard to individual differences in social responding (Raviv et al., 1980).

#### **2.2.4: Cognitive Factors.**

It is generally agreed that there are three different cognitive skills utilised in the development of prosocial behaviours (Spenser et al., 2015):

- (i) Theory of Mind (Premack & Woodruff, 1978), which is the ability to ascribe thoughts, intentions, beliefs and feelings to others;
- (ii) Empathic Understanding (Shamay-Tsoory et al., 2005), which is the ability to share in the emotional states of others;
- (iii) and Moral Reasoning (Gibbs et al., 1992), which is the ability to differentiate between socially acceptable and unacceptable thoughts and behaviours.

Past research has alluded to the fact that these skills are related to individual differences in prosocial behaviour (Spinrad & Van Schyndel, 2015). As a consequence, it has been further postulated that an inadequate development of Theory of Mind, Empathic Understanding, and Moral Reasoning may explain, at least partially, reduced social functioning and contribute to offending behaviour

(Palmer, 2013). To consider how prosocial and/or offending behaviours emerge and develop this thesis will now evaluate the theoretical background of Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as any potential association between the three constructs.

### **2.3: Acquiring Theory of Mind.**

The first cognitive skill to be discussed within this thesis is Theory of Mind. It is recognised that the mind encompasses mental states that include perceptions and intentions, as well as propositional attitudes such as beliefs, desires, and hopes (McCrae & Costa, 1990). Theory of Mind relates to how individuals ascribe these mental states to the self, and to others, in order to understand and predict behaviour. This process involves making the distinction between the ‘real’ world and the ‘mentally-represented’ world. There are four main competing approaches that attempt to explain how people form beliefs or judgments regarding another’s mental state or Theory of Mind. In line with theories relating to the acquisition of prosocial and offending behaviours, each theory makes use of a different psychological paradigm to explain the acquisition of Theory of Mind; the paradigms and theories are:

- (i) Genetic factors; the Modularity theory,
- (ii) Dispositional Differences; the Rationality-Teleology theory,
- (iii) Socio-environmental influences; the Theory-Theory theory, and
- (iv) Cognitive abilities; the Simulation theory.

The following section will begin by describing each, before concluding that the ‘Simulation’ theory is most appropriate, within the parameters of this thesis, to describe how individuals acquire prosocial and offending behaviours.

### **2.3.1: The Modularity Theory.**

Firstly, from a genetic position, the Modularity theory proposes the existence of a domain-specific module within the human brain, which uses individual representations and computations to understand situations (Fodor, 1987). This module is said to be an innate cognitive structure that matures at a pre-programmed stage and is not influenced by learning (Leslie, 1994; Scholl & Leslie, 2001). Evidence for the Modularity theory is provided by Baron-Cohen, Leslie, and Frith (1986). In a study of typically developing pre-school children, children with Down's syndrome, and children with autism, participants were given scrambled pictures from comic strips with the first picture already in place. The participants were then required to put the remaining strips in order to make a coherent story. There were three types of story:

- (i) 'mechanical' where people or objects act causally with each other,
- (ii) 'behavioural' where a person act in a way not requiring mental attribution, and
- (iii) 'mentalist' where people act in a way requiring mental attribution.

The children with autism ordered the mechanical strips correctly and dealt adequately with the behavioural script but could not understand the mentalistic stories. Conversely, the children with Down's syndrome, despite their general cognitive disability, were not deficient on any level; leading the researchers to conclude that autism impairs an area of the brain associated with Theory of Mind.

One major criticism of the Modularity theory is that it portrays Theory of Mind as merely part of a genetic endowment that starts in a similar way to puberty and once triggered becomes fixed and cannot be further developed (Scholl & Leslie, 2001). However, Hay and Cook (2007), in a study of 7- to 12- year olds, provided

contradictory evidence, noting that age related improvements in Theory of Mind appeared to be possible. This was attributed to the fact that around this age (particularly in Western societies) children begin to associate more regularly with friends and peers (Hastings, Miller, & Troxel, 2014). As results of these peer interactions it is claimed that children are more able recognise and understand the thoughts, beliefs, and feelings of individuals outside of his or her family unit (McDonald & Messinger, 2011). Therefore, whilst the Modularity Theory may account for the onset of Theory of Mind, it does not offer an explanation regarding its further development.

### **2.3.2: The Rationality-Teleology Theory.**

The Rationality-Teleology theory (Dennett, 1987) considers dispositional determinants in relation to Theory of Mind. Dennett suggested that, by taking into consideration individual characteristics, it was possible for a person to rationally 'predict' another person's behaviour. This theory was supported by Gergely, Nádasdy, Csibra, and B'iró (1995) who investigated whether infants were able to interpret the actions of others, allowing them to draw inferences based on rational and expected behavioural characteristics. In two experiments, Gergely et al. measured the length of time infants spent looking at 'situations' which (i) met their expectations and (ii) violated their expectations; both in terms of outcome. These researchers suggested that the 'looking' times of one year old children indicated that they were able to make both types of inferences, whilst 9-month-old infants were not. Thus demonstrating that, by the end of the first year of life, children are able to use the principle of rational action not only for the interpretation and prediction of goal-directed behaviours, but also for making inferences in relation to different situations or contexts.

However, an intrinsic aspect of human behaviour is that, despite allowing for dispositional differences, such actions are not always rational or predicable. It is therefore erroneous to suggest that certain behaviours will logically follow on from certain beliefs (Goddard, 2012). For example, Goddard suggested that people may forget, or choose to ignore, many of their prior beliefs, and that to expect a ‘rational’ response from a person is to disregard any day-to-day changes in his or her mental state. These changes, he postulated, may be triggered by a number of factors, including socio-environmental influences. Therefore, it is important to consider the impact of socio-environmental factors on Theory of Mind.

### **2.3.3: The Theory-Theory Theory.**

The Theory-Theory theory (Churchland, 1981; Fodor, 1987) takes into consideration the impact of socio-environmental factors on human behaviour. This theory asserts that individuals hold a basic or ‘naïve’ ability to infer the mental state of others. This can then be used to understand the intentions behind another person’s actions. The advantage of this theory is that it allows for the consideration of factors that may affect and/or alter a person’s mental state. The result is a framework that Churchland (1990, p. 51) described as “roughly adequate to the demands of everyday life”.

Developmental psychologists, who championed the Theory-Theory theory, believed that individuals utilise a science-like processes to interpret the situations in which they might find themselves (Gopnik & Meltzoff, 1997). In other words, it was postulated that people collect information, make observations, and accordingly change their beliefs, desires, hopes, and intentions, in a disciplined way, according to their current situation. This is evidenced by Bonawitz, van Schijndel, Friel, and Schulz (2012) who considered the effect of prior beliefs verses unexpected outcomes

on children's exploration. Consistent with the Theory-Theory theory, these researchers found that children's prior beliefs mediated their exploratory play. For example, the children in this study were more likely to further explore a situation when they noted information that conflicted with prior conceptual ideas. This, Bonawitz et al. proposed, provided evidence of a person evaluating all information available to him or her, before making a decision regarding a situation.

However, Murphy and Medin (1985) suggested that the Theory-Theory theory was unstable. For example, whilst for most people agreement can be reached regarding the concepts of what is true or what is false, a definition of the word 'truth' may differ according to the individual, the time, and the place. Eggum et al. (2011) noted that to fully recognise such differences, and therefore to rationalise human behaviour, cognitive reasoning is needed.

#### **2.3.4: The Simulation Theory.**

The Simulation theory (Gordon, 1986) suggests that representational Theory of Mind requires a cognitive skill base. Simply, the theory proposes that individuals can predict another's behaviour by answering the question, 'What would *I* do in that particular situation?' Both Heal (1986) and Goldman (1989) endorsed this idea, explaining that an observer must firstly create a 'pretend' mental state, which mirrors that of the person being observed, and secondly generate an anticipated 'follow on' mental state, to predict subsequent behaviours.

Gallese and Goldman (1998), using neuropsychology, provided further evidence for the Simulation theory. They proposed that the ability to take on another's mental state employed the brain's mirror neurons. Keyser, Wicker, Gazzola, Anton, Fogassi, & Gallese (2004), demonstrated this process in an experiment which involved touching. Being touched is known to activate neurons in

the somatosensory cortex area of the brain. In Keysers et al.'s study, participants were shown a short video in which an individual was touched on the leg. Using Functional Magnetic Resonance Imaging, these researchers found that the brains of the 'watchers' were activated in a similar way to that of the person being touched. According to Decety (2010), this is the foundation on which Theory of Mind is built, and the process that successfully allows an individual to recognise and understand the perspective of another person.

Whilst the Simulation theory explains the cognitive mechanisms underpinning Theory of Mind, it does not fully explain a link between the construct and actual behaviours. To address this, Imuta, Henry, Slaughter, Selcuk, and Ruffman (2016), in a meta-analysis of 76 studies comprising of 6,432 children aged 2- to 12- years, found an association between children with higher Theory of Mind scores and increased levels of observed prosociality. The magnitude of this effect was similar across a number of Theory of Mind assessments, all of which required the participant to identify the thought process of another person. These findings support the proposal that being able to explicitly consider what other people are thinking is related to Theory of Mind.

However, with regard to offending behaviour, empirical evidence of a link with Theory of Mind is less conclusive. For example, Happé and Frith (1996) used a 'False Belief' task and the Vineland Adaptive Behavioural Scales to investigate Theory of Mind in 6- to 12- year-olds with identified conduct disorders. These researchers reported that although the scores on the Vineland Adaptive Behavioural Scales indicated that the children in the study were socially impaired, the majority were evidenced to be adept at passing age-appropriate Theory of Mind tasks. Similarly, Richell, Mitchell, Newman, Leonard, Baron- Cohen, & Blair (2003)

predicted that adult psychopathic offenders would perform poorly on the 'Reading the Mind in the Eyes' test (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) but reported no significant difference between them and the non-psychopathic control group. In contrast, Dolan and Fullam (2004), using a verbal faux pas task and a visual emotional recognition task, assessed Theory of Mind in 89 male adult offenders with DSM IV anti-social personality disorder and/or psychopathic diagnoses and a control group, matched for age and IQ. They found that some offenders were impaired in their ability to both recognise *and* understand how the speaker and the listener might feel following a faux pas. In relation to the offenders own crime, whilst some of the participants in Dolan and Fulham's study were able to understand their victim's perspective, the majority displayed a lack of concern regarding the immediate, or ongoing, impact of their actions.

One explanation for this may lie in the fact that Theory of Mind is no longer believed to be a singular function (Amodio & Frith, 2006). Specifically, Shamay-Tsoory, Harari, Aharon-Peretz, and Levkovitz (2010) described Theory of Mind as comprising of both affective and cognitive components; cognitive Theory of Mind being the ability to make inferences about another's beliefs and motivations, whilst affective Theory of Mind being the ability to understand any associated feelings. Neurological studies have provided empirical support for this duality (Shamay-Tsoory et al., 2005; Shamay-Tsoory & Aharon-Peretz, 2007), demonstrating that patients with lesions to the ventromedial prefrontal cortex, when faced with a Theory of Mind task, were able to recognise an ironic remark but were unable to understand the mental state behind that same remark. This is of significance because, to respond successfully to another's mental state, it is thought that abilities in both cognitive and affective Theory of Mind are needed (Blair & Coles, 2000)

Yet, previous research appears to have, in many cases, used measures which focus almost exclusively on the cognitive aspects of Theory of Mind. Shamay-Tsoory et al. (2005), for example, argued that the ‘Reading the Mind in the Eyes’ test (Baron-Cohen et al., 2001) singularly assessed emotional recognition rather than simultaneously measuring both emotional recognition and understanding and, as such, only examined cognitive Theory of Mind. Therefore, to confidently detect any deficiencies in Theory of Mind, a measure which assesses the potential duality of Theory of Mind is needed. To address this issue, Spenser et al. (2015) used the Social Stories Questionnaire (Baron-Cohen, O’Riordan, Jones, Stone, & Plaistead, 1999). This measure is said to simultaneously consider a participant’s *cognitive* ability to recognise the knowledge states of various characters within a story, as well as his or her *affective* ability to understand the potential impact of any remark made by one character to another. Using a participant group comprising of 46 young-adult male offenders and a control group matched for age, Spenser et al. (2015) found significant differences in Theory of Mind, with the young-adult male offenders scoring lower than the control group. However, this research was limited in three ways: (i) the narrow age range, (ii) the lack of female participants, and (iii) IQ was not controlled for.

To conclude, whilst Theory of Mind may have its roots in genetics, it is also likely to be affected by dispositional determinants and socio-environmental influences. However, and perhaps most importantly from the perspective of this thesis, Theory of Mind appears to be reliant on cognitive abilities for its successful application. Building on this last theory study 2, reported in chapter five, assesses abilities in Theory of Mind, from both a cognitive and an effective perspective according to status.

## **2.4: Acquiring Empathic Understanding**

Empathic Understanding is the second cognitive skill to be discussed in this thesis. The term Empathic Understanding is a derivation of the German word *empathie*; essentially the process where individuals project genuine feelings or emotions onto objects (Titchener, 1924, p. 417). However, this definition captures the construct of Empathic Understanding at its simplest (Duan & Hill, 1996); the conceptual interpretation being somewhat more complex. For example, Empathic Understanding, as a skill, is said to be the driving force behind successful social relations (Pinker, 2011). However, as with Theory of Mind, Empathic Understanding is considered by some researchers to be innately dispositional (Kim & Kou, 2014), whilst others favour theories related to socio-environmental influences (Yamada & Decety, 2009), or cognitive determinants (Egan, 2010). The following subsection will discuss the proposed origins of Empathic Understanding.

### **2.4.1: The Dispositional View of Empathic Understanding.**

The dispositional view of Empathic Understanding believes that an individual's tendency to be empathic is a function of an 'innate' disposition (Duan & Hill, 1996) and that people will display similar levels of Empathic Understanding, regardless of a situation (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008). For example, the dispositional view might expect viewing a motorist stranded on the side of the road in a thunderstorm to evoke the same predetermined reaction in a person as witnessing that same stranded motorist on a clear and warm day. Whilst in reality, most people are able to effectively understand that one experience is likely to evoke a greater degree of distress than the other; thus reflecting the notion that Empathic Understanding may concurrently depend upon innate dispositional determinants *and* socio-environmental influences (Goetz, 2003).

#### **2.4.2: The Socio-Environmental View of Empathic Understanding.**

It has been suggested that an individual can better empathise with someone if they themselves have gone through a similar experience (Webster-Stratton et al., 2011). For example, an individual's ability to empathise with a bereaved person may differ according to their own experiences of death. Similarly, socio-environmental influences and cultural acceptability may also alter an individual's expression of Empathic Understanding (Webster-Stratton et al., 2011). One example of this might be divorce. Whilst divorce is socially acceptable in most western societies, and therefore might arouse an empathic reaction, it is not so for all cultures where the same situation might evoke feelings of shame or disgust. Therefore, as Empathic Understanding derives from an interaction between two or more individuals, a better understanding of the construct may be found by considering its possible cognitive origins (Duan & Hill, 1996).

#### **2.4.3: The Cognitive View of Empathic Understanding.**

Batson (1987) contended that Empathic Understanding is an emotional response that is characterised by feelings of tenderness, compassion, and sympathy. The ability to share such feelings requires an individual to take on the mental or emotional perspective of another (Shamay-Tsoory, 2011). Indeed, Hoffman (2000, p. 216) argued that a "cognitive dimension helps give structure and stability to empathic affects, which should make [them] less vulnerable to bias". Hoffman's work also provides a theoretical model to link Empathic Understanding to other emotional states including sympathy, guilt, and anger.

However, whilst accepting that humans have a capacity for Empathic Understanding, the question remains whether all people are equally able to understand another's situation, and to feel compassion for what that person might be

experiencing. For example, in terms of offending behaviours, Van der Helm et al. (2012) considered a cohort of 59 juvenile delinquents in Holland and found them to demonstrate lower levels of Empathic Understanding, particularly for their victims, compared to non-delinquent adolescents. This was supported by Spenser et al. (2015) who found similar results in a study with young adult offenders (*M age = 21* years). In contrast, Beven (2006) suggested that the Empathic Understanding of offenders was not quite so simply explained, noting that some appear intolerant of the remembered distress of their victims, whilst others present with feelings of excitement or enjoyment. An explanation for this may be that although some offenders are able to recognise distress in their victims, they are unable to respond in what is considered a socially appropriate manner (Jolliffe & Farrington, 2006).

In addition, some studies suggest that differences in Empathic Understanding are unrelated to certain categories of offending. Mann, Hanson, and Thornton (2010), in a study of sex-offenders, concluded that some had an emotional congruence with children, believing that they were able to recognise and understand the needs of their child victim (Daly & Wilson, 1999). The earlier work of Sykes and Matza (1957) might offer an explanation for this belief. They proposed that many offenders hold values very similar to those of law-abiding citizens, yet to justify their offending behaviours they adopt techniques that temporarily 'neutralise' such attitudes. The techniques are defined as follows:

- *Denial of Responsibility* where the offender is pushed or pulled into a situation beyond his or her control (i.e., "It wasn't my fault!").
- *Denial of Injury* where the offender thinks that his or her acts do not harm the victim (i.e., "They have plenty of money!").

- *Denial of the Victim* where the offender thinks the victim deserves the injury or that there is no victim (i.e., "They had it coming to them!").
- *Condemnation of the Condemners* where the offender see the condemners as hypocrites (i.e., "They probably did worse things in their day!").
- *Appeal to Higher Loyalties* where the offender believes relationships are more important than the law (i.e., "My friends depended on me, so what was supposed to do?").

Another explanation for the mixed findings in relation to Empathic Understanding may be that it may be a multidimensional construct, comprised of both affective and cognitive components (Cox, Uddin, Di Martino, Castellanos, Milham, & Kelly, 2012). Cognitive Empathic Understanding denotes the ability to take the mental or emotional perspective of others, whilst affective Empathic Understanding is said to be the ability to share in their emotional experiences (Shamay-Tsoory, 2011). Neurological research also supports the duality of Empathic Understanding. For example, Shamay-Tsoory, Aharon-Peretz, and Perry (2009) found that cognitive Empathic Understanding is disrupted by lesions to the medial prefrontal cortex, whilst damage to the bilateral amygdala disrupts affective Empathic Understanding. As such, it is suggested that both cognitive and affective elements are required for a complete Empathic Understanding (Nummenmaa, Glerean, Viinikainen, Jääskeläinen, Hari, & Sams, 2008).

To conclude, assuming that Empathic Understanding is comprised of both affective *and* cognitive components (Cox et al., 2012); it follows that both should be considered when assessing an individual's ability to respond appropriately to another's mental state (Nummenmaa et al., 2008). Building on this notion, chapter

five (study 2), assesses abilities in Empathic Understanding, from both a cognitive and an effective perspective according to status.

## **2.5: Acquiring Moral Reasoning.**

Moral Reasoning is the last prosocial skill to be considered within this thesis. Moral Reasoning can be defined as the cognitive process in which an individual attempts to determine the difference between what is right and what is wrong, by the use of logic (Bartels, Bauman, Cushman, Pizarro, & McGraw, 2015). According to Kohlberg (1978) people develop through three levels of Moral Reasoning: (i) the first level involves making decisions of morality based on the prospect of punishment; (ii) the second level assumes a perception of right and wrong, and believes the law to be the judge of morality; and, (iii) the third level occurs when a person makes decisions based on unspoken agreements, or when he or she can generalise ethical principles beyond his or her own personal interests. Kohlberg (1978) noted that an individual's moral stage could be discerned from their behaviour.

Palmer and Begum (2006) supported the premise that a person's behaviour reflects his or her moral stage of development. In a study of 60, 14- to 17- year old male offenders and non-offenders, matched for age and IQ, they determined that the offenders reasoned at a less mature moral stage when compared to the control group. This was earlier explained by Gibbs (2003, p. 135), who suggested that a "developmental delay in moral judgement", coupled with social skill deficits, were common amongst offenders. Palmer (2003) agreed, adding that the influence of parents, peers, and other socio-environmental factors may be responsible for the generation of cognitive distortions used to support illegal behaviours.

However, any discussion relating to Moral Reasoning and its development must acknowledge the cultural biases that are inextricably embedded in definitions of what is moral, and what is not (Rest, 1986). Woven throughout Kohlberg's theory is an inherent assumption that Moral Reasoning is defined by the principles of fairness and justice. Whilst fairness and justice are highly valued in individualistic and competitive cultures (common to many Western societies), other less competitive cultures may give more value to a different set of factors, such as compassion and group integrity. As a consequence, Bucciarelli, Khemlani, and Johnson-Laird (2008) suggested that Moral Reasoning might be better interpreted by four fundamental principles:

- (i) Indefinability of Moral Propositions. That is it is hard to tell from the proposition alone whether or not it concerns morals or conventions.
- (ii) Independent Systems. That is emotions or cognitive evaluations operating in parallel.
- (iii) Deontic Reasoning. That is all evaluations can depend on either unconscious or conscious inferences.
- (iv) Moral Inconsistency. That is the beliefs that are the basis of moral development are neither complete nor consistent.

In other words, Moral Reasoning does not necessarily rely on any one simple defining principle. For example, what represents a moral issue in one instance, or a matter of fact in another, is likely to be a reflection of the attitudes of the interested parties.

Raine and Yang (2006) proposed support for the premise of the importance of attitudes. In a neurological study, they presented participants with a number of moral decisions that were categorised as either 'personal' moral dilemmas (e.g., throwing a

person out of a sinking life-boat to save others), or ‘impersonal’ moral dilemmas (e.g., keeping money found in a lost wallet). Raine and Yang found that the same areas of the brain were activated in both types of scenario; suggesting that these structures play a central role in the emotional processes influencing *all* moral decision-making.

More recently, attempts to differentiate between the affective and cognitive elements of Moral Reasoning have been made (Blair, 2008). Blair described moral emotions, such as guilt, shame, and embarrassment, as the affective response to moral functioning and Moral Reasoning as the cognitive aspect of morality. Indeed, Ma (2013) suggested that Moral Reasoning, like Theory of Mind and Empathic Understanding, is dual construct; the affective aspect being associated with prosociality and the cognitive aspect being related to the justice reasoning elements of Moral Reasoning.

Consequently, as with Theory of Mind and Empathic Understanding, it is appropriate to adopt the position that Moral Reasoning is comprised of both affective and cognitive components (Blair, 2008), and that both should be considered when assessing an individual’s ability to respond to another's mental state (Ma, 2013). Building on this, chapter five (study 2) assesses abilities in Moral Reasoning, from both a cognitive and an effective perspective according to status.

## **2.6: Associations between Theory of Mind, Empathic Understanding, and Moral Reasoning.**

Hoffman (2000) suggested that both Theory of Mind and Empathic Understanding played a part in Moral Reasoning; arguing that Theory of Mind is the key activator in relation to Empathic Understanding and that Empathic

Understanding is the primary motivator of moral behaviour. Therefore, to fully understand the development of prosociality, it is important to identify any associations that may exist between Theory of Mind, Empathic Understanding, and Moral Reasoning, as the key indicators of prosocial abilities (Stams et al., 2006; Eisenburg, 2010).

An association between Theory of Mind, Empathic Understanding, and Moral Reasoning was supported by Lane et al. (2010) who proposed that Theory of Mind and Empathic Understanding, in a group of children aged 3- to 5- years, would predict the quality of their Moral Reasoning. They found that the children with a developed Theory of Mind and Empathic Understanding were more motivated to evaluate differing perspectives when faced with moral dilemmas. Neurological research also offers support of an association between Theory of Mind, Empathic Understanding, and Moral Reasoning. Schulte-Rüther, Markowitsch, Fink, and Piefke (2007), for example, using neuroimaging and behavioural measures in a sample of 26 participants (*Age* = 24 years) reported that the cognitive processing of facial expressions activated the same area of the brain as that involved in Moral Reasoning. Whilst more recently, Bzdok et al. (2012) in a meta-analysis of previous neurological studies, which considered Theory of Mind, Empathic Understanding, and Moral Reasoning, concluded that Moral Reasoning is related to both recognising another's point of view and understanding any feelings evoked by that perspective.

With regard to offending behaviours, a prime consideration in Piaget's (1932) early 'Developmental Theory of Moral Judgment' was the extent to which a child was able to appreciate and empathise with another's' point of view. Whilst Stams et al. (2006) noted that the relationship between Theory of Mind, Empathic Understanding, and Moral Reasoning has implications for understanding the

aetiology of criminal behaviour. However, despite the recognition of a potential association between Theory of Mind, Empathic Understanding, and Moral Reasoning, empirical research involving all three constructs, within a single study, with an adult offending and an adult non-offending population, appears to be missing from the literature. Chapter five (study 2) therefore examines the association between Theory of Mind, Empathic Understanding, and Moral Reasoning, in a group of male and female offenders and male and female non-offenders.

## **2.7: Other Factors Affecting Prosocial and/or Offending Behaviours**

It is generally agreed that prosociality is an amelioration of genetic factors, dispositional differences, socio-environmental influences, and cognitive development. However, other key effects have been identified within the literature as impacting on prosocial development; for example, age (Baillargeon et al., 2012), gender (Eisenberg, Carlo, Murphy, & van Court, 1995), and IQ (Han, Shi, Yong, & Wang, 2012). The following subsections will consider the literature relating to each of these.

### **2.7.1: Age Related Prosocial and/or Offending Behaviours.**

There appears to be general agreement that prosocial behaviour is first detected in children between the ages of 12- and 18- months (Smith et al., 2003). Infants will initially react to others' negative emotions by mirroring their distress. Later a more concerned attention, in the form of positive physical contact or verbal reassurance, may be evidenced (Knafo et al., 2008). It is during the second year of life, as a child's cognitive capacity to understand the goals and intentions of others increases, that he or she is then able to 'help' others in a wider variety of tasks and in response to a wider array of cues (Svetlova, Nichols, & Brownell, 2010). For

example, Liskowski, Albrecht, Carpenter, and Tomasello (2008) noted that when a child knows the location of a 'lost' object, he or she will point to direct the attention of the person who is looking for it. Given that the infants themselves do not seem to gain anything by providing this information, their directional pointing is considered by some to be an act of helping (Liskowski et al., 2008).

According to Zahn-Waxler, Radke-Yarrow, Wagner, and Chapman (1992), the development of prosocial behaviour continues as children begin to gain a greater understanding of the world. With age and cognitive maturity, obedience to societal standards becomes steadily more important, and the ability to exhibit prosocial behaviour further strengthens (Bouchard, Mesgarani, Johnson, & Chang, 2013). From a developmental point of view, most children begin to understand that prosociality is an obligatory part of a social relationship and take into account issues of right and wrong (Sanstock, 2014). Consequently, as a person moves through childhood and into adolescence, their thinking changes from being simplistic and needs-oriented, to a form that involves perspective taking and cognitive reasoning (Eisenberg, 2000). This was supported by Eysenck (2004) who in a study of 5- to 15-year olds noted that the frequency of prosocial behaviours varied according to age:

- (i) in young children - very occasionally;
- (ii) in 13- to 15- year olds - approximately 9% of the time;
- (iii) in 18- to 20- year olds - approximately 21% of the time, and;
- (iv) in 23- to 25- year olds - approximately 49% of the time.

This was supported by Eisenberg, Morris, and Spinrad (2005) who, in considering differences in prosocial behaviours between a group of adolescents (15- to 16- years) and adults (25- to 26- years) found that helping behaviours appeared to increase with age.

Further, Sze, Gyurak, Goodkind, and Levenson (2012) found that any growth in prosociality was enhanced when emotions were involved. For example, they observed that greater charitable donations resulted if a request was accompanied by an emotional video. Similarly, Beadle, Sheehan, Dahlben, and Gutchess (2015), in a study with young adults (*M age* = 19.8- years) and older adults (*M age* = 77.9 years), found that the older adults demonstrated greater prosocial behaviour than the younger adults, when feelings of empathy were triggered. However, the same researchers found no significant age-related differences when the ‘stimuli’ were neutral. This suggests that in a context where prosociality is the desired outcome, frequency increases with age.

In relation to offending behaviours, Beadle et al. (2015) proposed a link between maturation and desistance. This association was first introduced almost a hundred years ago by Goring (1919) who suggested that age related desistance was a natural process. Similarly, Glueck and Glueck (1937, p.105), in their work relating to life course criminality, argued that “aging is the only factor which emerges as significant in the reformatory process”. Indeed, the ‘age crime curve’ suggests that the majority of offending behaviour peaks at around 17- years of age, following which it starts to decline (Kazemian, 2007).

Moffitt's (1993) theoretical work attempted to explain this apparent phenomenon. She noted two types of offender; the first being those who engage in offending for a brief period during adolescence, and the second being those who start to offend much earlier and continue well into adulthood. One possible explanation for this difference may be the ‘relationship’ that an individual has with society. For example, Sampson and Laub (2005) noted that most ‘non-offending’ people have some form of attachment to the society in which they live; for adolescents these ties

may involve their family, their school, and their peer groups, whilst employment, marriage, and parenthood are said to operate in a similar way for adults. Thus the absence of such relationships, either during adolescent or into adulthood, may be influential in terms of offending behaviours.

An alternative explanation was offered by Giordano, Cernkovich, & Rudolph (2002) who suggested the Cognitive Transformation theory, proposing that four age-related conditions must be in place for successful desistance to occur; they are:

- (i) a general openness to change,
- (ii) the ability to envision a more conventional self,
- (iii) a new negative view of offending behaviours, and
- (iv) an exposure to mechanisms that might facilitate change.

Further, this theory draws on findings that suggest that individuals who are able to desist from crime have higher levels of self-efficacy, meaning that they see themselves in control of their own futures and have a clear sense of purpose and meaning in their lives (Maruna, 2001). One explanation for this may be that as an individual grows older, his or her ability to interact with the environment becomes more sophisticated, and he or she is more able to gauge the needs and requirements of others (Berk, 2013). To do this it is suggested that a developed set of cognitive reasoning skills are required (Dunfield & Kuhlmeierref, 2013). As noted in the introductory section of this chapter, those skills are purported to be Theory of Mind, Empathic Understanding, and Moral Reasoning.

However, whilst Theory of Mind, Empathic Understanding, and Moral Reasoning have been shown to emerge in children at about the same time (Semel & Rosner, 2003) and continue to develop in a simultaneous manner throughout early

childhood (Decety & Jackson, 2004), there remains limited consensus in the literature regarding their development through adolescence and into adulthood. Therefore, it is suggested that to fully understand the relationship between age and crime, more testable theories and empirical evidence are needed (McNeill et al., 2012). As a consequence, chapter four (study 1) gives consideration to the impact of age on the acquisition, and further development, of Theory of Mind, Empathic Understanding, and Moral Reasoning, and the results from study 1 are considered in studies 2, 3 and 4 (chapters five, six and seven).

### **2.7.2: Gender Related Prosocial and/or Offending Behaviours.**

The construction and nurturing of prosociality, regardless of gender, is often said to be at the forefront of many caregivers' minds (Morrow-Howell, McCray, Lee, & McBride, 2011). Indeed, the continuing development and maintenance of prosocial behaviours appears to be crucial for the effective functioning of society (Law, Siu, & Shek, 2012). Therefore, it may be reasonable to expect levels of prosociality to be similar and consistent in the majority of people (Espinosa & Kovářík, 2015).

However, empirical evidence relating to gender differences in prosociality is mixed (Croson & Gneezy, 2009). For example, Eagly and Crowley (1986), in a meta-analytic review of gender differences in prosocial behaviour, concluded that overall males 'helped' more than females, and females got more 'help' than males. In contrast, Chadha and Misra (2006) reported no significant gender related differences in prosocial behaviours. More recently, this view was supported by Abdullahi and Kumar (2016) who, in a study of 30 males and 30 females (aged 20- to 30- years), found no significant gender differences relating to social relationships and behaviours. In contrast, Erdle, Sansom, Cole, and Heapy, (1992) stated that

women appear to score more highly on measures of helping behaviours than men, and that such gender related differences are evidenced in prosocial behaviours.

Einolf (2001) concurred proposing that in general females are brought up to be more prosocially motivated than males.

One possible explanation for this dichotomy in helping behaviours according to gender may be attributed to ‘prosocial gender stereotyping’. Indeed, gender stereotyping may influence both the behaviour of males and females, as well as the research itself (Hines, 2013). For example, Hines stated that the rules that guide prosocial behaviour may be influenced by personal knowledge relating to gender and gender-appropriate behaviour. Consequently, males and females may behave differently in terms of their prosocial behaviour, based on their own gendered knowledge. As a result, findings may be representative of either a ‘real’ difference in prosocial behaviour between males and females, or they may be a consequence of how studies are designed, conducted, and responded to. For example, Espinosa and Kovářík (2015), in a meta-analysis of experimental studies containing at least one measure of prosociality, found that the ‘social framing’ of questions to be a factor in the alleged differences in prosocial behaviours between male and female participants. Specifically, these researchers found that when a question was put into a ‘social frame’, the female participants in their study demonstrated an increased level of prosociality in comparison to their male counterparts. However, it must be noted, any differences in perceived male and female prosociality is more likely to be a combination of both of these factors, with the *stereotype* influencing the *behaviour*, and the consequent *behaviour* informing the *stereotype*.

Indeed, Hines (2013) questioned the way in which males and females identify with, and take part in, prosocial behaviours. She demonstrated that the

female participants in her study performed stereotypically feminine or emotional prosocial behaviours, as well as traditionally masculine or physical ones. In contrast the male participants identified only with physical prosocial behaviours. Since emotions are naturally linked to social dilemmas, the capacity to inhibit them may result in lower sharing and less cooperation. Therefore, Hines' findings may indicate that men are more able to 'absent themselves' from the emotional aspects of dilemmas and so behave in a more 'selfish', or less prosocial way (Gross & John, 2003; McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008). Consequently, gender differences in prosocial behaviour may be about the types, rather than the quantity of prosocial behaviours (Dovidio, Piliavin, Schroeder, & Penner, 2006).

To conclude, whilst it is possible that the emergence of an engaged and actively prosocial person has a biological foundation, the socio-environmental influences in relation to prosocial behaviours appear to be of similar importance (Salvatore & Taniguchi, 2012). This influence may also lead to differences in observed prosocial behaviours, according to gender. Therefore, in study 2 (chapter five) the impact of gender (as well as status) on Theory of Mind, Empathic Understanding, and Moral Reasoning, is considered.

### **2.7.3: IQ and Prosocial/Offending Behaviours.**

The last factor which is said to impact on the development of prosociality, is IQ (Han, Shi, Yong, & Wang, 2012). IQ is a challenging construct to study, in part because it can be defined in a number of different ways (Deary, Johnson, & Houlihan, 2009). However, most definitions of IQ include the ability to reason, plan, solve problems, think abstractly, and understand complex ideas. Further, the ability to learn from personal experiences, as well as adapt to changing environments, are also important (Aknin, van Boven, & Johnson-Graham, 2014).

According to Green, Kreuter, Deeds, & Partridge (1980) intellectual ability appears to promote the development of social competence. Indeed, many of the abilities related to IQ, are similarly associated with prosociality (Vonk, Zeigler-Hill, Mayhew, & Mercer, 2013). Therefore, it may not be surprising that ‘cognitively-delayed’ individuals sometimes show a significant reduction in the development of appropriate social skills (Guralnick & Groom, 1987). This notion led Langdon, Clare, and Murphy (2011) to acknowledge that prosociality may be moderated by IQ; a view widely researched in relation to offending behaviours. For example, Simonoff et al. (2004) reported low IQ to be a consistent risk factor for the emergence and continuity of offending behaviours during a person’s life. This was supported by Koenen, Caspi, Moffitt, Rijdsdijk, and Taylor (2006) who, following a meta-analysis of previous studies, reported that the effect size of the association between lower levels of IQ and offending behaviour to be approximately .30.

Further, both IQ and offending behaviours appear to be influenced by genetic and environmental factors (Aljabber, 2001). For example, according to Rhee and Waldman (2002), both IQ and offending behaviours are partly heritable. They reported that genetic influences account for one third of the variance in a child’s IQ, as well as one half of the variance in offending behaviours. Similarly, IQ and offending behaviours seem to share many environmentally generated risk factors, such as low socioeconomic status (Bradley & Corwyn, 2002), a lack of educational opportunities (Towl & Crighton, 2010), and child maltreatment or domestic violence (Jaffee, Caspi, Moffitt, & Taylor, 2004). As a consequence, Kopp, Baker, and Brown (1992) suggested that individuals with low IQ scores may have difficulty in successfully following the rules of society or find it too difficult to verbally negotiate conflict; which may promote offending behaviours (Lynam & Henry, 2001).

For some time the association between IQ and offending behaviour has been considered to be robust (Lynam, Moffitt, & Stouthamer-Loeber, 1993). Koenen et al. (2006) concurred, stating that low IQ is a consistent risk factor for emergence and continuity of offending behaviour during a person's life, even when other relevant risk factors are statistically controlled for. More specifically Entorf and Spengler (2000) stressed the importance of differentiating between factors such IQ, when assessing abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning. Therefore, IQ was assessed in chapter 3, and the results were considered in studies 2, 3, and 4 (chapter's five, six and seven).

## **2.9: Social Capital, Theory of Mind, Empathic Understanding, and Moral Reasoning.**

So far this thesis has focused on factors that are implicated in the acquisition of prosocial and offending behaviours. However, the acquisition and ongoing maintenance of prosociality, according to some research, is heavily dependent on the development of successful social relationships (Bosancianu, Powell, & Bratović, 2013). Indeed, Bosancianu et al. stated that these relationships affect the contributions that people make to the welfare of others, as well as society in general. Yet, whether a person is asked to engage in prosocial behaviour, or even if they will comply with such a request, depends to a large extent on the ties and networks they have in place (Hooghe, 2002). These ties and networks are generally referred to as Social Capital (Lin, 2001).

According to Lin (2001) there are three types of Social Capital. The first is *scope-based Social Capital* which emerges when a person has contact with a large number of people from a wide range of different backgrounds. The second is *resource-based Social Capital* which is so named because it refers to the ties that

individuals might have to more 'resourceful' others; which in this instance means the provision of information, contacts, and encouragement (Lin, 2001). The last type of Social Capital, which is arguably the most important from the perspective of this thesis, is *relation-based Social Capital* that refers to relationships or networks that are categorised as having strong ties, with a high level of trust and reciprocity. In these networks, people are more likely to provide help to each other, conform to group norms, and punish deviant behaviour. However, past research appears to focus on neuroscientific study, with limited evidence of a psychological association between Social Capital and Theory of Mind, Social Capital and Empathic Understanding, and Social Capital and Moral Reasoning (McKenzie et al., 2002). The next subsection will consider the available literature.

### **2.9.1: Social Capital and Theory of Mind.**

In a neuroscientific study, McCabe et al. (2001) investigated the neural correlates of trust and reciprocity; two factors known to play a role in the development and maintenance of Social Capital. They exposed participants to a simple two-player reciprocal game of trust, in which he or she played against either a human or a computer, whilst at the same time undergoing a Functional Magnetic Resonance Imaging scan. Following the results, participants were divided into one of two groups. Group one consisted of participants who demonstrated cooperative behaviours against a human opponent but not against the computer, and group two consisted of participants who showed no significant cooperative behaviours at all, regardless of the opponent. In the study, those who showed cooperating behaviours against a human opponent, also demonstrated high levels of activity in the medial prefrontal cortex; an area of the brain known to be implicated in Theory of Mind. However, as noted in the introduction to the current section, previous studies appear

not to have considered a psychological link between Social Capital and Theory of Mind. To address this study 3(chapter six) considers this relationship.

### **2.9.2: Social Capital and Empathic Understanding.**

Social Capital is conceptualised by cooperative behaviours, especially those involving trust and reciprocity (Balliet & van Lange, 2013). Key to trust is the perception of fairness or unfairness (Andreoni, 1990). Some studies have made a link between perceived unfairness in social interaction and the activation of regions in the brain associated with Empathic Understanding. For example, Petersen, Roepstorff, and Serritzlew (2009) in a study involving online gaming, noted that emotions were evoked according to whether an opponent was perceived as having acted fairly or unfairly. In relation to the perceived unfairness, the emotions displayed by the participants were most predominantly anger and disgust.

Singer et al. (2006) similarly demonstrated an association between Social Capital and Empathic Understanding within an offending population. They firstly exposed participants to a range of dilemma based interactions where an opponent was seen to act either 'fairly' or 'unfairly'. The results demonstrated that the 'unfair' opponents were considered significantly less 'likeable', than those who acted fairly. Secondly, Singer et al. conducted brain scans on their participants, whilst he or she observed videos where both the 'fair' and 'unfair' opponents were subjected to 'painful' electric shocks. Analysis of the participants' brain activity revealed significantly less activity in the area of the brain related to Empathic Understanding when the 'unfair' opponents were 'shocked' compared to the 'fair' opponents. In addition, significant activity in the area of the brain associated with 'reward' was noted when the 'unfair' opponents received electric shocks; something that was found to be positively associated with a desire for revenge. However, as with Theory

of Mind, previous studies appear not to have considered a psychological link between Social Capital and Empathic Understanding. To address this, study 3 (chapter six) considers this relationship.

### **2.9.3: Social Capital and Moral Reasoning.**

Social Capital is said to involve many influencing factors; including social proximity, number of encounters, mutual commitments, trust, reciprocity, and moral motivations (Sanghera, Ablezova, & Botoeva, 2011; Torche & Valenzuela, 2011). As such, Moral Reasoning is likely to allow for the consideration of various emotional states, and be highly context sensitive (Barbalet, 2009). However, Lin (2001) noted that by emphasising that Social Capital is motivated by the norms of trust and reciprocity (Lin, 2001), moral motivations may have been ignored (Fevre, 2000). As such, bonds based on sympathy and sentiment, as well as trust and reciprocity, may be better explained by Moral Reasoning (Filonowicz, 2008).

Despite this dichotomy, evidence for a relationship between Moral Reasoning and Social Capital can be found in neuroscientific studies. For example, in a study where offenders were exposed to a number of morality based dilemmas, involving both computer generated and real life scenarios, Sanfey et al. (2003) found that the computer generated scenarios did not activate moral emotions such as shame, guilt, or embarrassment, in the same way that the real life situations did; thus indicating a relationship between Social Capital and Moral Reasoning. However, as with Theory of Mind and Empathic Understanding, previous studies appear not to have considered a psychological link between Social Capital and Moral Reasoning. To address this, study 3 as reported in chapter six, considers the relationship between Social Capital and Moral Reasoning.

## **2.10: Executive Functioning, Theory of Mind, Empathic**

### **Understanding, Moral Reasoning, and Social Capital.**

Cognitive constructs, such as Theory of Mind, Empathic Understanding, and Moral Reasoning, are said to have the capacity to regulate thoughts, feelings, and behaviours (Blair, 2002). They are also reported to provide a foundation for maintaining positive social relationships or Social Capital (Flook, Goldberg, Pinger, & Davidson, 2015). As such, self-regulation in these areas is increasingly recognised as an important contributor to successful social participation (Moffitt et al., 2011). However, the coordination and management of Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as Social Capital, is said to be complex. According to McCloskey, Perkins, and Van Divner (2009) Executive Functioning is said to be the overarching system, which co-ordinates the building blocks involved in;

- (i) maintaining and shifting cognitive set,
- (ii) visualising and manipulating information,
- (iii) strategising,
- (iv) selecting a response from among competing choices, and
- (v) maintaining task goals.

Further, the maturation of the brain is linked to the development of Executive Functioning. This is demonstrated by the advancement of abilities, which are said to be present in a rudimentary form at the beginning of life, but undergo rapid development congruent with brain growth during childhood, such as Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital (Diamond, 2013). This led Nigg and Huang-Pollock (2003) to note the effects of an underdeveloped Executive Functioning in terms of a person's long-term social

functioning. For example, in a study with school children, they found that positive reciprocity was needed for successful social interaction, and in particular the ability to comprehend, maintain, and comply with social rules appeared to be essential. Further, norm-breaking behaviours sometimes led to social rejection (Coie, Dodge, & Kupersmidt, 1990).

Barkley (2010) suggested that effective Executive Functioning was associated with prosociality, and conversely a dysfunction in this area is said to be predictive of offending behaviours (Mullin & Simpson, 2007). As a consequence, programmes aimed at addressing an offender's ability to self-regulate have been a particular focus of the Criminal Justice System (Sharma, Prakash, Sengar, Chaudhury, & Singh, 2015). Yet, despite evidence highlighting the importance of self-regulation, there is a paucity of research considering the predictive ability of Executive Functioning in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning. In addition, a gap in the literature exists relating to the effect that Executive Functioning may have on Social Capital. An explanation for this may be that Executive Functioning is noted as not having a 'gold-standard' test used in its measurement (Chan, Shum, Touloupoulou, & Chen, 2008; Salthouse, 2005); possibly because of its multidimensional nature (Brugger, Alderman, Evans, Emslie, & Wilson, 1998). Indeed, Executive Functioning is said to be made up of an array of cognitive abilities, which include: (i) Working Memory; (ii) Cognitive Flexibility, and (iii) Inhibitory Control (McCloskey et al., 2009). Therefore, these constructs were used as the determining factors of Executive Functioning to address this gap in the literature (see study 4, chapter seven).

## 2.12: Conclusion.

Eisenberg and Fabes (1998) argued that cognitive skills are associated with prosocial behaviour. This may be because cognitive structures underlie the capacity to discern others' thoughts, emotions, and needs, as well as the ability to respond adequately to those observations. As a result, prosocial people tend to be well regulated and low in impulsiveness (Eisenberg & Fabes, 1998). They are also able to exercise self-control when tempted to do wrong, and feel guilt and remorse about any perceived wrongdoing (Hoffman, 1970), and are often characterised by their compassion for others (Singer & Klimecki, 2014).

So far, this thesis has suggested that prosociality can be driven by a range of motivations. An appreciation of the theoretical framework underpinning prosocial and offending behaviours has been offered. In particular, the key psychological paradigms; (i) genetic factors, (ii) dispositional differences, (iii) socio-environmental influences, and (iv) cognitive abilities, have been discussed in relation to the acquisition and realisation of prosocial and offending behaviours. It has been described that whilst each paradigm has traditionally been presented as a singular and separate influence, that can prompt, change, or mitigate behaviour, psychology now takes a more multi-dimensional stance. It has been proposed that cognition represents the greatest cogency, as from this perspective the individual must recognise *and* understand the goals and desires of another, as well as note that any action they take will have an emotional consequence for both parties (Prinz, 2007). It is also noted that to do this a person must acquire three separate, yet related, cognitive skills; namely Theory of Mind, Empathic Understanding, and Moral Reasoning (Eggum et al., 2011; Elliott, Racine, & Busse, 1995; Sharp, 2008; Spenser et al. 2015).

The need for further psychological studies in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning was noted in the current chapter. In particular, it was stated that whilst Theory of Mind, Empathic Understanding, and Moral Reasoning have been shown to emerge in children at about the same time (Semel & Rosner, 2003), and continue to develop in a simultaneous manner during early childhood (Decety & Jackson, 2004), there is no consensus regarding their development through adolescence and into adulthood. This gap in the literature is addressed and further discussed in study 1 (chapter four) of this thesis.

More recently, Farrington (2010) noted that status related variances in Theory of Mind, Empathic Understanding, or Moral Reasoning are equivocal, whilst Hines (2013) questioned the way in which males and females identify, and take part in, prosocial behaviours. To clarify this issue Theory of Mind, Empathic Understanding, and Moral Reasoning, in relation to gender and status are examined and further discussed in 2 (chapter five) of this thesis.

In addition, McKenzie et al. (2002) noted that a link between Social Capital and key cognitive skills, such as Theory of Mind, Empathic Understanding, and Moral Reasoning, is complex. Whilst there appears to be neuroscientific support for this association: (i) Social Capital and Theory of Mind (McCabe et al., 2001), Social Capital and Empathic Understanding (Damasio, 2004), and Social Capital and Moral Reasoning (Sanfey et al., 2003), studies considering each from a psychological perspective, with a male and female, offending and non-offending population, are limited. This gap is addressed and further discussed in study 3 (chapter six) of this thesis.

Finally, despite evidence highlighting the importance of self-regulation in terms of social development (Marques, et al., 2015), to the current author's

knowledge, previous research has not considered the ability of Executive Functioning to predict Theory of Mind, Empathic Understanding, Moral Reasoning, as well as Social Capital. Similarly, additional research regarding differences in abilities according to status in Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, are missing from the literature. These gaps will be addressed and further discussed in study 4 (chapter seven) of this thesis. The following chapter will define the methodologies behind each of the four studies within this thesis.

# **Chapter Three**

## **The Methodology**

McNeill et al. (2012) suggested that a broadening of what is sometimes referred to as 'the desistance agenda' is long overdue. Consequently, the overriding purpose of this thesis was to examine how Theory of Mind, Empathic Understanding, and Moral Reasoning, as the key constructs behind prosociality, might have importance in terms of offender rehabilitation. Specifically, it is proposed that the ability to break down prosociality, as well as understand and measure its individual components (Theory of Mind, Empathic Understanding, and Moral Reasoning) will be useful for researchers and practitioners alike. Similarly, the relationship between Theory of Mind, Empathic Understanding, and Moral Reasoning and Social Capital, as well as the overriding influence of Executive Functions on each individual construct, could be particularly useful in relation to understanding prosocial and offending behaviours.

Therefore, this thesis asked the following questions:

1. Do abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning differ according to age? - study 1 (chapter four).
2. Do abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning differ according to a person's gender or status? - study 2 (chapter five).
3. Is there an association between Social Capital and Theory of Mind, Empathic Understanding, and Moral Reasoning, and if so are they able to

predict an individual's Social Capital across status? - studies 3a and 3b (chapter six).

4. Is Executive Functioning able to predict ability in Theory of Mind, Empathic Understanding, Moral Reasoning, and levels of Social Capital? - studies 4a and 4b (chapter seven).

This chapter presents the research design, data collection, and data analysis procedures considered to be the most suitable in addressing the research questions noted above. However, before practical procedures are presented, the theoretical fundamentals of the selected design will be discussed.

### **3.1: Design.**

As stated by Sayre (2001, p.4) "gathering intelligence...is the purpose of conducting research of all types". Within psychology one of two methods or research are generally adopted; qualitative or quantitative. Quantitative research is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. It is used to quantify attitudes, opinions, behaviours, and other defined variables. Quantitative research uses measurable data to formulate facts and uncover patterns of behaviour, and data collection methods are highly structured, using various forms of surveys, face-to-face or telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations. In contrast to qualitative research, quantitative methods can be more generalisable due to a larger sample population.

The reasons for choosing a quantitative design in this thesis threefold: Firstly, the aim of this thesis was to establish statistically significant conclusions about a population by studying a representative sample of that population. Since it is impractical to conduct a census, which includes everyone in the population, because

of constant turnover and resource constraints, a representative sample is chosen from the population. Secondly, the studies within this thesis are measurements of outcome. This type of research tests the accuracy of a theory by determining if the independent variables cause an effect on the dependent variable. Often, surveys, correlation studies, and measurements of outcomes are evaluated to establish causality within a credible confidence range. Lastly, quantitative research offers both reliability and validity. In terms of validity it enables separate researchers to come to similar conclusions using the same experimental design or participants in a study to consistently produce the same measurement. From the perspective of validity, all of the instruments used in the thesis are verified as measuring the construct they are purported to test. This adds assurance that any change in the dependent variable will be effected by the independent variable; as such, the results will be generalisable to the chosen population.

### **3.1.1: Study 1: Age related differences in Theory of Mind, Empathic Understanding, and Moral Reasoning.**

A one-way, between groups, multivariate analysis of covariance MANCOVA, controlling for IQ, was conducted to investigate age related differences in prosocial skills in (a) 69 males and (b) 69 females across three age groups: adolescents ( $n=23$ ; 14- to 17- years), young adults ( $n=23$ ; 18- to 24- years), and adults ( $n=23$ ; 25- to 55- years) across the five different measures. The independent variables were the three age groups: (i) male adolescents, (ii) male young-adults, and (iii) male adults, and the five dependent variables were: verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, and performance-based Empathic Understanding, and Moral Reasoning.

### **3.1.2: Study 2: Gender and status related differences in Theory of Mind, Empathic Understanding, and Moral Reasoning.**

A two-way, between groups, analysis of covariance (ANCOVA), controlling for IQ and age, was conducted to explore the impact of gender and status on the five dependent variables: (i) verbal Theory of Mind; (ii) visual Theory of Mind; (iii) self-reported Empathic Understanding; (iv) performance-based Empathic Understanding, and; (v) Moral Reasoning. The two independent variables were (i) gender, which had two levels; (a) male ( $n=200$ , 18- to 55- years) and (b) female ( $n=200$ , 18- to 55- years), and (ii) status, which had two levels: (a) offender ( $n=200$ , 18- to 55- years) and (b) non-offender ( $n=200$ , 18- to 55- years).

### **3.1.3: Study 3. Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.**

**Study 3 a:** Associations between Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital were measured. The relationship between Social Capital and (i) verbal Theory of Mind; (ii) visual Theory of Mind; (iii) self-reported Empathic Understanding; (iv) performance-based Empathic Understanding, and; (v) Moral Reasoning were investigated using Pearson Product-Moment Correlation Coefficient in offenders ( $n = 200$ ; 18- to 55- years) and non-offenders ( $n = 200$ ; 18- to 55- years). The study controlled for IQ, age, and gender.

**Study 3b:** Status related differences in Social Capital. An independent t-test was conducted to compare the Social Capital scores of offenders ( $n = 200$ ; 18- to 55- years) and non-offenders ( $n = 200$ ; 18- to 55- years).

### **3.1.4: Study 4: Executive Functioning, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.**

**Study 4a:** Differences in abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control between offenders and non-offenders. A one-way, between groups, multivariate analysis of covariance (MANCOVA), controlling for age and IQ, was conducted to investigate status related differences in Executive Functioning as informed by abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control, between 200 offenders (males and female, aged 18- to 55- years) and 200 non-offenders (male and female, aged 18- to 55- years). The independent variables were the two status groups: (i) offenders, and (ii) non-offenders, and the three dependent variables were: Working Memory, Cognitive Flexibility, and Inhibitory Control.

**Study 4b:** Executive Functioning, as informed by Working Memory, Cognitive Flexibility, and Inhibitory Control, as predictors of Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital. Path analysis was used to analyse the ability of Executive Functioning to predict Theory of Mind Verbal, Theory of Mind - Visual, Empathic Understanding- Self-Report, Empathic Understanding- Performance-Based, Moral Reasoning, and Social Capital in a mixed cohort of male and female offenders ( $n = 200$ ).

## **3.2: Measures.**

### **3.2.1: IQ.**

The WASI – Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999) was chosen to assess IQ as it provides a reliable, brief measure of IQ in research settings. This measure produces an estimate of general intellectual ability. The WASI consists of four subtests: Vocabulary, Block Design, Similarities, and Matrix

Reasoning. Scores on the Vocabulary and Similarities subtests were combined to yield a Verbal IQ (VIQ) score; similarly, scores on the Block Design and Matrix Reasoning subtests were combined to yield a Performance IQ (PIQ) score. Scores from the four subtests were combined to derive a Full Scale IQ (FSIQ) score. Raw scores on each of the subtests were converted into age-adjusted standardized scores, and from there the index scores (VIQ, PIQ, and FSIQ) were derived. The Vocabulary subtest assessed a participant's word knowledge by asking him or her to produce the definitions of given words. The researcher presented the words visually and orally, and the participant was required to define the word. The answer was given a score of 0, 1, or 2 points using a scoring guide. The Similarities subtest measured a participant's ability to form comparisons between verbal concepts. For the first four items of the test, the participant was presented with two rows of pictures. He or she was then required to choose one picture from the bottom row that was most similar to the pictures in the top row. For the rest of the items, the researcher read two words and the participant had to describe how those items were similar. As with Vocabulary, the participants' responses were scored 0, 1, or 2, based on the manual's scoring guide. The Block Design subtest measured non-verbal reasoning and visuospatial organisational abilities. This task required the participant to copy a geometric design presented on a stimulus card using two-dimensional blocks. It assessed lower-level cognitive abilities (e.g., basic visual perception) as well as higher-level perceptual planning elements; this integrated functioning of a variety of brain systems was measured with this subtest. The Matrix Reasoning subtest measured the ability to manipulate, abstract, and perceive the relationships between shapes; therefore, it measured non-verbal perceptual and visuospatial organisational abilities, as well as visual analogical reasoning (Braze et. al, 2007). In

this task, two sets of geometric patterns are presented to the participant. The first pattern has one piece missing; the participant is required to select the missing piece from the second set of patterns. A correct response to the problem is awarded 1 point; an incorrect response scores 0. The final score is the sum of all correct responses, and ranges between 0 and 35.

### **3.2.2: Verbal Theory of Mind.**

The Social Stories Questionnaire (SSQ, Lawson, Baron-Cohen, & Wheelwright, 2004) was chosen to measure verbal Theory of Mind. This measure consists of ten vignettes. Each vignette is divided into three sub-sections, making a total of 30 sub-sections. Each sub-section contains either: a blatantly offensive utterance, a subtly offence utterance, or no offensive utterance, which is made by one character to another. In all, 10 sub-sections contain a blatantly offensive utterance, 10 sub-sections contain a subtly offensive utterance and 10 sub-sections contain no offensive utterance. In the following example vignette sub-section 1 contains a blatantly offensive utterance (dialogue line b), sub-section 2 contains no offensive utterance, and sub-section 3 contains a subtly offensive utterance (dialogue line b).

#### Sub-section 1:

Linda was nervous. She was about to introduce her new boyfriend, James, to her friends, Faye and Alex. She was nervous because they had really like her last boyfriend, Keith. She was also nervous because she had just spoken to her old best friend Kate. Kate and Linda had been best friends at school but when they left Kate had got a job in another town and they had lost touch. That was five years ago. But Kate was back and wanted to meet up tonight. At 7pm the doorbell rang and Linda opened the door to see Kate standing there.

1a) *'Hello stranger', said Linda, 'Come on in'.*

1b) *'Crikey, there's a few more lines on that face than I remembered',  
said Kate.*

1c) *'Well it's been a few years. What brings you back?'*

Sub-section 2:

2a) *'I just came back to see my mum', replied Kate.*

2b) *'Oh,' said Linda, 'Do you want a drink?'*

The others arrived shortly afterwards and to Linda's relief everyone was getting on really well.

Sub-section 3:

Linda had cooked a meal of roast beef. Just after she had dished it out she realised she'd forgotten to ask James if he was vegetarian.

3a) *'Great meal, Linda', said James to Linda's relief.*

Later when Linda was making coffee with Faye and Alex she realised she was out of milk. Faye carried the black coffee into the living room.

3b) *'Sorry Keith, you don't mind it black do you?' said Faye.*

3c) *'No', replied Linda's boyfriend.*

Participants were asked to indicate if they thought a section contained an utterance which might upset or offend another character by ticking a 'yes' response. If the participants indicated that they thought an utterance might upset or offend another character, they were then asked to identify the dialogue line on which the utterance appeared by placing a dot at the beginning of the appropriate line. If they thought the section was void of any offensive utterance, they were asked to tick the 'no' response. Participants were awarded one mark for each target utterance correctly identified. The highest score for each type of utterance was therefore 10, with a maximum of 30 marks for the measure in total. Lawson et al.'s (2004)

guidelines for administering the test were followed throughout. According to Lawson et al. the probability of identifying a target by chance alone is  $p = .5 \times .25 = .125$ ; therefore, corrections were not considered necessary. This test has been reliably used in the measuring of Theory of Mind in autistic adults by Lawson et al., who contend that a low score indicates a less developed Theory of Mind, whilst a higher score implied a more developed Theory of Mind. The type of utterance was randomly placed throughout the sub-sections. The sections without an offensive utterance acted as a control. In the current study the internal consistency (Cronbach's alpha coefficient) was  $\alpha = .72$ .

### **3.2.3: Visual Theory of Mind.**

The 'Reading of the Mind in the Eyes test' revised version (Baron-Cohen et al., 2001) was chosen to measure visual Theory of Mind. This measure consists of 36 photographs plus 1 practice photograph. The 36 photographs (which were included for standard use in the measure) were split into 3 levels: 12 positive emotions, 12 negative emotions, and 12 neutral emotions. The levels were distributed randomly throughout the test and are given to the participants in the same order. The ages of the 'eyes' are mixed and split evenly between men and women; however they all of Caucasian ethnicity. The participant was asked to pick which of the four words best described what the person in the photograph was thinking or feeling. Three of the words were 'foil mental state terms' while the fourth was deemed to be 'correct'. The position of the correct word was randomised. The participant was asked to circle, their choice on the answer sheet provided, where the four possible answers were replicated (see figure 3.1).

In this example the correct answer is 'playful'. Participants were awarded one mark for each correct emotion identified and zero marks for each incorrect emotion

identified. The maximum number of marks was 36. A definition of each word taken from the original test was also included to ensure all participants had an equal understanding on the meaning of each word. In the current study the internal consistency was  $\alpha = .61$ .

**PLAYFUL**

**COMFORTING**



**BORED**

**IRRITATED**

**Figure 3.1: Example of a photograph taken from Baron-Cohen, Wheelwright, Hill, Raste and Plumb, 2001 (reproduced with the permission of [www.autismresearchcentre.com](http://www.autismresearchcentre.com))**

#### **3.2.4: Self-Reported Empathic Understanding.**

The Empathy Quotient (EQ –Short, Wakabayashi et al., 2006) was selected to measure self-reported Empathic Understanding. This measure was used to assess participants' Empathic Understanding. Participants were instructed to read each of the 22- statements carefully and judge the extent to which they agreed using a four-point scale ranging from 1 (*Strongly agree*) to 4 (*Strongly disagree*). Half the items were positively worded (e.g., “I really enjoy caring for other people”) and half negatively worded (e.g., “I find it difficult to judge if something is rude or polite”). The order of presentation was randomised to avoid a response bias. Participants

scored two points if they recorded a strongly empathising response and one point if they recorded a slightly empathising response. Slightly and strongly non-empathising responses scored no marks. The highest score obtainable is therefore 44. The higher the score the more empathic the participant is deemed to be. There have been some concerns regarding this type of measure. For example, Makino (2010) suggested that self-report empathy measures might not be an indication of how a participant actually feels but rather how they believe other people might expect them to feel. In addition, it is important to note that the data may also vary according to an individual's ability to verbalise his or her own thoughts (Zhou, Valiente, & Eisenberg, 2003). However, the Empathy Quotient is reported to have acceptable internal consistency, with a Cronbach alpha coefficient of .76 (Wakabayashi et al., 2006). In the current study the internal consistency was  $\alpha = .81$ .

### **3.2.5: Performance-Based Empathic Understanding.**

The Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002) was chosen to measure performance-based Empathic Understanding. This measure assesses the four-branch model of emotional intelligence (perceiving emotions, using emotions, understanding emotions, and regulating emotions). The test consists of 141 questions that are divided among 8 tasks (2 for each branch). The test yielded four branches and a total emotional intelligence score.

The first branch 'Perceiving Emotions' was measured by asking participants to identify the emotions expressed in photographs of people's faces (Faces) as well as the feelings suggested by artistic designs and landscapes (Pictures). For example, in the Faces task, participants were presented with a picture of a person expressing a basic emotion. Below the picture is a list of five emotions; the subject was asked to

rate on a five-point scale how much of a particular emotion was expressed in the picture.

The second branch ‘Use of Emotion to Facilitate Thought’ was measured by two tests that assess the participant’s ability to describe emotional sensations and their parallels to other sensory modalities using a non-feeling vocabulary (Sensations), and identify the feelings that might facilitate or interfere with the successful performance of various cognitive and behavioural tasks (Facilitation). For example, the task measuring Sensations presented participants with a sentence asking them to imagine feeling an emotion such as shame. Participants were then given a list of adjectives pertaining to other sensory modalities (e.g., cold, blue, and sweet) and were asked to rate on a five-point scale from *Not Alike* to *Very Much Alike* how much the feeling of shame was similar to the adjectives.

The third branch ‘Understanding Emotion’ was measured by two tests that pertain to a participant’s ability to analyse blended or complex emotions (Blends) and to understand how emotional reactions change over time or how they follow upon one another (Changes). For example, a question on the Blends task presented a statement such as:

*‘Acceptance, joy, and warmth often combine to form...’*

Participants were then presented with a list of response alternatives and were asked to choose the most appropriate.

The fourth branch ‘Managing Emotions’ had two subtests that assessed how participants managed the emotions of others (Social Management), and how a participant regulated his or her own emotions (Emotion Management). For example, the Social Management task asked participants to read a short story about another person, and then determine how effective several different courses of action would

have been in coping with emotions in the story. Participants rated a number of possible actions ranging from *Very ineffective*, to *Very effective*. The MSCEIT is an objective test because there were better and worse answers on it, as determined by consensus or expert scoring. Consensus scores reflected the proportion of people in the normative sample (over 5,000 people from various parts of the world) who endorsed each MSCEIT test item. Expert norms were obtained by Mayer et al. (2002) from a sample of 21 members of the International Society Research on Emotions (ISRE) who provided their expert judgment on each of the test's items. Participants received credit for correct answers to the extent that they match those of the experts. Full-scale MSCEIT scores based on the consensus norms and expert norms correlated highly,  $r = .91$  (Mayer et al., 2002).

The MSCEIT is reliable at the full-scale level and at the area and branch levels (Mayer et al., 2002). Mayer et al. reported full-test split-half reliabilities of .93 and .91 for consensus and expert scoring, respectively. The test-retest reliability of the full-test MSCEIT over a three-week interval was  $r_{(59)} = .86$  in a college student sample (Brackett & Mayer, 2002). In the current study the internal consistency was  $\alpha = .76$ .

### **3.2.6: Moral Reasoning.**

The Socio-Moral Reflection Measure (SRM-SF, Gibbs et al., 1992) was selected to assess Moral Reasoning. This measure is used to assess participants' moral judgment. The social values assessed included contract, affiliation, life, property, law, and legal justice. Participants responded to each of the 11 statements using a three-point scale (*Very important*, *Important*, and *Not important*) to indicate the level importance they attributed to each. They were then asked to give a short reason as to why they had attributed that level of importance to a particular item.

For example:

*How important is it for parents to keep their promises to their children?*

*VERY IMPORTANT*

*IMPORTANT*

*NOT IMPORTANT*

*Why?.....*

As recommended by the authors, the lead researcher was self-trained using the guidelines and training materials provided by Gibbs et al. (1992) which have good inter-rater reliability,  $r_{(23)} = .99, p < .001$ . The importance attributed to each statement acted merely as a prompt for the participant and was not assessed by the researcher. Each reason (given in response to the question ‘why’ in each of the 11-statements) was assessed by the lead researcher, matched against standardised answers and scored accordingly (1.0, 1.25, 1.5, 1.75, 2 and so on, up to a maximum of 4.0). The scores were summed and divided by the number of valid responses. A minimum of seven valid responses were needed to ensure accuracy. The resultant SRM-SF score indicated the participants’ global stage or level of moral development. For data analysis the score is multiplied by 100 to create a continuous range of 100 (indicating lower levels of Moral Reasoning and corresponding to Kohlberg's moral stage 1) to 400 (indicating higher levels of Moral Reasoning and corresponding to Kohlberg's moral stage 4).

The measure has been found, in past research, to discriminate between offenders and non-offenders (Palmer & Begum, 2006). The measure is reported by Palmer and Begum to have acceptable levels of test and re-test reliability,  $r_{(234)} = .88, p < .001$ , and comparable validity with the Moral Judgement Interview (Colby & Kohlberg, 1987),  $r_{(43)} = .88, p < .0001$ . The SRM-SF also shows good convergent

validity with age,  $r_{(372)} = .66$ , verbal IQ,  $r_{(319)} = .49$ , and economic status,  $r_{(349)} = .20$  (Gibbs et al., 1992) and has good internal consistency, with a Cronbach alpha coefficient reported of .92. In the current study the internal consistency was  $\alpha = .93$ .

### **3.2.7: Social Capital.**

The Cambridge Friendship Questionnaire (FQ; Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2003) was selected to measure levels of Social Capital in both the offenders and non-offenders in studies 3 and 4. As noted in chapter 2 (sub-section 2.9) the acquisition and ongoing maintenance of prosociality is dependent on the development and maintenance of successful social relationships - referred to as Social Capital (Bosancianu, Powell, & Bratović, 2013). Sabatini (2009) suggested that the construct of Social Capital is comprised of three distinct sub-types: bonding Social Capital, bridging Social Capital, and linking Social Capital (see chapter 7, section 7.3, for a more detailed explanation). The 'relationships' or 'ties' within these sub-types of Social Capital are said to be characterised by a sense of knowledge, obligation, expectation, and trustworthiness which serve to endorse societal norms (Nagin & Paternoster, 1994); thus offering a system of informal social control (Sampson & Laub, 2005). Indeed, Sampson and Laub argue that offending behaviours may result when a person's relationships or ties are absent, weakened, or broken. However, most studies examining this proposal have relied on observational methods, with few self (or performance-based) report instruments being developed. To address this gap Baron -Cohen et al. (2003) developed the FQ, noting that individual wills score highly if they: (i) enjoy close, trusting, reciprocal, and supportive relationships; (ii) like and are interested in people; (iii) enjoy interaction with others for its own sake ,and; (iv) find such relationship to be important (Baron-Cohen & Wheelwright, 2003). This measure is

a 35-item self-report questionnaire. The questions are based on assumed none gender differences. A sample item is as follows, where the participant was asked to tick only one box:

- a. *I have one or two particular best friends.*
- b. *I have several friends who I would call best friends.*
- c. *I don't have anybody who I would call a best friend.*

The possible scoring range is 0 to 135. The FQ is reported by Baron-Cohen et al. as having high internal consistency reliability ( $\alpha = 0.75$ ), with  $\alpha = 0.72$  for the current study.

### **3.2.8: Executive Functioning.**

As noted in chapter two, Executive Functioning is not noted as having a 'gold-standard' test used in its measurement (Chan et al., 2008; Salthouse, 2005). One possible explanation for this may lie in the multidimensional nature of Executive Functioning (Brugger et al., 1998). Consequently, it is standard in most studies to use different tests to measure the different core components of Executive Functioning (Chan et al., 2008), and there remains no agreement within the literature as to which test should be adopted, and in which combination (Salthouse, 2005). In addition, abilities in Executive Functioning is said to be comprised of three key factors: (i) Working Memory, (ii) cognitive Flexibility, and (iii) Inhibitory Control (McCloskey et al., 2009). Therefore, for the purposes of this thesis it is important to identify which of these components are most closely associated with Theory of Mind, Empathic Understanding, and Moral Reasoning.

Firstly, Tager-Flusberg and Joseph (2003) proposed a link between Theory of Mind and Working Memory, whilst Tager-Flusberg, Paul, and Lord (2005) suggested that flexible problem solving, or Cognitive Flexibility and Theory of Mind. The WAIS III and its shortened version, the WASI, are both recognised to test aspects of Executive Functioning; the VIQ subscale measures verbal comprehension and Working Memory, and the PIQ subscale measures planning reasoning, problem solving, processing speed, and Cognitive Flexibility. Therefore for the purposes of this thesis the WASI – Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999), was used to measure Working memory and Cognitive Flexibility.

Secondly, Dix (1991) proposed that emotional and behavioural self-regulation were learned skills which develop as a result of strong parent-child relationships, similar in construct to prosociality. Eisenburg (2007) built on this idea by suggesting that, as most prosocial skills were ‘costly to the actor’, the ability to self-regulate or inhibit, from an emotional or behavioural perspective, was imperative. More recently, it was proposed that self-regulation developed in line with Empathic Understanding (Deater-Deckard, 2014; Eisenberg, 2013), whilst the earlier work of Hoffman (1987) noted that both emotional regulation and inhibition were necessary when making moral judgements; hence linking both to Moral Reasoning.

However, Von Hippel and Gonsalkorale (2014) suggested that the traditional cognitive tests used to assess inhibition (for example the Stroop colour –word test) measure only cognitive ability. Specifically a person’s selective attention capacity and skills, as well as their brain are processing speed ability. Von Hippel and Gonsalkorale proposed that such tests do not accurately assess a person ability to inhibit or regulate emotions and behaviour and went on to suggest that the MSCEIT

(Mayer et al., 2002) is better suited to as a measure, as its subscale 'emotional management' measures a person's ability to inhibit and self-regulate behaviour. Thus, for the purposes of this thesis, the relevant subscales of the MSCEIT (Mayer et al., 2002) were used.

### **3.3: Participants.**

One hundred male offenders (aged 18- to 55- year-olds;  $M = 27.38$ ,  $SD = 7.095$ ) were recruited from a male adult, category B, prison in England and 100 female offenders (aged 18- to 55- year-olds;  $M = 30.24$ ,  $SD = 10.57$ ) were recruited from a female adult, closed category prison in England. Category B male prisons and closed category female prisons house inmates who do not require maximum security, but for whom escape needs to be made difficult. All participants were serving a sentence of six months or less. A sentence of six months or less indicates that the offenders would not have committed an indictable offence such as murder, manslaughter, rape, kidnapping, major drugs offences, grand theft, robbery, or conspiracy. All other offences such as (but not limited to) assault, burglary or theft, driving offences, minor drugs offences, and minor fraud may be included; however, the actual offence was not available. A control group of 100 males and one hundred females were recruited from the general and student population, in England, to match the age of the offenders ( $M_{\text{age male control}} = 27.89$ ,  $SD = 8.55$  and  $M_{\text{age female control}} = 31.46$ ,  $SD_{\text{age female control}} = 10.78$ ). When asked participants reported that they did not have a criminal record.

In addition, a further cohort of 23 adolescent males aged 14- to 17- years ( $M_{\text{age}} = 15$ ,  $SD = 1.13$ ) were recruited for study 1 (chapter four) from the general

population of England. With regard to the male adolescent group, the number of participants used represents the whole of the data gathered ( $n = 23$ ).

The samples were self-selected as the participants volunteered to take part; having responded to identical posters placed either on the wing notice-boards in the prison for the offender group or prominent places (such as school, university, or community library notice boards, community centre notice boards, and the university intranet notice board). As per the recruitment criteria, all participants were English speaking. No upper age limit was specified. With the exception of the student participants who were given research credits for taking part, no other form of compensation was given to any of the groups.

### **3.3.1: IQ.**

As noted in subsection 2.7.3, allowing for different levels of IQ when assessing abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning is of importance (Entorf & Spengler, 2000). Therefore, an independent-samples t-test was conducted to compare the IQ of individuals (both male and female) according to status with condition one being the offender group ( $n = 200$ , 18- to 55- years) and condition two being the non-offender group ( $n = 200$ , 18- to 55- years). This initial screening of IQ revealed a significant difference in the levels of IQ between the offender group and the non-offender group, with the offender group scoring lower on the Wechsler Abbreviated Scale of IQ (Wechsler, 1999), Offenders ( $M = 86.83$ ,  $SD = 9.214$ ); Non-Offenders ( $M = 90.04$ ,  $SD = 11.52$ ;  $t_{(398)} = -3.076$ ,  $p < .05$ ). Therefore all four studies within this thesis controlled for IQ.

### **3.4: Procedure.**

Written consent was obtained from all participants in line with the England and Wales's National Offenders Management Services (NOMS) and the supervising University's ethical approval procedure. Specifically, with regard to those under the age of 18- years, the head teacher of the participating school informed the students' parents of the nature of the study, and asked them to respond if they did not want their son to take part in the study and all parents agreed that their son could participate in the research. Consent for the research was then given by the head teacher at the school. The young people were also asked to give their consent before completing the questionnaires. All of the young people approached to participate in the study did so.

Before commencing the main measures an IQ test was administered. Participants then completed six measures to assess ability in Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital. Tests were conducted in the following way; (i) Participants in the offender groups were tested individually in an empty room in the prison and (ii) Participants in the control group were either tested individually in an empty room in the university booked specifically for the task or, they completed an identical set of questions placed on Survey Monkey - which meets the BPS Guidelines for Ethical Practice in Psychological Research Online (2007). The 14- to 17- year old participants completed the questionnaires individually during class time.

All participants were told that participation was voluntary; that there were no right or wrong answers, and they could withdraw from the study at any time. Where the tests were conducted in person; the researcher sat in the room with the participant

to provide help with reading the stories or statements if required. When no help was needed the researcher remained silent, out of the participant's direct line of vision, and at a suitable distance to protect the participant's privacy. In the offender group the door to the room remained open at all times and a prison officer was stationed outside the room to ensure the safety of the researcher; the officer was not in the participant's direct line of vision and a suitable distance was maintained to protect the participant's privacy. Each participant was given standard verbal instructions and told that they would not be timed but should try to complete the task as quickly as possible. The orders of the measures were counterbalanced across participants to prevent order effects. When finished the completed tasks were collected by the researcher. The participants were debriefed and thanked for their participation.

### **3.5: Ethical Approval.**

Formal ethical approval was sought at an institutional level, through existing formal structures within the College of Business, Law and Social Sciences, Nottingham Trent University. The college's ethical clearance is in line with the British Psychological Society's Code of Ethics and Conduct (2009). Ethical approval was granted on 19th June, 2012. In addition, ethical approval was sought from the National Offenders Management Services (NOMS) for research with both male and female offenders. NOMS gave ethical approval for research with male participants (172-12) on 4<sup>th</sup> September, 2012, and for research with female participants (2013-149) on 29<sup>th</sup> July 2013. For copies of all briefing and debriefing documents, as well as consent forms see the appendices. The following four chapters comprise studies one through to four.

## **Chapter Four**

### **Study 1**

# **Age Related Development of Theory of Mind, Empathic Understanding, and Moral Reasoning**

In chapter two the definition of prosocial behaviour was given as “a voluntary, intentional action that produces a positive or beneficial outcome for the recipient regardless of whether that action is costly, neutral, or beneficial to the donor” (Grusec et al., p. 2). In the same chapter, the factors said to influence the acquisition of prosociality: (i) genetic factors; (ii) dispositional determinants; (iii) socio-environmental influences, and; (iv) cognitive abilities were discussed. With particular focus on the cognitive aspects of prosocial behaviour, it was stated that for an individual to act in a prosocial way, he or she must be able to recognise the thoughts, desires, and beliefs of another, as well as to understand that any actions he or she takes, may have an emotional and/or moral consequence, for both themselves and the other person (Prinz, 2007). According to Eggum et al. (2011), to do this requires the acquisition of three cognitive skills: Theory of Mind, Empathic Understanding, and Moral Reasoning.

Consequently, if prosociality dictates that a person must recognise the thoughts, desires, and beliefs of another, as well as understand that all behaviours can have an emotional and/or moral consequence, it seems reasonable to suggest that the opposite might also be true. That is, that offending behaviour may be the

consequence of an inability to recognise the beliefs, feelings, or intentions of others. Palmer (2013) suggested that this could result from an underdeveloped Theory of Mind, Empathic Understanding, and/or Moral Reasoning. From the perspective of the Criminal Justice System, and in particular interventions aimed at reducing offending behaviours by improving prosociality, the ability to improve upon Theory of Mind, Empathic Understanding, and/or Moral Reasoning, during a person's life span, is important.

To the current author's knowledge the present study is the first to consider if Theory of Mind, Empathic Understanding, and Moral Reasoning have the potential to further develop during the life span of an individual, in a single study. Therefore, the aim of study 1 was to establish whether Theory of Mind, Empathic Understanding, and Moral Reasoning have the potential to develop beyond childhood, and at what point, if any, they become fixed.

#### **4.1: Age Related Development of Theory of Mind.**

One of the most important milestones in the development of Theory of Mind is the ability to attribute false belief; that is, to recognise that others can have beliefs about the world that are different from one's own (Wimmer & Perner, 1983). To do this, individuals must understand how knowledge is formed and that their own beliefs, as well as those of others, are based on their own personal knowledge or mental state. Further, a person must recognise that a belief can accurately represent reality and be true or misrepresent reality and be false, and that behaviours can be, in part, predicted by personal knowledge (Eggum et al., 2011). Eggum et al. also proposed that to acquire false belief, individuals must be able to hold two mental

representations in mind at the same time; in other words, a true state of reality and a false mental representation of reality.

Research has suggested that very young children, tend to confound another person's knowledge with their own (Begeer, Bernstein, van Wijhe, Scheeren, & Koot, 2010). Specifically, in false belief tasks, when asked to suggest where another will look for a hidden object, he or she will predict that a person will look where the object really is and not where they ('falsely') believe it to be. Failure to attribute false beliefs disappears around the age of three or four years (Callaghan et al., 2004). A meta-analysis conducted by Wellman and Liu (2004) demonstrated that this pattern of performance is robust across different procedures and cultures; thus supporting the theory that biological maturation is the main factor responsible for the onset of false-belief understanding in typically developing children.

Wimmer and Perner (1983) conducted one of the earliest studies to successfully demonstrate false-belief in children. They stated that three-year-olds tend to fail in false-belief tasks, whereas four-year-olds usually succeed on the same task. In their research, typically developing children watched a scenario featuring puppets in which the protagonist (Sally) leaves a ball in a basket and then departs the scene. In her absence, the target (Anne) is seen to move the object from the basket and place it in a box. The children in the study were asked to predict where Sally will look for the ball when she returns to the room, or alternatively where she will 'think' the ball is. Prior to the age of four, children typically answer incorrectly; that is that Sally will think the ball is in the box (where it really is). After the age of four years, however, children answer as an adult would, by specifying the place where Sally actually left the ball; thereby ascribing to Sally a Theory of Mind. Carlson and Moses (2001) explained that to do this an individual must be able to override any

dominant or habitual thoughts, beliefs, or desires. For example, they must ignore the natural compulsion to reference reality as they perceive it to be. The extra year, during which this ability is able to mature, may be the crucial difference that enables four-year-olds to successfully attribute false belief.

Whilst limited in number, and with mixed findings, some studies have addressed the issue of Theory of Mind and its progression during an individual's life span. One such study suggested that Theory of Mind continues to develop in a gradual fashion beyond the preschool years and into early adulthood (Birch & Bloom, 2007). In their study of 155 students, Birch & Bloom found that adults not only take into consideration their own knowledge and that of others, but also the plausibility of a given scenario. Similarly, Valle, Massaroa, Castelli, and Marchetti (2015) found an improved performance, on an appropriate false-belief task between an adolescent group (*M age* = 14.8 years) and a young adult group (*M age* = 22.8 years), with the young adult group scoring higher than the adolescent group. The researchers attributed this difference in scores to the young adults having better cognitive abilities than the adolescents, which they exploited in order to respond specifically to the requirements of the task.

However, other research has concluded differently; Begeer et al. (2010), for example, considered Theory of Mind to be fully developed in childhood. In a study of 124, 6- to 20- year olds, the researchers found no improvement in the performance of the older participants when compared to the younger participants; thus concluding that Theory of Mind is fixed in early childhood. Alternatively, Bernstein, Thornton, and Sommerville (2011) suggested that false belief reasoning may follow a more bell-shaped development, increasing throughout childhood, stabilising in adulthood but then declining again in later life. In their study of 95 adults (aged 17- to 59-

years), Bernstein et al. found that the older participants exhibited more false belief bias than the younger participants, irrespective of cognitive ability. In other words, the older participants tended to confound another person's knowledge with their own, in a similar way of younger children.

In addition, it has been suggested that the ability to respond to another's mental state requires the recognition and understanding of both visual and verbal cues (Blair & Coles, 2000). For example, simple forms of Theory of Mind are dependent on visual imagery, whilst higher orders also require verbal input (Astington & Jenkins, 1999). This is particularly evident when moving from natural concepts to social concepts; which appear to be dependent on the ability to utilise both visual and verbal Theory of Mind (Blair & Coles, 2000). This was supported by de Villiers (2007) who noted that language development appeared to be predictive of Theory of Mind in typically developing children.

Therefore, this thesis suggests that, whilst there is some agreement regarding the initial emergence of Theory of Mind, whether it continues to develop after childhood, through adolescence and into adulthood remains unclear. Study 1 will address this issue, taking into consideration both verbal and visual Theory of Mind. The following hypotheses are made:

- Hypothesis 4.1 is that there will be significant differences in verbal Theory of Mind across the three age groups: adolescents, young adults, and adults, in (a) males and (b) females.
- Hypothesis 4.2 is that there will be significant differences in visual Theory of Mind across the three age groups: adolescents, young adults, and adults, in (a) males and (b) females.

## 4.2: Age Related Development of Empathic Understanding

The second key skill to be discussed in this chapter, in relation to the development of prosocial behaviour, is Empathic Understanding. Empathic Understanding denotes the ability to take the mental or emotional perspectives of another, whilst sharing in their emotional experiences (Shamay-Tsoory, 2011). Although claims are made that Empathic Understanding is evidenced in very young children, measuring such abilities can be problematic due to their limited verbal ability. As a consequence, Martin and Clark (1982) designed a study using a variety of control stimuli; including silence, white noise, synthetic crying sounds, non-human crying sounds, and the child's own cry, in order to conduct their research. They found that children as young as 18- to 72- hours following birth, often display distress reactions when exposed to the sound of another infant crying; this they termed reflexive or reactive crying, or emotional contagion.

Later, in a longitudinal study of 14- to 36- month-old infants, Zahn-Waxler et al., (1992) considered typically developing children's responses to the simulated distress of a parent and a stranger, at home and in a laboratory. By measuring different manifestations of empathic responding, including: (i) concern, as noted by the child's facial expression; (ii) hypothesis testing by asking the child a question such as 'what happened?', and (iii) prosocial behaviour as noted by the child's physical reactions, these researchers found that many apparent prosocial behaviours increased in *quantity* over the second year of life. Furthermore, Zahn-Waxler et al. noted that the *quality* of the child's behaviour also developed during that same period; for example the youngest infants' responses were primarily comprised of physical actions, whereas older children were capable of a wide variety of helping behaviours, such as verbal comfort, sharing, and distraction tactics. This was

supported by Hoffman (2000) who stated that by the age of two years, children normally begin to display the fundamental behaviours of Empathic Understanding by having an emotional response that corresponds with another person's emotional state.

In support of the premise that Empathic Understanding continues to develop beyond initial emergence, some studies have noted improvements in the skill between early and middle childhood (Hay & Cook, 2007). During this time, it is known that children, particularly in western societies, begin to associate more regularly with friends and peers and less frequently with their parents (Hastings et al., 2014). As a result, by the age of 12- years, some young people begin to better understand the emotions of individuals outside of their family unit (McDonald & Messinger, 2011). This more complex understanding of empathy sometimes manifests itself in a phenomenon called empathic lying. Also known as telling a white lie; the predominant aim of which is to protect another person's feelings (Evans & Lee, 2011).

However, the findings of studies focusing on the age related development of Empathic Understanding, beyond middle childhood, are less consistent. For example, some research advocates an increase in Empathic Understanding from middle to late childhood. Indeed, Eisenberg et al. (1999) measured multiple prosocial constructs, and in particular Empathic Understanding, at various time points in participants aged from 4- to 20- years of age. This was done through measured observation in a naturalistic, as well as laboratory setting, and through self, parent, and/or friend report. The researchers concluded that early spontaneous sharing in childhood appeared to predict a more increased Empathic Understanding in later adolescence. Similarly, Eisenberg, Cumberland, Guthrie, Murphy, and Shepard

(2005) found that the manifestations of Empathic Understanding, such as sharing or donating, were more pronounced in adolescents, when compared to 7- to 12- year olds.

In contrast, Carlo, Crockett, Randall, and Roesch (2007) reported a decrease in empathic tendencies during adolescence. Approximately 500 participants, aged 11- to 18- years, took part in their study. Analysing both self- and parental-reports of Empathic Understanding, Carlo et al. found less evidence of helping behaviours, particularly in boys, after the age of 13- years. Kanacri, Pastorelli, Zuffiano, Eisenberg, & Ceravolo (2014) found similar results in a longitudinal study of adolescents and young adults (aged 13- to 21- years), also noting a decrease in Empathic Understanding around the age of 13- years.

Decreases in Empathic Understanding during early adolescence may be, at least partially, explained by the social changes that take place for individuals during that time. For example, adolescents start to renegotiate existing relationships with their parents and develop new peer relationships, which might impact either positively or negatively, on their empathic abilities (Carlo et al., 2007). It is also apparent that adolescents differ in their management of these changes (Zarrett & Eccles, 2006), with some finding the transition to adulthood quite difficult (McDonald & Messinger, 2011). Indeed, McDonald and Messinger suggested that the ability to cope with these changes may, at least in part, be influenced by an individual's emotional maturity; which in turn could impact upon his or her ability to empathise.

Similar inconsistencies are found when considering the age related development of Empathic Understanding during adulthood (Grühn, Rebucal, Diehl, Lumley, & Labouvie-Vief, 2008). For example, when considering the data from self-

report measures, older adults often appear better at regulating their emotions than younger adults (Birditt & Fingerman, 2005). In their study with 666 adults (aged 25- to 74- years), Birditt and Fingerman revealed that older adults were less likely to engage in arguments, or report tensions, with others, when compared to younger adults. In contrast, Labouvie-Vief and Marquez (2004) suggested that older adults possess a less differentiated view of ‘self’ and ‘others’ and therefore their ability to process *affective* information is diminished. This potential deficit in Empathic Understanding in older adults may be explained by changes in cognitive and emotional intelligence, both of which are thought to increase in early life and diminish in later adulthood according (Henig, 2013). However, in a study of wisdom, where empathy was also measured, Gluck, Bluck, Baron, and McAdams (2005) reported no age-related differences in Empathic Understanding within their participant group aged 30 to 72 years.

Therefore, having reviewed the literature relating to Empathic Understanding, this thesis suggests that whilst there is an agreement regarding its initial emergence, there remains conflicting opinion as to whether the skills continues to develop during the life span of an individual. Study 1 will add clarity to the literature, by measuring if Empathic Understanding continues to develop into adulthood; the following hypotheses are made:

- Hypothesis 4.3 is that there will be significant differences in self-reported Empathic Understanding across the three age groups: adolescents, young adults, and adults, in (a) Males and (b) females, and
- Hypothesis 4.4 is that there will be significant differences in performance-based Empathic Understanding across the three age groups: adolescents, young adults, and adults, in (a) males and (b) females.

### **4.3: Age Related Moral Reasoning**

The last key skill to be considered within this thesis, in relation to prosocial behaviour, is Moral Reasoning. Kohlberg (1976, p. 33), based on a study of 50, male participants, aged between 10- and 26- years, concluded that Moral Reasoning moved from a 'pre-conventional stage', which included "most children under 9 [and] some adolescents", through a 'conventional stage', being "the level of most adolescents", to finally reach a 'post conventional stage' during early adulthood. However, Kohlberg's work has not been without criticism. Gilligan (1982), for example, pointed out that the participants in Kohlberg's study were all white, middle class, young males, and suggested that his conclusions therefore may not be transferrable to other members of the human population. Further, Eisenberg (2000) suggested that Kohlberg's approach was too narrow; noting that it did not take into consideration individual variations that may motivate moral or immoral behaviour. Along similar lines, Baek (2002) proposed that the dilemmas, on which Kohlberg's participants were measured, included scenarios uncommon in non-western cultures.

Despite these criticisms, some research has maintained that Kohlberg's moral stages are associated with age. For example, Snarey (1995) stated that moral judgment does improve over time, and attributed this to the fact that, with maturity, an individual becomes more able to take on both society's and other people's perspectives. Decety, Michalska, and Kinzler (2012) drew similar conclusions. In their study, 127 participants (aged 4- to 36- years) were shown 96 short video recordings, whilst undergoing a Functional Magnetic Resonance Imaging scan. The recordings portrayed intentional harm, such as a person being pushed and unintentional harm, such as a person being hit accidentally. The recordings also showed both intentional and unintentional damage to objects. The findings indicated

that younger children have a tendency to consider all perpetrators as malicious; irrespective of intention or target (people or objects). However, the older participants perceived the perpetrator as less menacing in relation to accidental actions, especially when the target was an object; thus suggesting that Moral Reasoning does continue to alter with age.

However, whilst adolescence can be representative of a heightened rate of prosocial activity in some, antisocial behaviours are seen to increase in others (Veenstra, 2006). This can be explained by moral disengagement and low self-regulation, often experienced during adolescence that can exacerbate antisocial behaviours and suppress potential prosociality (Hardy, Bean, & Olsen, 2015). A variety of challenges, opportunities, and influences, that distinguish adolescents' lives from those of children, including the transition to larger schools and romantic relationships, have been offered by way of explanation (Hart & Carlo, 2005). Specifically, in many Western cultures, one quality that often separates adolescents from children is that the former spends more time with peers and less time with their parents. As a consequence, adolescents can be more influenced by their peers than younger children. Pardini, Loeber, and Stouthamer-Loeber (2005) suggested that the negative influence of antisocial peers is a major contributor in relation to adolescent offending behaviours. In contrast, Lawford, Pratt, Hunsberger, and Pancer (2005) noted that young adults, who have positive relationships with their parents, are more committed to caring for others as they get older.

So whilst the seeds of Moral Reasoning may be planted early in childhood, in some instances this skill does not fully form until young adulthood (Hardy & Carlo 2011). Further, having reviewed the literature relating to Moral Reasoning, this thesis suggests that, whilst there is an agreement regarding its initial emergence,

there is conflicting opinion as to whether Moral Reasoning continues to develop during the life span of an individual, or if at a certain point it becomes fixed. The study that follows will add to the current literature, by considering whether Moral Reasoning continues to develop or, as Kohlberg suggested, it is fixed in early adulthood; the following hypothesis is made:

- Hypothesis 4.5 is that there will be significant differences in Moral Reasoning across the three age groups: adolescents, young adults, and adults in (a) males and (b) females.

To conclude, the need to further explore age-related changes in Theory of Mind, Empathic Understanding, and Moral Reasoning, during adolescence, through young-adulthood, and into adulthood, and to clarify the mixed findings of the current literature, is suggested. The following study will therefore investigate individual ability in Theory of Mind, Empathic Understanding, and Moral Reasoning in male and female adolescents (14- to 17-year-olds), male and female young-adults (18- to 24- year olds) and male and female adults (>25 years).

## **4.4: Methodology**

### **4.4.1: Design**

As noted in chapter three a one-way, between groups, multivariate analysis of co-variance (MANCOVA) controlling for IQ was conducted to investigate age related differences in prosocial skills. A group of 69 males, across three age groups were recruited for in this study. The independent variables were the three age groups; (i) male adolescents, (ii) male young-adults, and (iii) male adults, and the five dependent variables were: (i) verbal Theory of Mind, (ii) visual Theory of Mind, (iii) self-reported Empathic Understanding, (iv) performance-based Empathic

Understanding, and (v) Moral Reasoning. Further, to examine any indicated differences between the three age groups, in each of the five dependant measures a series of multiple analyses of variances (ANOVAS) were performed.

#### **4.4.2: Participants**

Twenty-three adolescent males aged 14- to 17- years ( $M = 15$ ,  $SD = 1.13$ ) and twenty-three adolescent female ( $M = 15.34$ ,  $SD = 1.31$ ), twenty-three young-adult males aged 18- to 24- years ( $M = 19.52$ ,  $SD = 1.24$ ) and twenty-three young-adult females aged 18- to 24 ( $M = 20.18$ ,  $SD = 1.98$ ), and twenty-three adult males aged 25- to 55- years ( $M = 41$ ,  $SD = 9.35$ ) and twenty-three adult females aged 25- to 55- years ( $M = 38.17$ ,  $SD = 3.13$ ) were recruited from the general population of England. With regard to the male adolescent and female adolescent groups, the number of participants used represents the whole of the data gathered (male  $n = 23$ , female  $n = 23$ ). With regard to the male and female young-adult and male and female adult groups, the number of participants used is a subsample of the main male and main female non-offending samples. In this instance, the first 23 male young-adults and the first 23 female young-adults, and the first 23 male adults and the first 23 female adults were selected from a total of 50 male young-adults, and 50 male adults.

The samples were self-selected as the participants volunteered to take part; having responded to identical posters placed in prominent places (such as school, university, or community library notice boards, community centre notice boards, and the university intranet notice board). As per the recruitment criteria, all participants were English speaking. No upper age limit was specified. With the exception of the student participants who were given research credits for taking part, no other form of

compensation was given to any of the groups.

#### **4.4.3: Materials, Procedure, and Ethical Considerations**

The following measures were used for study 1: (i) verbal Theory of Mind - The Social Stories Questionnaire (SSQ, Lawson, Baron-Cohen, & Wheelwright, 2004), (ii) visual Theory of Mind - The 'Reading of the Mind in the Eyes test' revised version (Baron-Cohen et al., 2001), (iii) self-reported Empathic Understanding - The Empathy Quotient (Wakabayashi et al., 2006), (iv) performance-based Empathic Understanding - The MSCEIT (Mayer et al., 2002), and (v) Moral Reasoning - The Socio-Moral Reflection Measure (Gibbs et al., 1992). For full details relating to the materials, the procedure and all ethical considerations, please refer to chapter three.

#### **4.5: Results**

As can be seen in Table 4.1 and 4.2, there is a difference in the mean scores for each of the five measures across the three age groups in (a) males and (b) females. The standard deviations in each of the five measures, across the three age groups, indicated that most of the scores were located fairly close to the relevant mean score.

Descriptive statistics and preliminary assumption testing was also conducted for each of the five measures for the whole sample (see Table 4.3). Skewness and kurtosis values were obtained with regard to the distribution of the data. With regard to the skewness, the following was identified: for verbal Theory of Mind and Moral Reasoning, the negative result indicates that all the scores were clustered towards the higher end, in relation to the maximum scores available in this measure. For visual Theory of Mind, self-reported Empathic Understanding, and performance-based

Empathic Understanding, the positive results indicate that all the scores were clustered towards the lower end, in relation to the maximum scores available in this measure. However, all score were located within the permitted range of -1 to +1 (Clark-Carter, 2010) indicating a relatively normal distribution of the data.

With regard to kurtosis of the data, the following was identified: for verbal Theory of Mind, visual Theory of Mind, and Moral Reasoning the negative results across all three age groups indicate that the distribution of scores is relatively flat. For self-reported Empathic Understanding and performance-based Empathic Understanding, the positive results indicate that the scores are clustered towards the centre. However, with the exception of the performance-based Empathic Understanding score, all scores were within the permitted range of -3 to +3 (Clark-Carter, 2010) indicating that the data were relatively normally distributed. To further check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, preliminary assumption testing was conducted. The Kolmogorov-Smirnov statistic was used to assess the distribution of the scores. For each of the five measures the results were  $p > .05$  indicating violation of the assumption of normality. However, the box plots indicated the existence of a number of outliers which may have been the cause of the violation of the assumption of normality. The normal Q-Q plots showed the scores to be clustered around reasonably straight lines, for each for each of the five measures. This again suggests a near normal distribution of scores.

**Table 4.1: Descriptive statistics for the male participants in verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by age group**

	Adolescents			Young-Adults			Adults		
	<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 Theory of Mind</b>	23	12.47	2.69	23	13.52	2.95	23	15.56	1.70
<b>Visual Theory of Mind</b>	23	12.52	2.89	23	19.39	5.34	23	28.0	6.19
(Self- Report) <b>Empathic Understanding</b>	23	26.52	5.03	23	31.87	6.17	23	32.35	5.07
(Performance-Based) <b>Empathic Understanding</b>	23	10.48	2.96	23	12.48	6.36	23	14.43	5.75
<b>Moral Reasoning</b>	23	274.96	20.21	23	304.13	26.97	23	304.91	31.95

**Table 4.2: Descriptive statistics for the female participants in verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by age group**

	Adolescents			Young-Adults			Adults		
	<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 Theory of Mind</b>	23	12.65	2.80	23	14.17	3.24	23	18.17	3.13
<b>Visual Theory of Mind</b>	23	13.22	2.49	23	24.24	3.34	23	32.0	5.45
(Self- Report) <b>Empathic Understanding</b>	23	27.13	3.24	23	32.87	3.18	23	35.72	4.07
(Performance-Based) <b>Empathic Understanding</b>	23	11.32	2.38	23	13.42	4.36	23	15.12	3.14
<b>Moral Reasoning</b>	23	278.74	28.63	23	318.13	31.35	23	324.69	25.67

**Table 4.3: Descriptive statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores across whole data set**

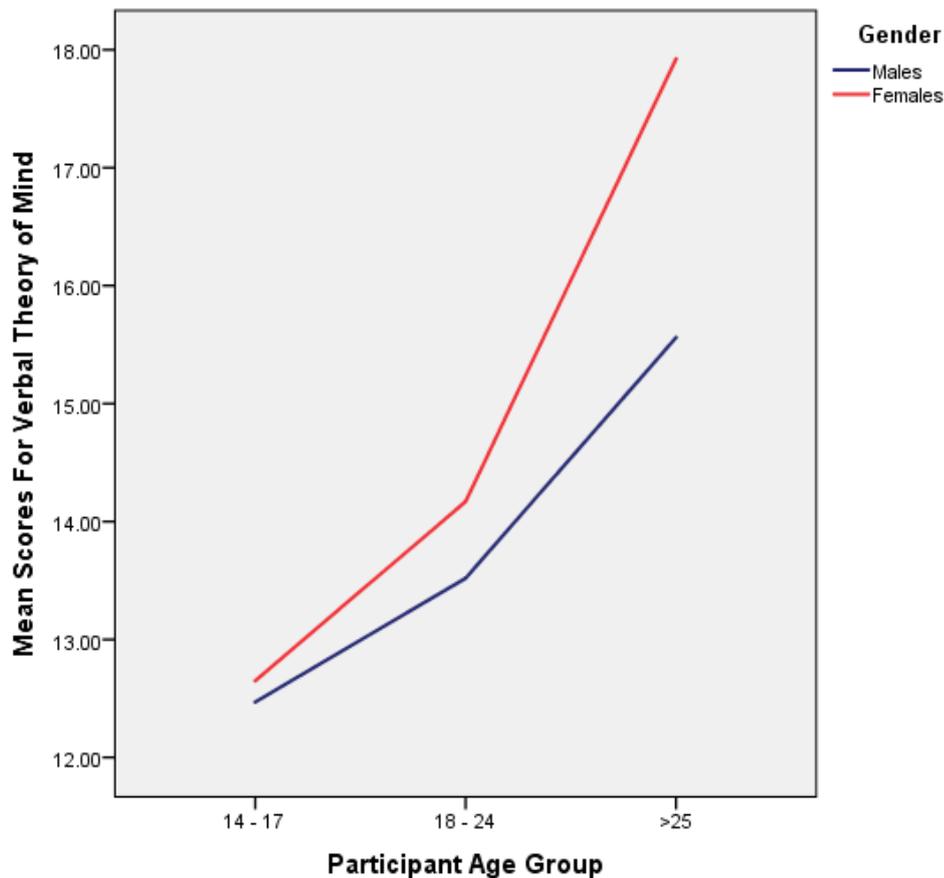
	<i>n</i>	<i>M</i>	<i>5% Trimmed M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
<b>Verbal Theory of Mind</b>	138	13.85	13.95	2.78	-.58	-.48
<b>Visual Theory of Mind</b>	138	19.92	19.68	8.04	.38	-.97
<b>(Self-Reported) Empathic Understanding</b>	138	29.61	29.56	4.90	.22	.38
<b>(Performance-Based) Empathic Understanding</b>	138	12.53	12.26	4.41	0.74	-5.9
<b>Moral Reasoning</b>	138	289.15	297.28	30.82	-.19	-.813

It was concluded that the data reflected the underlying nature of the constructs being measured, the different ages of the participants, and the abilities in those constructs to change over time, for both (a) males and (b) females. Therefore, following the above assessment of the descriptive statistics and assumption test outcomes, it was concluded that the data were sufficiently 'normal' to reject the option of transformation. However, as Levene's Test of Equality of Error Variances indicated that the assumption of equality of variance had been violated for each of the five measures,  $p > .05$ , and after following Tabachnick and Fidell's recommendations (2013), a more stringent  $p$  value was adopted for subsequent tests,  $p < .025$ .

To investigate age differences in prosocial skills across the three age groups for the five different measures, and to control for type I error a one-way, between groups MANCOVA was performed, controlling for IQ. The independent variable was age group; (adolescents, male young-adults, and male adults) and the five dependent variables were: verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning. A statistically significant difference was found to exist between the three age groups for (a) males,  $F_{(5, 61)} = 3.86$ ,  $p < .001$ ; Wilks' Lambda = .58; partial  $\eta^2 = .241$ , and (b) female,  $F_{(5, 61)} = 4.12$ ,  $p < .001$ ; Wilks' Lambda = .62; partial  $\eta^2 = .258$ . To examine the indicated differences between the three age groups, in each of the five measures verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning, further tests were conducted. A series of multiple ANCOVAs (controlling for IQ) was selected for this. As this would increase the risk of type I

error, in line with Tabachnick and Fidell's (2013) recommendations, a more stringent  $p$  value was adopted,  $p < .025$ .

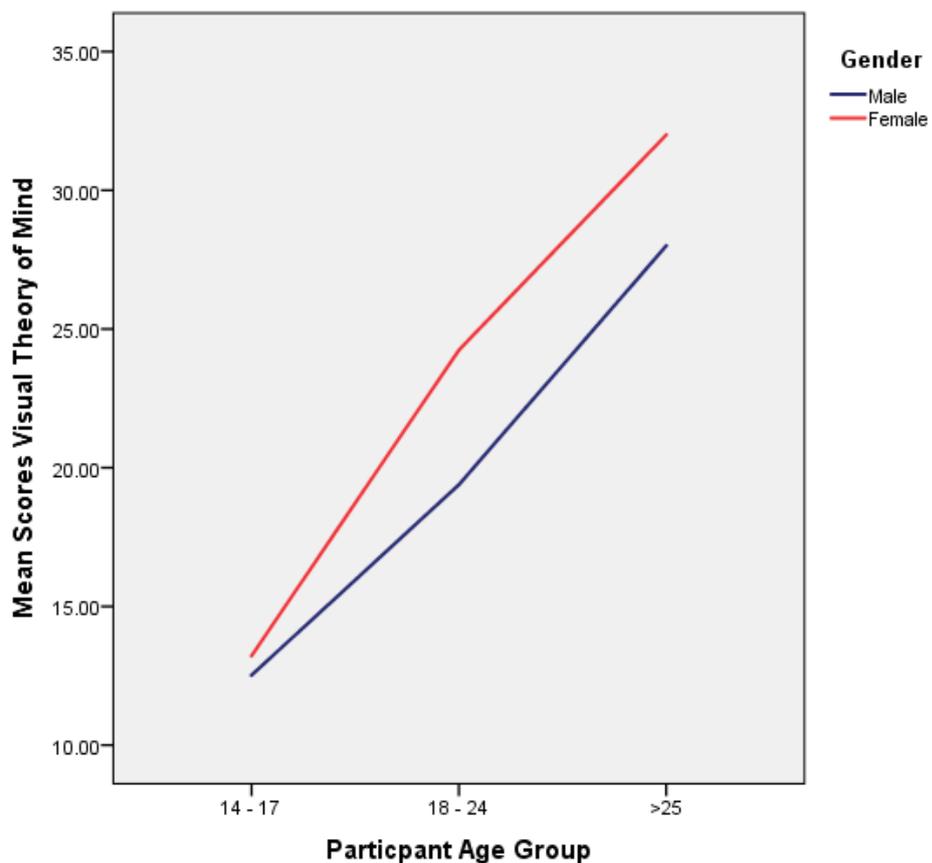
Firstly, to explore the impact of age on verbal Theory of Mind ability and test hypothesis 4.1, a one-way, between groups ANCOVA was conducted. Hypothesis 4.1 was supported as there was a statistically significant difference in verbal Theory of Mind across the three age groups in (a) males:  $F_{(2, 66)} = 9.02, p < .001$ , and (b) females:  $F_{(2, 66)} = 21.747, p < .001$ . An effect size for (a) males and (b) females of .2 was calculated using eta squared. However, post- hoc comparisons, using Tukey's HSD test ( $p = .01$ ) for the (a) males revealed only partial support for hypothesis 4.1 as the mean score for the adolescent group ( $M = 12.48, SD = 2.69$ ) did not differ significantly from that of the young-adult group ( $M = 13.52, SD = 2.95$ ). However, there was a significant difference between the adolescent group and the adult group ( $M = 15.56, SD = 1.7$ ) and the young-adult and the adult group, with the adolescent group scoring significantly lower than the young-adult group and the adult group for verbal Theory of Mind. With regard to (b) females post- hoc comparisons, using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.1 as the mean score for the adolescent group ( $M = 12.65, SD = 2.8$ ) did not differ significantly from that of the young-adult group ( $M = 14.17, SD = 3.24$ ). However, there was a significant difference between the adolescent group and the adult group ( $M = 18.17, SD = 3.13$ ) and the young-adult and the adult group, with the adolescent group scoring significantly lower than the young-adult group and the adult group for verbal Theory of Mind (see Figure 4.1).



**Figure 4.1: Mean Score for Verbal Theory of Mind by Age Group for Males and Females**

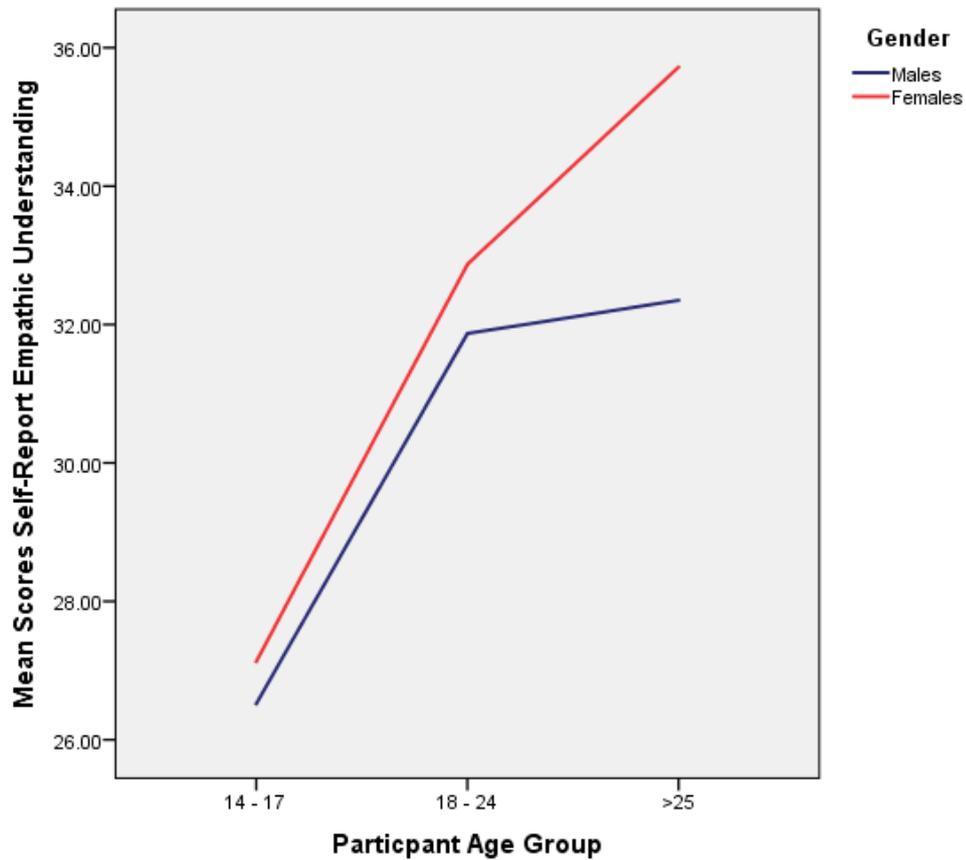
To explore the impact of age on visual Theory of Mind and test hypothesis 4.2, a one-way, between groups ANCOVA was conducted. Hypothesis 2 was supported as there was a statistical significant difference in visual Theory of Mind regarding age for the (a) males:  $F_{(2, 66)} = 54.46, p < .001$ , and (b) females:  $F_{(2, 66)} = 48.825, p < .001$ . An effect size for (a) males and (b) females of .2 was calculated using eta squared. Post- hoc comparisons for the (a) males, using Tukey's HSD test ( $p = .01$ ), were conducted. These tests indicated that the mean score for the adolescent group ( $M = 12.52, SD = 2.88$ ) differed significantly from that of the young-adult group ( $M = 19.39, SD = 5.34$ ) and the adult groups ( $M = 27.91, SD = 6.19$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for visual Theory of Mind. In addition, there was a

significant difference between the young-adult group and the adult group, with the young-adult group scoring significantly lower than the adult group for visual Theory of Mind. With regard to the (b) females, post-hoc comparisons, using Tukey's HSD test ( $p = .01$ ) were conducted. These tests indicated that the mean score for the adolescent group ( $M = 13.22$ ,  $SD = 2.49$ ) differed significantly from that of the young-adult group ( $M = 24.24$ ,  $SD = 3.34$ ) and the adult groups ( $M = 32.0$ ,  $SD = 5.45$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for visual Theory of Mind. In addition, there was a significant difference between the young-adult group and the adult group, with the young-adult group scoring significantly lower than the adult group for visual Theory of Mind (see Figure 4.2).



***Figure 4.2: Mean Score for Visual Theory of Mind by Age Group for Males and Females***

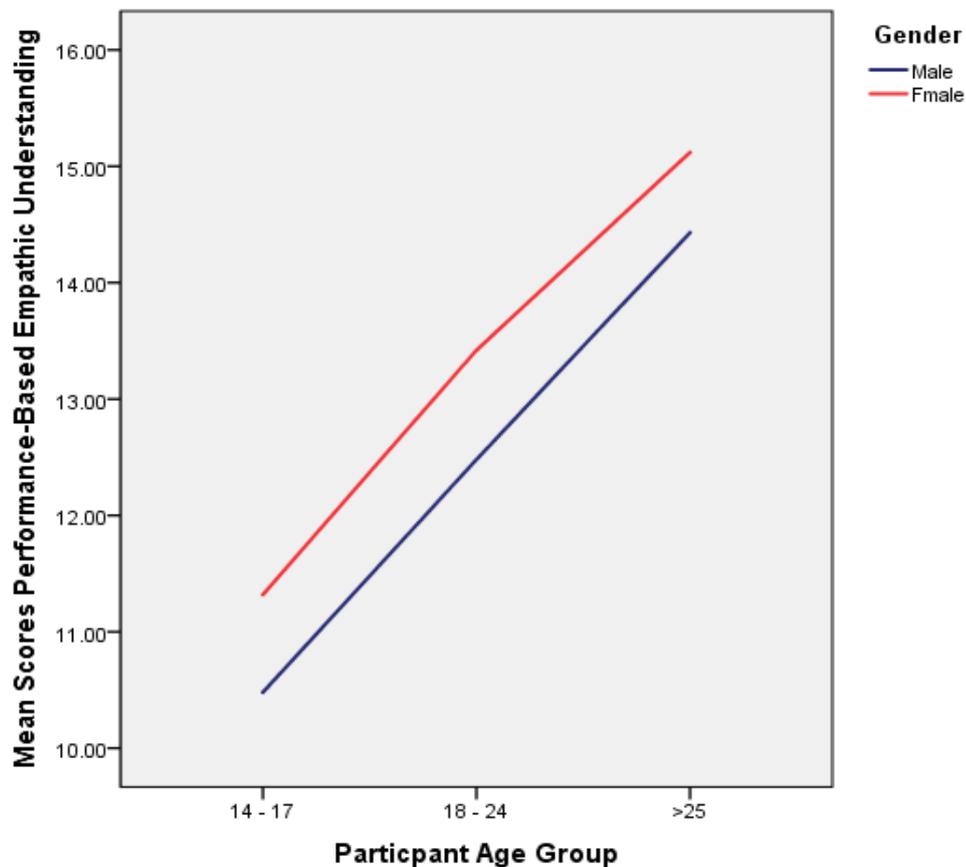
To explore the impact of age on self-reported Empathic Understanding and to test hypothesis 4.3, a one-way, between groups ANCOVA was conducted. Hypothesis 4.3 was supported as there was a statistical significant effect of age on self-reported Empathic Understanding scores in (a) males:  $F_{(2, 66)} = 8.11, p < .001$ , and (b) females,  $F_{(2, 66)} = 2.184, p < .025$ . An effect size of .2 was calculated using eta squared. However, post- hoc comparisons, using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.3 in (a) males. They indicated that the mean score for the adolescent group ( $M = 26.52, SD = 5.03$ ) differed significantly from that of the young-adult group ( $M = 31.87, SD = 6.2$ ) and the adult group ( $M = 32.34, SD = 5.07$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for self-reported Empathic Understanding. However, no significant difference was detected between the young-adult group and the adult group (see Figure 4.3). With regard to (b) females, post- hoc comparisons, using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.3. They indicated that the mean score for the adolescent group ( $M = 27.13, SD = 3.24$ ) differed significantly from that of the young-adult group ( $M = 31.87, SD = 6.2$ ) and the adult group ( $M = 32.87, SD = 3.18$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for self-reported Empathic Understanding. However, no significant difference was detected between the young-adult group and the adult group (see Figure 4.3).



**Figure 4.3: Mean Score for Self-Reported Empathic Understanding by Age Group for Males and Females**

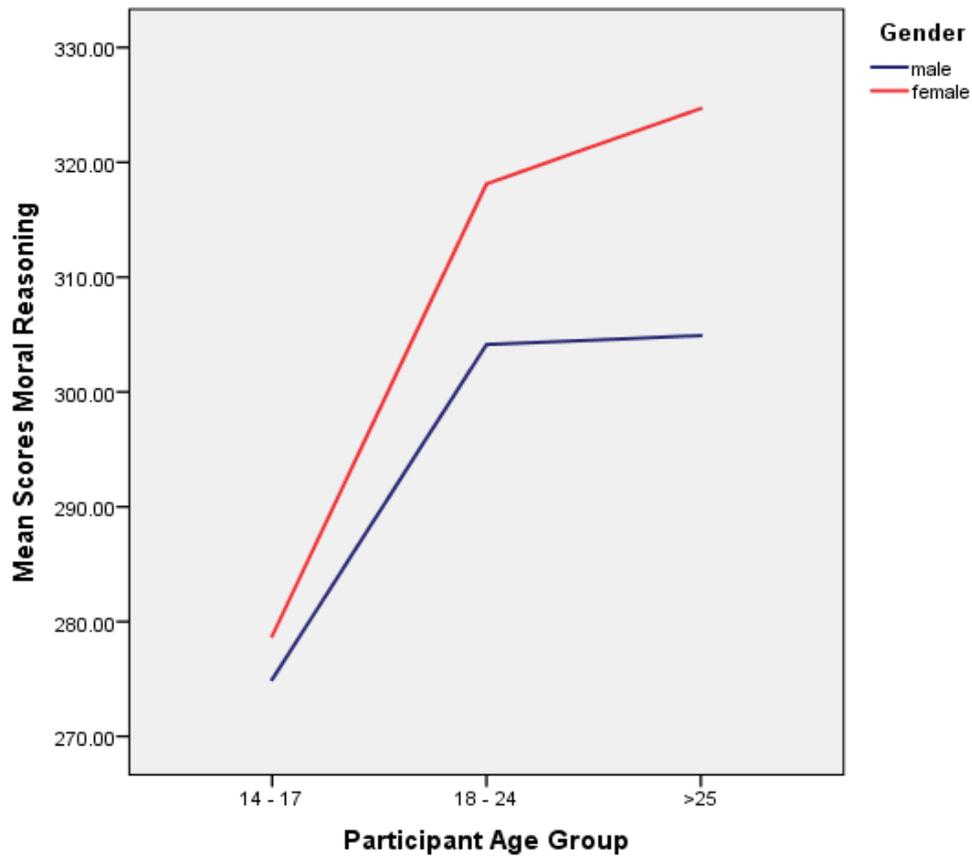
To explore the impact of age on performance-based Empathic Understanding and test hypothesis 4.4, a one-way, between groups ANCOVA, was again conducted. Hypothesis 4.4 was supported as a statistically significant effects of age on performance-based Empathic Understanding was detected in (a) males:  $F(2, 66) = 3.73, p = .029$  and (b) females  $F(2, 66) = 3.082, p = .045$ . An effect size of .2 was calculated using eta squared for both (a) males and (b) females. However, post-hoc comparisons using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.4 in (a) males as they indicated that the mean score for the adolescent group ( $M = 10.34, SD = 2.69$ ) differed significantly from that of the young-adult group ( $M = 13.48, SD = 6.36$ ), and the adult group ( $M = 14.43, SD = 5.75$ ), with the

adolescent group scoring significantly lower than the young-adult group and the adult group for performance-based Empathic Understanding. However, the young-adult group did not differ significantly from that of the adult group. With regard to (b) females, post- hoc comparisons using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.4 as they indicated that the mean score for the adolescent group ( $M = 11.32, SD = 2.38$ ) differed significantly from that of the young-adult group ( $M = 13.42, SD = 4.36$ ), and the adult group ( $M = 15.12, SD = 3.14$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for performance-based Empathic Understanding. However, the young-adult group did not differ significantly from that of the adult group (see Figure 4.4).



**Figure 4.4: Mean Score for Performance-Based Empathic Understanding by Age Group for Males and Females**

Finally, to explore the impact of age on Moral Reasoning and test hypothesis 4.5, a further one-way, between groups ANCOVA, was conducted. Hypothesis 4.5 was supported as a statistically significant effects of age on Moral Reasoning was detected in (a) males:  $F(2, 66) = 9.32, p < .001$ , and (b) females  $F(2, 66) = 3.19, p < .05$ . An effect size of .2 was calculated using eta squared. However, post- hoc comparisons using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.3 in (a) males as they indicated that the mean for the adolescent group ( $M = 274.96, SD = 20.21$ ) differed significantly from that of the young-adult group ( $M = 304.13, SD = 26.97$ ) and the adult group ( $M = 304.91, SD = 31.95$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for performance-based Empathic Understanding. However, the young-adult group did not differ significantly from that of the adult group. With regard to (b) females, post- hoc comparisons using Tukey's HSD test ( $p = .01$ ) revealed only partial support for hypothesis 4.3 as they indicated that the mean for the adolescent group ( $M = 278.74, SD = 28.63$ ) differed significantly from that of the young-adult group ( $M = 318.13, SD = 31.35$ ) and the adult group ( $M = 324.69, SD = 25.67$ ), with the adolescent group scoring significantly lower than the young-adult group and the adult group for performance-based Empathic Understanding. However, the young-adult group did not differ significantly from that of the adult group (see Figure 4.5).



***Figure 4.5: Mean Score of Moral Reasoning by Age Group for Males and Females***

## **4.6: Discussion**

The current study had one aim: to investigate the effect of age on abilities in both verbal and visual Theory of Mind, self-reported and performance-based Empathic Understanding, and Moral Reasoning. From the findings there appeared to be age related differences in each of the five measures: verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning in (a) males and (b) females. The findings will now be discussed in relation to each measure.

#### **4.6.1: Theory of Mind**

Post-hoc tests, with regard to verbal Theory of Mind (hypothesis 4.1), revealed that whilst there was a significant difference between the male and female adolescent group and the male and female adult group, with the adult group scoring higher on the measure than the adolescent group, and the male and female young-adult and the male and female adult group, with the adult group scoring higher on the measure than the young-adult group, there was no significant difference in the scores of the male and female adolescent group and the male and female young-adult group. In contrast, a significant difference in visual Theory of Mind (hypothesis 4.2) was identified between the male and female adolescent group and both the male and female young-adult group and the male and female adult groups, with the young-adult group scoring higher on the measure than the adolescent group, and the adult group scoring higher on the measure than the adolescent group, and the young-adult group scoring higher on the measure than the adolescent group, and the young-adult group and the adult group, with the adult group scoring higher on the measure than the young-adult group.

There are a number of reasons why the observed effects of age regarding Theory of Mind might have occurred. One possible explanation may be that of ‘rehearsal’ (Epley, Morewedge, & Keysar, 2004). Epley et al. suggested that even the most ‘effortful cognitive processes’ can become more efficient with practice and experience. Consequently, as a result of years of accommodating the many differing perspectives of others, it may be that adults are able to process scenarios in a more proficient way, when compared to children. Indeed, Apperly, Samson, and Humphreys (2009), noted that even after acquiring Theory of Mind, as demonstrated by passing developmentally sensitive false-belief tasks, children’s abilities remained slower and less flexible than those of adults. This suggests that cognitive

improvements in speed and flexibility, which are known to advance with age (Ball, Edwards, & Ross, 2007), may explain later developments in Theory of Mind.

Ability in language may also offer an explanation for the current findings (Milligan, Astington, & Dack, 2007). For example, Dunn and Brophy (2005) suggested that ‘conversational pragmatism’ may be an important developmental factor in an individual’s ability regarding Theory of Mind. Pragmatics is the branch of linguistics dealing with the rules relating to language; this includes taking turns in conversation, listening to what has been said and responding appropriately. According to Blain-Brière, Bouchard, and Bigras (2014) speech pragmatism is acquired by children between the ages of 4- and 5- years. This may explain why individuals with delayed language, as a result of deafness or autism, may also be late to pass tasks measuring abilities in Theory of Mind (Tager-Flusberg & Joseph, 2003).

Lastly, a link between Theory of Mind and Executive Functioning (Duval, Piolino, Bejanin, Eustache, & Desgranges, 2011) may also give additional clarity for the current findings. Executive Functioning is a ‘domain-general’ skill that is said to include data processing in terms of speed and flexibility, as well as memory (Sullivan & Ruffman, 2004). According to Lahat, Todd, Mahy, and Zelazo (2010) Executive Functioning is essentially the conscious regulation of thoughts, emotions, and behaviours. Certain aspects of Executive Functioning, specifically Working Memory, Cognitive Flexibility, and Inhibitory Control, are thought to be necessary for the development of Theory of Mind (Sabbagh, Xu, Carlson, Moses, & Lee, 2006). Further, some studies have suggested that Executive Functioning is involved in the role of moderating perception and memory (Gilbert, 1998). For example, MaCrae, Bodenhausen, Schloerscheidt, and Milne (1999) found that memory bias,

particularly when the information was counter to expectations, was dependent on cognitive processes associated with Executive Functioning. As the association between theory of Mind and Executive Functioning appears to be important it will be further considered in study 4 (chapter seven) of this thesis.

To conclude, study 1 suggests that whilst verbal Theory of Mind may only develop in a gradual fashion from adolescence to early adulthood, it has the ability to improve significantly during adulthood. However, visual Theory of Mind has the ability to improve significantly during the life span. These findings, regarding the age related development of Theory of Mind, may be of importance to those involved in the designing and delivering of rehabilitative programmes aimed at reducing reoffending by improving prosocial abilities. Indeed, establishing each participant's individual ability in Theory of Mind before considering them suitable for, or allocating them to, rehabilitative programmes aimed at improving prosocial skills, may be of long-term benefit in the goal to lower recidivism in the UK.

#### **4.6.2: Empathic Understanding**

With regard to Empathic Understanding (hypothesis 4.3), post-hoc analysis showed that whilst the scores for the male and female adolescent group differed significantly from that of the male and female young-adult group and the male and female adult group, with the young-adult group scoring higher on the measure than the adolescent group, there was no significant difference in the scores between the male and female young-adult group and the adult group. With regard to hypothesis 4.4, significant differences were found in male and female Empathic Understanding between the male and female adolescent group and the male and female adult group, with the adult group scoring higher on the measure than the adolescent group, but the mean score for the male and female adolescent group did not differ significantly

from that of the male and female young-adult group, and the male and female young-adult group did not differ significantly from that of the male and female adult group.

One explanation for the identified differences in Empathic Understanding, particularly between the adolescent group and the adult group, may be attributed to individual and social changes that take place during adolescence. For example, adolescents experience significant gains in mobility and independent decision making (Grotevant, 1998). This in turn provides opportunities for renegotiating existing relationships with parents, and for developing new peer relationships; both of which can impact, often positively, on prosocial behaviours which last into adulthood (Carlo, Fabes, Laible, & Kupanoff, 1999). Yadav and Iqbal (2009) built on this proposition by suggesting that adolescents who are well schooled in life skills and experiences exhibit greater abilities in Empathic Understanding, in adulthood. Yadav and Iqbal stated that such life skills enabled adults to utilise knowledge, attitudes and values, and consequently behave in a more empathic way. The development of Empathic Understanding through adolescence and into adulthood is also supported by neuroscience. Schulte-Rüther et al., (2011) suggested that distinct brain regions are associated with Empathic Understanding and responding, and the continuous refinements of this network is responsible for the developmental changes in Empathic Understanding during a person life (Blakemore, 2008).

With regard to the relative stabilising of Empathic Understanding in older adults, there are two theories that may offer an explanation. The Socio-Emotional Selectivity Theory (Carstensen, Isaacowitz, & Charles, 1999) posits an age related 'shift' in a person's cognitive ability. Consistent with this idea, Gross et al. (1997), in their study of 199 Catholic nuns (aged 24- to 101-) in the USA, stated that the older adults reported an increased ability to regulate their emotions when compared

to younger adults. The second relevant theory is that of Dynamic Integration (Labouvie-Vief, 2003). This theory is concerned with the development of cognitive complexity and allows for a person's ability to represent his or her own, as well as that of others' emotions. Both theories suggest that cognitive representations become increasingly complex and well-balanced between adolescence and early adulthood, following which stability is achieved. However, it is important to note that neither the Socio-Emotional Selectivity Theory nor the Dynamic Integration Theory appear to consider contextual factors that may moderate age related change in Empathic Understanding; in particular Working Memory (Fung & Carstensen, 2003); something that will be addressed in study 4 (chapter seven) of this thesis.

In summary, study 1 of this thesis found that individuals display a marked improvement in both self-reported Empathic Understanding and performance-based Empathic Understanding between adolescence and young-adulthood. These findings are of importance, as they suggest that abilities in Empathic Understanding are relatively plastic, and thus can generally be improved upon in young adults, aged 18- to 24- years. Therefore, such an improvement gives confidence to those involved in the designing and delivering of rehabilitative programmes aimed at reducing reoffending by improving prosocial abilities. However, it is the relative stabilising of Empathic Understanding in older adults, found in both the self-report and performance-based measures, which may be of particular interest to practitioners as this may suggest that rehabilitative programmes aimed at reducing recidivism by improving prosocial abilities could be less successful in people of this age group.

#### **4.6.3: Moral Reasoning.**

Hypothesis 4.5 stated that there would be significant differences in Moral Reasoning across the three age groups. Following post-hoc tests, a significant

difference emerged between the male and female adolescent group and the male and female young-adult group, with the young-adult group scoring higher on the measure when compared to the adolescent group. However, no significant difference in scores between the male and female young-adult group and the male and female adult group was observed.

The evidence provided by study 1 appears to suggest that most individuals develop Moral Reasoning as defined by Kohlberg's (1976) stages of moral development; that is that Moral Reasoning steadily develops during, childhood, through adolescence, and into early adulthood, thereafter maintaining stability and consistency. However, it must be pointed out that Kohlberg, in his original research, only considered individuals up to the age of 26- years. This may suggest that he believed that abilities in Moral Reasoning are maximised in early adulthood. Mason and Gibbs (1993), appear to support with this notion, proposing that individuals are exposed to the largest number of life experiences, with increased opportunities for more complex thinking and perspective taking, between adolescence and early adulthood. Therefore, it is possible that an improved knowledge of socially acceptable behaviour, evidenced by the approval of others, may peak at this time; which in turn may foster a growth in Moral Reasoning (Branch, 2000). However, it must also be considered that as a consequence the design of Kohlberg's initial research, and that of researchers who followed in his path, does not allow for the measurement of Moral Reasoning beyond early adulthood.

Alternatively, another explanation for the findings of the current study may be related to the way people assess the situation in which they find themselves. Kohlbergian theories suggest that individuals do this using the most sophisticated levels of Moral Reasoning in their possession (Krebs, Denton, Vermeulen,

Carpendale, & Bush, 1991). However, Krebs et al. concluded that such a premise is unrealistic and that people are more likely to employ an ‘appropriate’ level of Moral Reasoning, regardless of their ability, but dependant on the situation. Simply, people may be more morally flexible than Kohlberg's model of Moral Reasoning implies, and as a result moral judgments may be relatively plastic. Krebs and Denton (2006) concurred, stating that the stages of Moral Reasoning play a relatively minor role in determining the moral judgments or behavioural decisions made by people in their everyday lives. Whilst Krebs and Denton accepted that people do tend to acquire increasingly sophisticated levels of Moral Reasoning as they age, sophistication is not always necessary to solve many of the moral problems encountered by a person on a daily basis. In other words, problems can be solved perfectly adequately with simple forms of Moral Reasoning; meaning Kohlberg’s level 4 may not be adopted when level 2 allows for a satisfactory judgement to be made. This suggests that the flexibility to select an *appropriate* level to solve a day-to-day moral dilemma may be as important as the highest level of Moral Reasoning that a person has attained.

In addition, individual differences derived from personality traits, socio-environmental influences, and cognitive abilities may also affect Moral Reasoning (de Vries & Walker, 1986). Specifically, with regard to cognition, some theories of Moral Reasoning rest upon the premise that developmental progression occurs in parallel to Executive Functioning (Gibbs, 1979). Executive Functioning, as stated earlier in this chapter, is a domain general skill used in the regulation of thoughts, emotions, and behaviours, and as such, may also have an impact on the development of Moral Reasoning (Lahat et al., 2010); a topic this author believes to be of particular significance, and so will be further considered in study 4 (chapter seven).

#### **4.7: Conclusion.**

To conclude, whilst Theory of Mind, Empathic Understanding, and Moral Reasoning have received psychological attention for a number of years, research regarding their development during a person's lifespan has, to some extent, been neglected. To the current author's knowledge, study 1 was the first to demonstrate the effects of aging on Theory of Mind, Empathic Understanding, and Moral Reasoning, in a single study, using a cohort of male and female, 14- to 55- year olds. Most importantly, the findings of study 1 suggest that age may not be a prohibitive factor in relation to the later development of values necessary for socially acceptable behaviour. In particular, the findings suggest that Moral Reasoning appears to be relatively plastic from adolescence to early adulthood. Whilst the plateauing of Moral Reasoning in early adulthood cannot be ignored, the current author suggests that this may either be reflective of the 'ceiling' characteristic inherent in the measure being used, or it may imply that by early adulthood individuals have developed all the 'tools' they need to make moral decisions, but choose to engage only those considered necessary to solve a given dilemma.

Although the current study had one key limitation that is it did not consider an offending cohort (something future studies may wish to address), it nonetheless proposes that improvements in Theory of Mind, Empathic Understanding, and Moral Reasoning, between some age groups, may be possible. This, as stated in the introductory section of this chapter, is considered necessary for the success of rehabilitative programmes, aimed at the reduction of reoffending levels, through the improvement of prosocial skills (Ministry of Justice, 2010). Therefore, the findings of study 1 may be of interest to researchers and practitioner alike.

## **Chapter Five**

### **Study 2**

# **‘Gender’ and ‘Status’ Related Differences in Theory of Mind, Empathic Understanding, and Moral Reasoning**

Every society has commonly accepted rules of conduct that individuals are expected to follow; subsequent compliance with these rules generally results in socially acceptable behaviour (Gächter, Nosenzo, & Sefton, 2012). As noted in chapter two, socially acceptable behaviour requires, amongst other things, the utilisation of three individual prosocial skills; Theory of Mind (Premack & Woodruff, 1978), Empathic Understanding (Davis, 1983), and Moral Reasoning (Gibbs et al., 1992). More recently, research has suggested that Theory of Mind, Empathic Understanding, and Moral Reasoning are comprised of both cognitive and affective elements (Blair, 2008; Blair & Cipolotti, 2000; Shamay-Tsoory et al., 2005), both of which are required for the successful implementation of each skill (Lauri et al., 2008; Ma, 2013; Shamay-Tsoory, 2011). Used in combination, the cognitive and affective aspects of Theory of Mind, Empathic Understanding, and Moral Reasoning enable most individuals to control their behaviour in socially appropriate ways (Sharp, 2008; Spenser et al., 2015; Stams et al., 2006).

An obvious consequence of appropriate prosocial behaviour is the inhibition of harmful actions (Decety, 2008). Consequently, an undeveloped Theory of Mind, Empathic Understanding, and/or Moral Reasoning may contribute to antisocial or

offending behaviours (Sharp, Croudace, & Goodyer, 2007; Sharp, 2008). However, whilst there are a number of studies that have focused on the interaction of two of the individual constructs; (i) Theory of Mind and Empathic Understanding (Lawson, Baron-Cohen, & Wheelwright, 2004); (ii) Theory of Mind and Moral Reasoning (Astington, 2004); and (iii) Empathic Understanding and Moral Reasoning (Eisenburg-Berg & Mussen, 2007), few have considered all three in a single study (Lane et al., 2010; Spenser et al., 2015). Indeed, to this author's knowledge, Spenser et al. (2015) was the first to consider the variations in Theory of Mind, Empathic Understanding, and Moral Reasoning, in a single study, in an adult offending population. In a study, of 46 young-adult offenders (aged 18- to 24- years) and a matched control group, Spenser et al. demonstrated a significant difference in the Theory of Mind, Empathic Understanding, and Moral Reasoning between the groups. However, the study was not without limitations; firstly it included only male participants, and secondly, the age range of the participants was limited. Whilst it is known that young male offenders make up one-third of those sentenced to prison each year (T2A, 2012), the actual prison estate has no upper age limit and includes female offenders; these issues will therefore be addressed in study 2.

In addition, research with female offenders has, to some extent, been neglected (Bottos, 2007). This may be because historically women have been accused of far fewer crimes than men. Specifically, between the years of 1674 and 1913, women accounted for only 21% of all defendants tried. One explanation for this could be the 'roles' traditionally assigned to men and women (Richardson, & Hammock, 2007). In recognising that women are often cast in a nurturing role, these researchers suggested that historic female offences were primarily driven by the need to provide for dependants, rather than the various gratuitous motivations often

attributed to male offending. The Emancipation Theory (Adler, 1975) argued that as the roles of women become more similar to those of men, so would their participation in criminal activity. However, in the Criminal Justice Statistics, Quarterly Update, (2012), it was reported that 929,720 men were convicted of crimes, compared to 297,034 women. This represents a female proportion of approximately 24%; a figure similar to that found in historic data.

One explanation for the difference in crime rates between male and female offenders, may be because women are said to be better able to: (i) attribute the mental states of others, and (ii) affect more socially appropriate responses, than their male counterparts (Blair, 2005; Russell, Tchanturia, Rahman, & Schmidt, 2007). In other words, women may be more prosocially skilled than men, and therefore may be more compliant with regard to the rules of society. As a result, it is possible that the theories surrounding male offending cannot simply be transferred to female offending (Bennett, Farrington, & Huesmann, 2005).

As previously mentioned in chapter two, many current rehabilitative programmes, designed to address the problem of offending behaviours, recognise the need to improve upon perceived underdeveloped prosocial ability as a way of reducing offending behaviours in those who commit crimes (Antonowicz & Ross, 2005; Palmer, 2013). Indeed, many of the programmes available are considered gender neutral, and so are offered to both male and female offenders (Epstein, 2015); despite Corston (2007, p. 13) recommending the creation of a “distinct, radically different, visibly-led, strategic, proportionate, holistic, woman-centred, integrated approach” to the rehabilitation of female offenders. This thesis proposes that to address this goal, at least in part, the ability to identify and measure any differences in Theory of Mind, Empathic Understanding, and Moral Reasoning, between male

and female, offenders and non-offenders, would allow practitioners to further tailor rehabilitative programme to their target audience.

Therefore, to address the limitations identified in Spenser et al. (2015), and better understand differing abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning according to gender, as well as status, study 2 will include both male and female offenders and non-offenders, and apply no upper age limit. Hence, the aims of this study are: (i) to investigate any differences in abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning according to gender (males verses females), across a representative age group (18- to 55- years) and (ii) to investigate any differences in Theory of Mind, Empathic Understanding, and Moral Reasoning according to status (offenders verses non-offenders), across a representative age group (18- to 55- years).

## **5.1: Theory of Mind**

### **5.1.1: Theory of Mind according to differences in gender.**

Past research has observed a significant difference in Theory of Mind between male and female participants; however, it must be noted that this is largely using a young, non-offending samples. For example, Walker (2005) observed an advantage in preschool girls over preschool boys on tasks used to measure Theory of Mind. More recently, Calero, Salles, Semelman, and Sigman (2013) in a study of 9- to 15- year olds, examined the hypothesis that gender differences in Theory of Mind may continue beyond infancy and found that girls performed significantly better than boys in all tasks. Similarly, Hiller, Young and Weber (2014), using the five-step model of Theory of Mind development (Wellman & Liu, 2004), found that the young adult women demonstrated superior ability in the Theory of Mind tasks, and

that these abilities were strongly associated with levels of prosociality. In particular, this was evident in the ‘Knowledge Access Theory of Mind’ task; a task known to be strongly associated with higher prosocial behaviours and lower rates of aggression. Hiller et al. concluded that gender was a unique predictor of variance in Theory of Mind, favouring females.

However, past research has generally relied on methods that assess Theory of Mind from a verbal perspective; that is many studies use written measures which require participants to read a question and respond appropriately. This may explain why females are thought to have a better Theory of Mind when compared to males, as research has shown that females perform better than males in most verbal tests, with the reverse being true of visual tests (Sagrilo & Ferreira, 2012). Given that Blair and Coles (2000) reported that Theory of Mind requires the recognition and understanding of *both* verbal and visual cues, any study assessing the construct using only verbal or visual stimuli, may obtain findings that are biased towards female participants with regard to the verbal stimuli or the male participants with regard to the visual stimuli. Hence, to address this limitation, the current author proposes that a measure that assesses both verbal and visual cues is necessary. To this end, the Social Stories Questionnaire (Baron-Cohen et al., 1999) which assesses Theory of Mind from a verbal perspective, and the ‘Reading of the Mind in the Eyes’ test (Baron-Cohen et al., 2001) which assesses Theory of Mind from a visual perspective, were adopted in study 2 of this thesis.

### **5.1.2: Theory of Mind according to differences in status**

With regard to status, some prior studies have found no significant difference between offenders and non-offenders, when considering Theory of Mind. For example, Dolan and Fulam (2004), using a battery of tasks to assess the ability of 89

male adult offenders (with either DSM IV antisocial personality disorder and/or psychopathic diagnoses), found that the majority of the participants had acquired an acceptable level of Theory of Mind. One explanation for this may be that most past research appears to have used measures that only focus on the cognitive aspects of Theory of Mind; that is the ability to recognise the mental state of another person. For example, Shamay-Tsoory et al. (2005) argued that the 'Reading the Mind in the Eyes' test (Baron-Cohen et al., 2001) singularly assesses emotional recognition rather than simultaneously assessing both emotional recognition *and* understanding and, as such, only considers cognitive Theory of Mind.

However, Blair and Coles (2000) suggested, that to respond to another's mental state, both cognitive *and* affective Theory of Mind are needed; that is the ability to recognise *and* understand the mental state of another. This may, in part, explain why many offenders typically 'pass' Theory of Mind tasks but are still poor at responding to another's mental state; as to do this requires both the recognition *and* understanding of that person's cues. Hence, to address this limitation and, to better detect potential reduced ability according to status; a measure which assesses the duality of Theory of Mind was implemented. As noted in section 5.1.1, the measure selected was the Social Stories Questionnaire (Baron-Cohen et al., 1999); a 'faux pas' test which simultaneously considers a participant's cognitive ability to recognise potential differences in the knowledge states of multiple characters in a story and his or her affective ability to understand the potential emotional impact of an offensive remark made by one character to another.

Therefore, in order to establish all possible effects or outcomes, in relation to verbal and visual, as well as cognitive and affective, Theory of Mind, between male and female offenders, male and female non-offenders, male offenders and non-

offenders, and female offenders and non-offenders, and be of maximum use to practitioners, the following hypotheses were made:

- Hypothesis 5.1a. There will be significant gender related differences in verbal Theory of Mind.
- Hypothesis 5.1b. There will be significant status related differences in verbal Theory of Mind.
- Hypothesis 5.1c. There will be an interaction between gender and status with regard to verbal Theory of Mind.
- Hypothesis 5.1d. There will be significant gender differences in visual Theory of Mind.
- Hypothesis 5.1e. There will be significant status related difference in visual Theory of Mind.
- Hypothesis 5.1f. There will be an interaction between gender and status with regard to visual Theory of Mind.
- Hypothesis 5.1g. There will be an association between verbal Theory of Mind and visual Theory of Mind.

## **5.2: Empathic Understanding.**

### **5.2.1: Empathic Understanding according to differences in gender.**

Research has noted a significant difference when considering individual ability in Empathic Understanding between male and female participants. For example, Messing, Randoin, Tissot, Rail, and Fortin (2004) demonstrated that the development of Empathic Understanding varied according to both the gender of the child, and of the parent. Noting the gender of the participant and the parent, Messing et al. asked the children to complete an affective empathy measure, whilst their

parent completed a scale to assess their own parenting style. A positive association between high levels of Empathic Understanding in female children and an ‘empathic’ childrearing style in their parent(s) was found; thus suggesting that parenting style, as well as parent to child relationships, might play a significant role in the development of Empathic Understanding in children.

This perceived gender difference in Empathic Understanding also appears to continue into adulthood. With a sample of 60 participants (male = 24; female = 36), aged between 19- and 47- years (*M age* = 24.5 years), Rueckert, Branch, and Doan (2011) reported that the female participants scored significantly higher than the males. Using the Emotional Quotient (Baron-Cohen & Wheelwright, 2004) and the Interpersonal Reactivity Index (Davis, 1980), participants were asked to predict, across 10 different scenarios, how much: (i) happiness, (ii) sadness, and/or (iii) anger they would feel if a particular scenario happened to: (i) them, (ii) a friend, or (iii) an enemy. Overall, the female participants rated themselves as likely to feel more emotions than men, whether the event happened to themselves, to a friend, or to an enemy.

However, one explanation for these self-reported differences in levels of Empathic Understanding between men and women may be the result of societally perceived ‘gender roles’ (Eisenberg & Lennon, 1983). Rueckert et al., (2011), noted that a prevalent stereotype in most western societies is that women are more people-oriented, helpful, and empathic than men. For this reason, Makino (2010) criticised self-report measures, suggesting that they might not be indicative of how a person actually feels but rather reflect their knowledge of how other people might expect them to feel.

### **5.2.2: Empathic Understanding according to differences in status.**

Past findings, have also found differences in ability, between offenders and non-offenders, when considering Empathic Understanding. For example, Beven (2006), in a study of 106 adult male offenders (mean age of 33- years), found a significant positive association between reduced Empathic Understanding and offending behaviour. More specifically, Bevan determined that some offenders exhibit intolerance, whilst others demonstrate a level of excitement or enjoyment in response to the distress of their victims. This suggests that whilst the offenders in the study were able to comprehend the emotional state of their victim, they were unable to respond in a socially appropriate way.

An absence of guilt and shame in connection with offending behaviours is often associated with a lack of empathy (Blair, 2005). This lack may be explained by feelings of 'entitlement'. That is a belief that one is as, if not more, deserving of a 'reward' than others (Raskin & Terry, 1988). Further, such a feeling of entitlement has been associated with narcissism (Baskin-Sommers, Krusemark, & Ronningstam, 2014). Wai and Tiliopoulos (2012) described narcissism as an extreme form of selfishness. In practice, narcissism, coupled with a sense of entitlement, may give an individual permission to disregard the law, as well as cause them to underestimate his or her chances of being caught when in pursuit of a personal goal (Hepper, Hart, Meek, Cisek, & Sedikides, 2014).

To address these limitations and to enable practitioners to better understand individual abilities in Empathic Understanding, as well as giving consideration to all possible effects or outcomes in terms of male and female offenders, male and female non-offenders, male offenders and non-offenders, and female offenders and non-offenders, a performance-based measure, as well as a self-report measure, was

considered necessary. To this end, study 2 used the Empathy Quotient (Wakabayashi et al., 2006), a self-report measure of Empathic Understanding, and the Emotional Intelligence Test (Mayer et al., 2002), a performance –based measure of Empathic Understanding. The following hypotheses are made:

- Hypothesis 5.2a. There will be significant gender related differences in self-reported Empathic Understanding.
- Hypothesis 5.2b. There will be significant status related differences self-reported in Empathic Understanding.
- Hypothesis 5.2c. There will be an interaction between gender and status with regard to self-reported Empathic Understanding.
- Hypothesis 5.2d. There will be significant gender differences in performance-based Empathic Understanding.
- Hypothesis 5.2e. There will be significant status related difference in performance-based Empathic Understanding.
- Hypothesis 5.2f. There will be an interaction between gender and status with regard to performance-based Empathic Understanding.
- Hypothesis 5.2g. There will be an association between self-reported Empathic Understanding and performance-based Empathic Understanding.

### **5.3: Moral Reasoning.**

#### **5.3.1: Moral Reasoning according to differences in gender.**

Implicit within Kohlberg's (1969) Stages of Moral Judgement is the belief that morality is universal and equally applicable to men and women (Nisan & Kohlberg, 1982). However, according to his stages of moral development, Kohlberg

claimed that the average female attained a moral judgment rating of level three, whilst males reached, on average, level four; thus concluding that females are inferior to men in relation to Moral Reasoning.

Gilligan (1982) questioned the validity of Kohlberg's theory with regard to females. She argued that Kohlberg's reliance on a male normative sample resulted in both a theory and a measurement system that were insensitive to the traditional female concerns of responsibility and care. Based on her Care of Ethics theory, Gilligan developed a complementary 3-stage model:

- (i) Stage 1. At this stage a woman's morality is thought to be self-oriented and decisions based on what she considers to be best for herself;
- (ii) Stage 2. At this stage care for others takes precedent. Here women develop a sense of respect for, and responsibility to, others; and
- (iii) Stage 3. At this stage women learn to equate personal needs with those of others, and the focus shifts to a dynamic relationship. In the latter part of this stage care extends to inter-personal relationship.

This led Gilligan (1982) to conclude that males tend to organise their social relationships in a hierarchical order, subscribing to a morality of rights or justice; whilst females value interpersonal connectedness, care, sensitivity, and responsibility to people. She further suggested that Kohlberg's scoring criteria assign interpersonal care orientations a lower rating than justice orientations and advocated the need to integrate each orientation; stating that only then could full human potential in Moral Reasoning be measured. This premise was supported by Walker (1984) who attributed identified differences in Moral Reasoning between males and females to factors relating to the measurement instrument itself, as well as MacKinnon and Fiala (2015) who noted that such measures were biased towards men.

As a consequence, past research may offer information relating to male Moral Reasoning that is not easily transferred to females. To address this limitation, the Socio-Moral Reflection Measure (SRM-SF, Gibbs et al., 1992) was adopted in study 2, as it has been purported to equally measure Moral Reasoning in both males and females participants.

### **5.3.2: Moral Reasoning according to differences in status.**

Some studies have concluded a strong negative relationship between Moral Reasoning and illegal behaviour. Kohlberg (1969, p. 33), for example, proposing an association between an individual's moral stage and their behaviour, argued "that children under nine, some adolescents, and adult criminals typically reasoned at stages one and two; whereas individuals who have achieved a higher level of Moral Reasoning engaged in responsible, consistent, and predictable behaviour". Palmer and Begum (2006) provided empirical support for this. These researchers, in a study of young male offenders ( $n = 60$ ,  $M age = 19.53$  years,  $SD = 0.79$ ), found that the adolescent offenders in their study reasoned at Kohlberg's moral stage two; in other words they reasoned in a way that maximised their own needs and desires, whilst minimising any negative consequences. In contrast, the matched non-offender control group reasoned at moral stage three which is said to take onto account the perspective of a third-person and is based on mutually trusting relationships.

Similarly, Chen and Howitt (2007) found that Moral Reasoning was significantly lower in the offender group in their study, when compared to the control group. The male offenders in their study completed the SRM-SF measuring of Moral Reasoning (Gibbs et al., 1992), having been classified according to a crime category, which included drug offences, violence, and theft. Chen and Howitt concluded that whilst the SRM-SF was of limited usefulness in differentiating

between offence types, it was good at differentiating between offenders and non-offenders in terms of their ability to reason from a moral perspective.

However, research in this area has largely focused on young male offenders. As noted earlier in the introductory section of this thesis, whilst young male offenders make up one-third of those sentenced to prison each year (T2A, 2012), the actual prison estate includes a noteworthy proportion of female offenders and has no upper age limit. Therefore, in order to accommodate all possible effects or outcomes, in relation to Moral Reasoning across a representative age group (18- to 55- years), between male and female offenders, male and female non-offenders, male offenders and non-offenders, and female offenders and non-offenders, and be of maximum use to practitioners, the following hypotheses were made:

- Hypothesis 5.3a. There will be a significant gender related difference in Moral Reasoning.
- Hypothesis 5.3b. There will be significant status related difference in Moral Reasoning.
- Hypothesis 5.3c. There will be an interaction between gender and status with regard to Moral Reasoning.

## **5.4: Methodology**

For the design, participants, measures, procedures, and ethical considerations relating to study 2, please refer to chapter three.

## **5.5. Results**

The sample comprised the 400 participants aged 18- to 59- years ( $M = 27.82$  years;  $SD = 8.55$  years) as detailed in chapter three. Descriptive statistics were

obtained by gender and status, for each of the five measures used (verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning). As can be seen in Table 5.1 there is a difference in the mean scores and the *SD* indicated that all the scores were located fairly close to the relevant mean score.

Descriptive statistics and preliminary assumption testing was also conducted for each of the five measures. Table 5.2 shows the mean scores in each of the five measures. The standard deviation indicates that all the scores are located fairly close to the relevant mean score. Skewness and kurtosis values were then obtained to provide information relating to the distribution of the scores. With regard to the skewness of the data, for all five measures, the negative result indicates that all the scores were clustered towards the higher end, in relation to the maximum scores available in this measure. However, all score are located within the permitted range of -1 to +1 (Clark-Carter, 2010), which indicates a relatively normal distribution of the data. With regard to kurtosis of the data, the following was identified: for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, and Moral Reasoning, the negative result suggests that the distribution of scores is relatively flat. For performance-based Empathic Understanding the positive results indicate that the scores are clustered towards the centre. However, with the exception of performance-based Empathic Understanding, all scores are within the permitted range of -3 to +3 (Clark-Carter, 2010), indicating that the distribution of the data is fairly normal.

**Table 5.1: Descriptive Statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores by Gender and 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 Theory of Mind</b>	100	6.03	4.16	100	13.20	4.05	100	14.34	4.96	100	14.42	4.40
<b>Visual Theory of Mind</b>	100	18.76	6.01	100	27.74	5.60	100	19.56	9.66	100	29.54	4.63
<b>Self-Reported Empathic Understanding</b>	100	27.22	7.65	100	27.94	8.43	100	27.33	5.00	100	29.09	7.73
<b>Performance-Based Empathic Understanding</b>	100	109.69	24.89	100	120.55	19.78	100	117.66	17.45	100	141.15	16.63
<b>Moral Reasoning</b>	100	273.63	39.75	100	320.56	29.83	100	275.87	27.12	100	329.75	29.49

**Table 5.2: Descriptive Statistics for verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning scores across the Whole Data Set**

	<i>n</i>	<i>M</i>	<i>5% Trimmed M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
<b>Verbal Theory of Mind</b>	400	12.06	12.70	5.53	-.43	-.79
<b>Visual Theory of Mind</b>	400	23.90	24.07	8.26	-.431	-.66
<b>Self-Reported Empathic Understanding</b>	400	27.33	27.43	7.65	-.039	-.103
<b>Performance-Based Empathic Understanding</b>	400	122.26	122.39	23.03	-.178	.255
<b>Moral Reasoning</b>	400	299.95	301.06	39.75	-.223	-.316

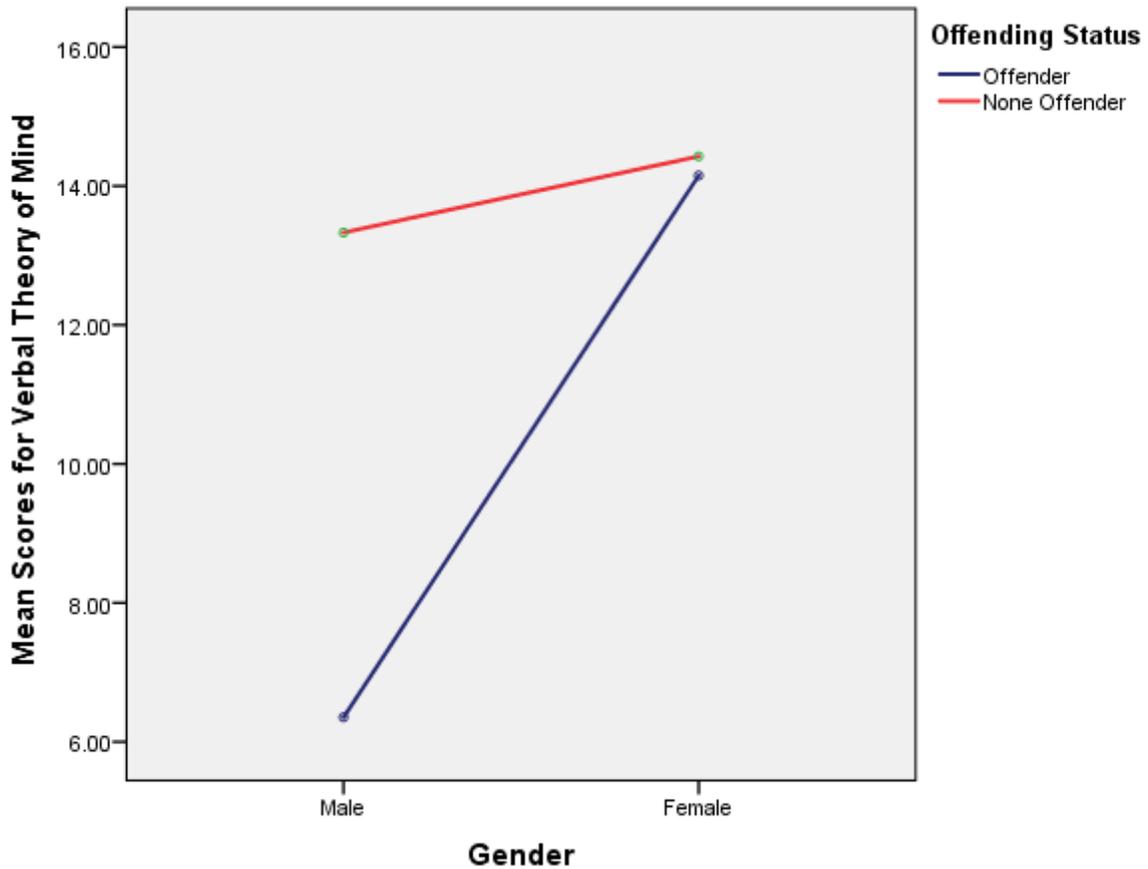
The variances in the data are more likely to reflect the underlying nature of the constructs being measured, the different ages of the participants, and that abilities in those constructs may change over time. Therefore, following an assessment of the descriptive statistics and assumption test results it was concluded that the data were sufficiently 'normal' to reject the option of transformation. However, as Levene's Test of Equality of Error Variances indicated that the assumption of equality of variance had been violated for each of the five measures,  $p > .05$ , and after following Tabachnick and Fidell's recommendations (2013), a more stringent  $p$  value was adopted,  $p < .025$ .

A series of two-way, between groups ANCOVA (controlling for age and IQ), was conducted to explore the impact of gender and status on the five dependant variables: (i) verbal Theory of Mind, (ii) visual Theory of Mind, (iii) self-reported Empathic Understanding, (iv) performance-based Empathic Understanding, and (v) Moral Reasoning. The independent variables were: (i) gender (male and female) offenders and (ii) status (offenders and non-offenders). IQ was controlled for as noted in chapter three.

### **5.5.1: Verbal Theory of Mind**

Hypothesis 5.1a was supported as there was a statistically significant main effect for gender,  $F_{(5, 394)} = 106.075$ ,  $p = .000$ , with the female group scoring higher than the male group on the measure for verbal Theory of Mind. However the effect size was small (partial eta squared = .212). Similarly, hypothesis 5.1b was supported as there was a statistically significant main effect for status,  $F_{(5, 394)} = 69.921$ ,  $p = .000$ , with the non-offender group scoring higher than the offender group on the measure for verbal Theory of Mind, however the effect size was small (partial eta squared = .151). Hypothesis 5.3c was also supported as there was a statistically significant interaction effect between gender and

status,  $F(5, 394) = 61.236, p = .000$ , suggesting that the effect of gender on verbal Theory of Mind depends on the value of status (see Figure 5.1).



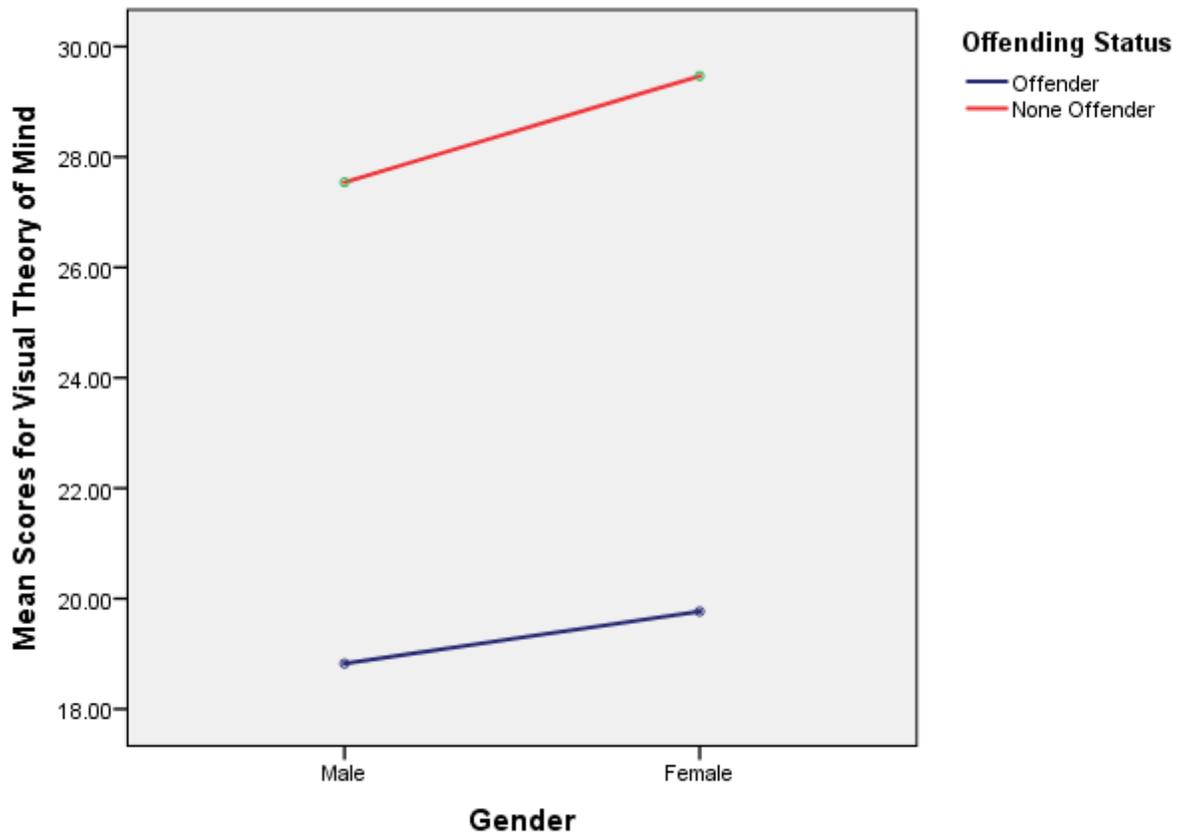
***Figure 5.1: Mean Scores for Verbal Theory of Mind***

Post hoc analyses were conducted given the statistically significant results of the ANOVA F test. Specifically, Tukey HSD tests were conducted on all possible pairwise contrasts. The following pairs of groups were found to be significantly different ( $p < .05$ ): male offenders ( $M = 13.2, SD = 4.16$ ) and male non-offenders ( $M = 13.2, SD = 4.05$ ), male offenders and female offenders ( $M = 14.34, SD = 4.96$ ), and male offenders and female

non-offenders ( $M = 14.42, SD = 4.37$ ). In other words, male offenders scored significantly less on the measure for verbal Theory of Mind than the male non-offenders, the female offenders and the female non-offenders. The male non-offenders did not differ significantly from the female offenders or the female non-offenders and the female offenders did not differ significantly from the female non-offenders.

### **5.5.2: Visual Theory of Mind**

Hypothesis 5.1d was not supported as there was no statistically significant main effect for gender,  $F_{(5, 394)} = 4.578, p = .033$ ; the effect size was small (partial eta squared = .011). In contrast, hypothesis 5.1e was supported as there was a statistically significant main effect for status,  $F_{(5, 394)} = 69.921, p < .001$ , with the non-offender group scoring higher than the offender group on the measure for visual Theory of Mind. The effect size was medium (partial eta squared = .322). Hypothesis 5.1f was not supported as the interaction between gender and status was not statistically significant  $F_{(5, 394)} = .547, p = .46$  (see Figure 5.2).



*Figure 5.2: Mean Scores for Visual Theory of Mind*

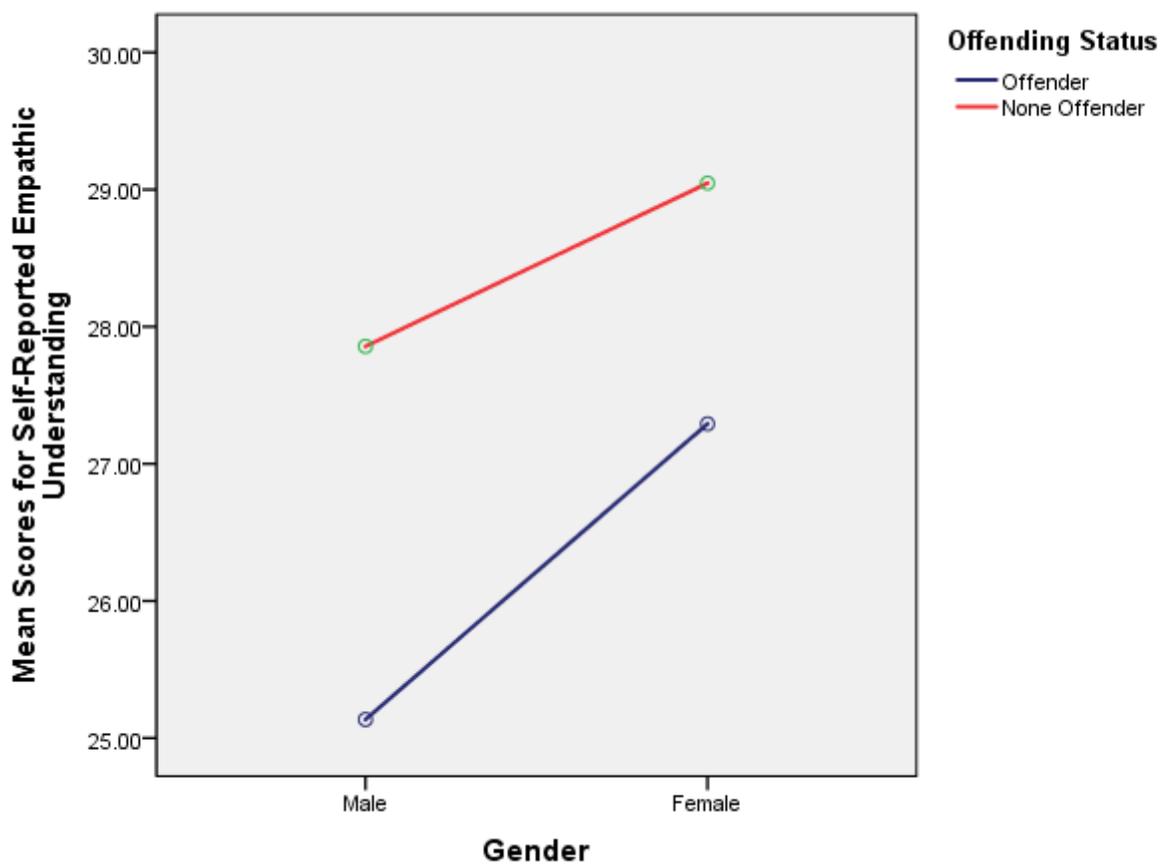
### 5.5.3: Verbal and Visual Theory of Mind.

The relationship between verbal Theory of Mind and visual Theory of Mind was investigated using Pearson product-moment correlation coefficient. Hypothesis 5.1g was supported as there was a moderate positive association between the two variables,  $r_{(398)} = .522, p = .000$ , with high scores in verbal Theory of Mind associated with high scores in visual Theory of Mind.

### 5.5.4: Self-Report Empathic Understanding.

Hypothesis 5.2a was not supported as there was no statistically significant main effect for gender,  $F_{(5, 394)} = 4.895, p = .28$ ; the effect size was small (partial eta squared =

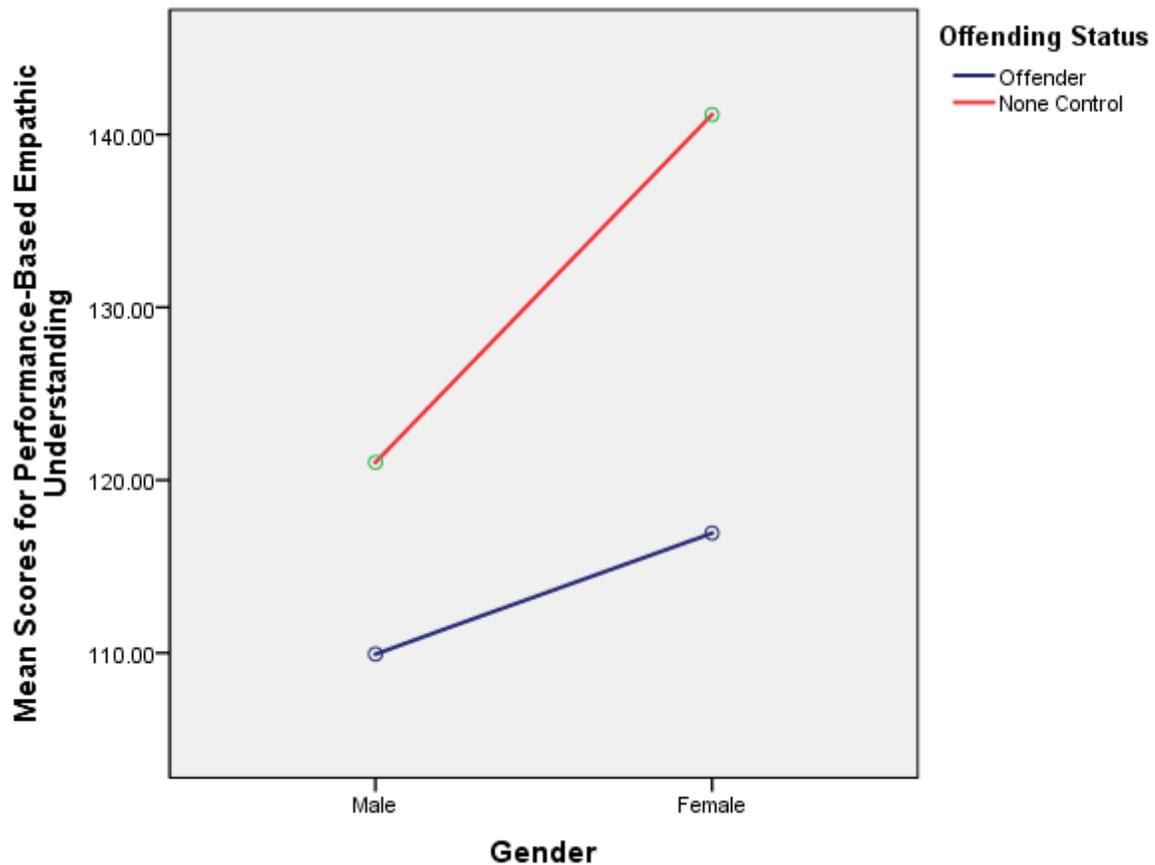
.012). However, hypothesis 5.2b was supported as there was a statistically significant main effect for status,  $F_{(5, 394)} = 8.679, p = .003$ , with the non-offender group scoring higher than the offender group on the measure for self-reported Empathic Understanding. However, the effect size was small (partial eta squared = .22). Hypothesis 5.2c was not supported as the interaction effect between gender and status was not statistically significant,  $F_{(5, 394)} = .415, p = .52$  (see Figure 5.3).



***Figure 5.3: Mean Scores for Self-Reported Empathic Understanding***

### **5.5.5: Performance-Based Empathic Understanding.**

Hypothesis 5.2d was supported as there was a statistically significant main effect for gender,  $F_{(5, 394)} = 47.783, p < .001$ , with the female group scoring higher than the offender group on the measure for performance-based Empathic Understanding. However, the effect size was small (partial eta squared = .108). Hypothesis 5.2e was also supported as there was a statistically significant main effect for status,  $F_{(5, 394)} = 80.183, p < .001$ , with the non-offender group scoring higher than the offender group on the measure for performance-based Empathic Understanding. However, the effect size was small (partial eta squared = .169). In addition, hypothesis 5.2f was supported as the interaction effect between gender and status was statistically significant,  $F_{(5, 394)} = 11.367, p = .001$ , suggesting that the effect of gender on performance-based Empathic Understanding depends on the value of status (see Figure 5.4).



***Figure 5.4: Mean Scores for Performances-Based Empathic Understanding***

Post hoc analyses were conducted given the statistically significant results identified in the ANOVA F test. Specifically, Tukey HSD tests were conducted on all possible pairwise contrasts. The following pairs of groups were found to be significantly different ( $p < .05$ ): male offenders ( $M = 109.69, SD = 24.89$ ) and male non-offenders ( $M = 120.55, SD = 19.78$ ), male offenders and female offenders ( $M = 117.66, SD = 17.44$ ), and male offenders and female non-offenders ( $M = 141.15, SD = 16.68$ ). In other words, male offenders scored significantly less on the measure for performance-based Empathic Understanding than the male non-offenders, the female offenders and the female non-

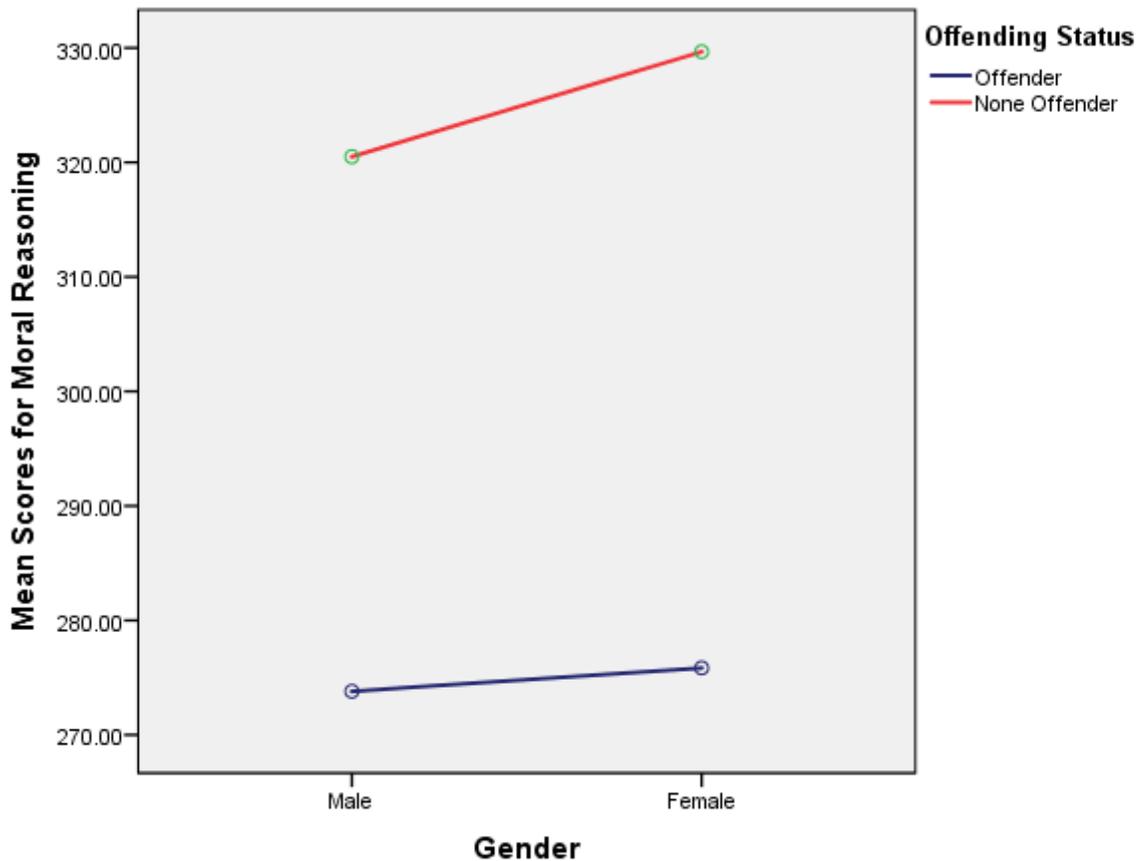
offenders. Similarly the female non-offenders differed significantly from the male non-offenders, with the male non-offenders scoring significantly less than the female non-offender and the female offenders  $M = 117.66, SD = 17.45$ ) differed significantly from the female non-offenders, with the female offenders scoring significantly less than the female non-offenders. The male non-offenders did not differ significantly from the female offenders, with the male non-offenders scoring significantly higher on the measure for performance-based Empathic Understanding than the male non-offenders. Similarly did not differ significantly from the female offenders and the female offenders did not differ significantly from the female non-offenders.

#### **5.5.6: Self-Report and Performance-Based Empathic Understanding.**

The relationship between Empathic Understanding – Self-Report and Empathic Understanding- Performance –Based Verbal was investigated using Pearson product-moment correlation coefficient. Hypothesis 5.2g was not supported as the results showed no association between the two variables,  $r_{(398)} = .009, p = .915$ .

#### **5.5.7: Moral Reasoning.**

Hypothesis 5.3a was not supported as the main effect for gender did not reach statistical significance,  $F_{(5, 394)} = 3.299, p = .07$ . However, hypothesis 5.3b was supported as there was a statistically significant main effect for status,  $F_{(5, 394)} = 262.853, p < .001$ , with the non-offender group scoring higher than the offender group on the measure for Moral Reasoning. The effect size was medium (partial eta squared = .400). Hypothesis 5.3c was not supported as the interaction effect between gender and status was not statistically significant,  $F_{(5, 394)} = 1.352, p = .246$  (see figure 5.5).



*Figure 5.5: Means Cores for Moral Reasoning*

## 5.6: Discussion.

The current study had two aims: first to investigate differences in abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning in relation to gender across a representative age group, and second to investigate differences in abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning between offenders and non-offenders. The findings will now be discussed.

### **5.6.1: Verbal Theory of Mind.**

There was a main effect of gender (hypothesis 5.1a), and also of status (hypothesis 5.1b), for verbal Theory of Mind. With regard to gender, the male group scored lower on the measure for verbal Theory of Mind than the female group, and with regard to status, the offender group scored lower on the measure for verbal Theory of Mind than the non-offender group. With regard to hypothesis 5.1c, the significant interaction indicated that the effect of gender on verbal Theory of Mind was dependant on the value of status.

By using a 'Faux Pas' task that simultaneously measured both cognitive and affective Theory of Mind, study 2 added to the literature by providing empirical support for a difference according to gender, across a representative adult cohort, in a single study. Specifically, study 2 found differences in abilities in verbal Theory of Mind according to gender between men and women; with the men scoring lower than the women. The disparity between male and female scores in verbal Theory of Mind, with the males scoring lower than the females, might be explained by looking at variations in the amount of supportive and emotional talk that parents and older siblings enter into with younger children; as research suggests such communications appear to favour girls over boys (Brown & Dunn, 1996). According to Leaper, Anderson, and Sanders (1998) this difference in turn may be all that is needed to give girls a boost with regard to their developing Theory of Mind. Similarly, Hughes (1998) proposed that parents may train female offspring to think more carefully about social interactions, than their male counterparts, by making the thoughts, beliefs, and feelings of others the focus of discussions.

In assessing verbal Theory of Mind according to status, the present study differed from most past research in that it was able to detect a difference according to status; with

the offenders scoring lower on the measure than the non-offenders. One explanation for this difference may rest in the traditional methods used to assess Theory of Mind. For example, Richell et al.'s (2003) research used a measure that considered only emotional recognition, rather than emotional recognition *and* understanding; thus assessing only cognitive Theory of Mind (Shamay-Tsoory et al., 2005). As Blair and Coles (2000) stated, both cognitive and affective Theory of Mind are needed for the recognition and understanding of another person's cues. Therefore, as noted in subsection 5.1.2 of this chapter, the use of a measure that assesses Theory of Mind from only a cognitive perspective may explain why offenders typically 'pass' Theory of Mind tasks but are still poor at responding to another's mental state. Further, the main aim of Richell et al. (2003) was to compare abilities in Theory of Mind between two offender groups; a psychopathic group and a non-psychopathic group, and not to identify differences in ability in Theory of Mind between offenders and non-offenders. This thesis would suggest that in Richell's study, both offender groups (psychopath and non-psychopath) may have had similar, possibly reduced, abilities in Theory of Mind; thus demonstrating no significant difference between their scores.

To conclude, in addressing the limitations of previous studies by assessing a larger cohort of male and female adult offenders and male and male adult non-offenders, using a 'Faux Pas' task that simultaneously measured both cognitive and affective Theory of Mind, study 2 was able to identify differences in ability in verbal Theory of Mind according to status. This adds to the literature by providing empirical support for a difference between offenders and non-offenders, across a representative adult age group, in verbal Theory of Mind, in a single study.

### **5.6.2: Visual Theory of Mind.**

The current study did not identify a significant difference in visual Theory of Mind according to gender (hypothesis 5.1d). This means that no differences in scores, between the male group and the female group, were identified. Study 2 did however find differences in abilities in visual Theory of Mind according to status (hypothesis 5.1e), with the offender group scoring lower than the non-offender group on the measure for visual Theory of Mind. With regard to hypothesis 5.1f the interaction was not significant indicating that the effect of gender on visual Theory of Mind was not dependant on the value of status. The results will now be discussed.

With regard to gender, one explanation for this may lie within the task itself. Bolger, Hornickel, Cone, Burman and Booth (2007) noted that boys appear to outperform girls in tasks where they are presented with a visual stimulus; whilst girls outperform boys in tasks where there is a verbal stimulus. Using Functional Magnetic Resonance Imaging these researchers measured the brain activity in 31 boys and 31 girls (aged 9- to 15- years) as they performed spelling and writing tasks. The tasks were delivered in two sensory modalities: verbal and visual. Bolger et al. found that the boys showed significantly greater activation in the language areas of the brain, when presented with a visual stimulus, when compared to the girls; however, the reverse was also true in that the girls outperformed the boys when the stimulus was delivered by means of the written word. As the 'Reading the Mind in the Eyes' test (Baron-Cohen et al., 2001), used in study 2 of this thesis, involved looking at photographs of eyes, whilst at the same time matching the observed expressions to one of the four written descriptors, it is possible that the two types of stimuli (verbal and visual) moderated for each other. Future research may therefore like to identifying a task

that taps into belief attribution in a purely visual manner bypassing language, and therefore reducing other executive demands (Roux & Uhlhaas, 2014).

With regard to the identified differences according to status, one explanation for this may be that a delay in cognitive development, possibly caused by a background where abuse, conflict, neglect, and negative attitudes predominate (Towl & Crighton, 2010), may have an impact on the shaping of an individual's Theory of Mind (Happé & Frith, 1995). Keenan and Ward (2000) noted that individual experiences within the family, and/or larger social environments, are witnessed from both a verbal and a visual standpoint. Whereas, Schurz et al. (2015), stated that visual perspective taking is a fundamental feature of the human social brain, and aids a more accurate representation. Therefore, it could be concluded that any delayed, or reduced, development in relation to Theory of Mind might feasibly affect both verbal and visual perspective taking. To the current author's knowledge study 2 is the first to consider and demonstrate differences according to status in visual Theory of Mind; thus adding to the literature.

### **5.6.3: Verbal and Visual Theory of Mind.**

The hypothesis, that there would be an association between verbal Theory of Mind and visual Theory of Mind (hypothesis 5.1g), was also supported. To the current authors knowledge this is the first study to evaluate both visual and verbal Theory of Mind, from a cognitive *and* affective perspective, according to gender and status, in a single study. By demonstrating a difference in ability between the offending and non-offending participants, the current study offers an insight into the overall perspective taking abilities of offenders. Further, the present study shows the importance of assessing Theory of Mind from a visual, as well as a verbal, point of view, before concluding a person's individual ability.

#### **5.6.4: Self-Report Empathic Understanding.**

A main effect according to gender (hypothesis 5.2a) was not found. This means that there was not a significant difference in the scores for self-reported Empathic Understanding between the male and female participants; however, a main effect relating to status (hypothesis 5.2b) was identified, with the offender group scoring lower than the non-offender groups on measures for self-reported Empathic Understanding. There was no interaction between gender and status (hypothesis 5.2c) indicating that the effect of gender on self-reported Empathic Understanding was not dependant on the value of status

The current study found no gender difference in scores with regard to self-reported Empathic Understanding. One explanation for this may be the validity of self-reported Empathic Understanding measures themselves. Makino (2010) suggested that studies using self-report measures, where gender differences in Empathic Understanding were found, may not be representative of how a participant actually feels, but rather reflect his or her beliefs relating to how society expects them to feel. An example of this was found by Klein and Hodges (2002); these researchers noted that the women in their study scored more highly than the men in measures for Empathic Understanding when the reasons for the research were withheld. However, when the participants were told the true nature of the study, no gender differences were identified. It might then be that male and female differences in Empathic Understanding, as identified by self-report measures, are not a true reflection of ability, but rather of societal biases. In other words, when assessing empathy, women may feel they *must* respond more empathically and men may feel they *must* respond less empathically, in order to conform to gender roles (Michalska, Zeffiro, & Decety, 2016), thus masking gender differences. Therefore, in finding no differences in

gender related performance-based Empathic Understanding; the present study proposes a true reflection of male and female empathic abilities.

With regard to status, the current findings support the earlier work of Spenser et al. (2015) who reported that a lack of empathy is characteristic of an offending personality. Whilst a number of theories have been offered to explain this association; this thesis focused on two. Firstly, the ability to detect differences in Empathic Understanding may depend on the individual characteristics of a particular cohort. For example, as mentioned in chapter four, age may be an influencing factor. In particular, Hoffman (1984) noted that cognitive Empathic Understanding becomes more sophisticated with age, whereas affective empathy is said to be more stable across time (Eisenberg et al., 2005). Secondly, as mentioned in chapter three, IQ may be influential in terms of an association between Empathic Understanding and offending behaviours. Jolliffe and Farrington (2006), for example, in a meta-analysis of 21 studies found that the relationship between Empathic Understanding and offending behaviours disappeared after controlling for IQ. Thus, by controlling for both age and IQ, this study proposes a true difference in Empathic Understanding between offenders and non-offenders.

#### **5.6.5: Performance-Based Empathic Understanding.**

The current study found a significant gender difference (hypothesis 5.2d) in the scores for the performance-based Empathic Understanding measure, with the female group scoring higher than the male group. Study 2 also found a significant difference in the scores according to status (hypothesis 5.2e) in performance-based Empathic Understanding; with the offender group scoring lower than the non-offender group. With regard to hypothesis 5.2f, the significant interaction indicated that the effect of gender on performance-based Empathic Understanding was dependant on the value of status.

One possible explanation for the identified differences according to gender may be attributed to levels of the hormone testosterone. Whilst, testosterone is responsible for the development of male gender characteristics, it has also been linked to reduced empathy in both genders (Batrinos, 2012). For example, Harris, Rushton, Hampson, and Jackson (1996), with a sample of 155 male and 151 female participants, found that a lower level of testosterone acted as a predictor of Empathic Understanding in men and women. However, although testosterone is found in both men and women, men have approximately 10 times as much of the hormone as their female counterparts. So, given this higher baseline, it might be concluded that men will be less empathic than women (Baron-Cohen, 2002). In light of this, Hermans, Ramsey, and van Honk (2008) tested the association between testosterone levels and emotional mimicry. Emotional mimicry is the ability to mimic the thoughts, beliefs, and feelings on another person. The results of the study revealed that a single dose of testosterone was enough to significantly decreased emotional mimicry in the female participant and led Hermans et al. to conclude that the naturally higher baseline of testosterone in males was explanation for their reduced ability to mimic emotions when compared to females.

However, whilst previous research has indicated that women are more empathic than men, this has been largely based on self-report measures (Blair, 2005). As indicated above self-report measures can be influenced by demand characteristics (Makino, 2010). The present study adds to literature by demonstrating differences in empathic ability between male and female participants using a performance-based measure; thus showing the importance of assessing this perspective.

With regard to status, study 2 also found that the offender group scoring lower than the non-offender group on the measure for a performance-based Empathic-Understanding.

However, the difference in the scores between the offender group and the non-offender group were much greater in the performance-based measure than in the self-report measure. This may indicate that the participants in study 2 displayed some demand characteristics; in other words his or her answers may have reflected societal pressures or expectations, rather than true thoughts and beliefs (Rueckert et al., 2011). Therefore, by suggesting that a performance-based measure may indicate a truer realisation of male and female abilities in Empathic Understanding, study 2 adds to the literature.

#### **5.6.6: Self-Report and Performance-Based Empathic Understanding.**

Hypothesis 5.1g, that there would be an association between self-reported Empathic Understanding and performance-based Empathic Understanding, was not supported. Whilst not as predicted, the findings do reflect the work of Smith, Mattick, Jamadar, and Iredale (2014). In their study, 105 offenders (60 diagnosed with schizophrenia and 45 healthy controls) were compared using a performance-based Empathic Understanding measure with three key components; empathic responding, emotional empathy, and cognitive empathy, and a self-reported Empathic Understanding measure. Smith et al. found that the offenders demonstrated lower scores than the controls across the three performance-based Empathic Understanding measures, but that these measures showed minimal relation to the self-reported Empathic Understanding results. By emphasising the importance of assessing Empathic Understanding in offenders, using a performance-based measure, study 2 adds to the literature.

#### **5.6.7: Moral Reasoning.**

No main effect according to gender (hypothesis 5.3a) were identified in the present study; however a main effect according to status (hypothesis 5.3b) was found; with the

offender group scoring lower than the non-offender group on measures for Moral Reasoning. There was no interaction between gender and status (hypothesis 5.3c).

The present study addresses the existing controversy with regard to gender moderated Moral Reasoning. For example, Gilligan (1982) asserted that women tend to resolve moral dilemmas using a care approach, whilst men tend to use a justice approach. However, Clopton and Sorell (1993) suggested that these differences were due to the different types of dilemmas women and men encounter in their daily lives, rather than differences in the way in which he or she might approach a problem. To address this issue, Clopton and Sorell used parenting problems to determine whether a restriction in the type of dilemma would reduce perceived gender differences in Moral Reasoning and found that men and women did not differ in their use of care or justice reasoning when the dilemma type was restricted; thus supporting the conclusion that male and female differences in Moral Reasoning result from differences in circumstances rather than stable gender characteristics.

Similarly, Watt, Frausin, Dixon, and Nimmo (2000) found no differences in Moral Reasoning between the adult male and adult female offenders. They stated that both the male and the female groups in their study displayed similar levels of Moral Reasoning, in respect of two Kohlbergian dilemmas, with the majority of both groups attaining Kohlberg's Moral Stage 3. According to Colby and Kohlberg (1987), at Moral Stage 3 most individuals accept that moral conduct involves perspective taking, having good motives, showing concern for others, and maintaining mutual relationships such as trust, loyalty, respect, and gratitude.

More recently, Friesdorf, Conway, and Gawronski (2015), following a meta-analysis of 40 studies, in which the 6100 male and female participants were asked a number of

questions posing various moral dilemmas (including decisions about murder, torture, lying, abortion, and animal research) noted that perceived differences in gender related morality were due to women having a stronger emotional aversion to harmful actions, rather than an actual difference in cognitive reasoning abilities, when compared to men. Further, Friesdorf et al. explained that these studies, in assuming that moral behaviour was dependent on affective processes, often ignored the consequences of actions and so when emotions were controlled for, no evidence for gender differences were found.

Whilst, study 2 found no difference in Moral Reasoning according to gender, differences in status related Moral Reasoning was found; with the offenders achieving lower in the measure for Moral Reasoning when compared to the non-offenders. As noted in chapter three, the measure used in the present study to assess abilities in Moral Reasoning was based on Kohlberg's (1969) [four] Stages of Moral Judgement. In comparing the present findings against Kohlberg's theory it became apparent that the offenders reached, on average, Stage 2, whilst the non-offenders were found to reason at Moral Stage 3. Although these findings were also reflective of those identified by Palmer and Begum (2006), these researchers considered only adolescent offenders. In contrast, the participants in study 2 ranged from 18- to 55- year of age; thus addressing a more representative age group in terms of the prison estate, and adding to the literature.

## **5.8: Conclusion.**

Differences in perspective taking and decision making according to gender and status have been of interest to researchers for a number of years; particularly in the context of reducing offending levels. For example, Ross et al. (1988) suggested that prosocial training is an effective method in the reduction re-offending. In their Canadian study spanning 18

month, and following 62 offenders, they found that that the effective implementation of interventions resulted in an overall lower rate of recidivism (18.1%) when compared to those who received no training at all (69.5%). More recently, Vessels and Huitt (2005) proposed that any deficiencies in prosociality may be addressed by ‘programmes’ which focus on skills related to perspective taking, decision making, and prosociality in the form of Theory of Mind, Empathic Understanding, and Moral Reasoning.

To this author’s knowledge the study 2 was first to examine for differences, in Theory of Mind, Empathic Understanding, and Moral Reasoning, in a cohort of both offenders and non-offenders, across a representative age group, in a single study. As such, study 2 was the first to provide empirical evidence suggesting that offenders may differ in their abilities regarding Theory of Mind, Empathic Understanding, and Moral Reasoning when compared to a matched group of non-offenders, and that males may differ in their abilities regarding verbal Theory of Mind and performance-based Empathic Understanding when compared to the females; thus adding to the literature.

## **Chapter Six**

### **Study 3**

# **Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital**

Chapter four noted that it is ‘human nature’ to form relationships with others (Petersen et al., 2009). One explanation for this can be found in evolutionary psychology, where information processing systems were used to deal with the challenges associated with proliferation of the species (Cosmides & Tooby, 2000). However, other explanations take a more socio-environmental focus (Frith & Frith, 2009). Rose and Clear (1998) proposed the mere fact of survival may have necessitated a need for trust and reciprocity within a society. Indeed, examples of positive human interaction can be found in early recorded history; for instance helpfulness and cooperation to serve the good of the household was evidenced in the Hopi culture as early as A.D. 500 (Knickerbocker, 2015). As a result it is concluded that humans are able to both construct others as being ‘prosocial’, whilst acknowledging the effects of positive interaction with others; commonly referred to as Social Capital (Frith & Frith, 2006).

Social Capital is said to emerge from the resource-rich, durable, and reciprocal networks and connections that people have with each other (Chen et al., 2015). It is usually built with an individual, group, or community that is valued, or with whom an ongoing relationship is desirable (Hawkins & Maurer, 2010). However, Social Capital can be highly contextual and pertinent to certain situations or interactions (Gallagher, Pettigrew, &

Muldoon, 2015). Therefore, for a person to successfully interact with others, Frith and Frith (2006) proposed, they must be equipped of a number of cognitive skills, as well as being able to attribute those same skills to others. As noted in chapter 2, those skills are: (i) Theory of Mind, (ii) Empathic Understanding, and, (iii) Moral Reasoning. This chapter will consider the relationship between Social Capital and Theory of Mind, Empathic Understanding, and Moral Reasoning. However, before doing so there are a number of socio-environmental effects, that whilst not the focus of this chapter, must be addressed.

### **6.1: Socio-Environmental Influences of Social Capital.**

Social Capital is said to underpin a society's culture, as well as promoting individual well-being (Allan, Catts, & Stelfox, 2012). Originally used to explain the need for coordinated actions at a macro level, in terms of state governance and economic development, Social Capital now includes any beneficial connections a person has at a micro or individual level (Ferragina, 2013). According to Harpham (2008) this network of connections takes both structural and cognitive forms. Structural Social Capital defines the ties that exist between individuals, groups, and communities, whereas cognitive Social Capital describes the mutually agreed norms and values intrinsic to those relationships.

Further, it has been proposed that the construct of Social Capital consists of three distinct sub-types: bonding Social Capital, bridging Social Capital, and linking Social Capital (Sabatini, 2009). Archuleta and Teasley (2013) described each sub-type as having its own distinct characteristics. For example: (i) bonding Social Capital is represented by family ties; (ii) bridging Social Capital refers to the connection between friends and acquaintances, and (iii) linking Social Capital is associated with the wider community. As each person's Social Capital is shaped by a unique mixture of these sub-types, which are

then used to govern and influence ingroup and outgroup outcomes, the measure of Social Capital used in study 3 is said to tap into each (Baron Cohen et al., 2003).

However, despite there being a large number of ‘potential’ social networks available to a person, several influencing factors are said to affect his or her ability to acquire Social Capital. Firstly, the family is viewed as the ‘incubator’ of Social Capital, assisting in its development both intentionally and vicariously. Indeed, the relationship a person has with his or her primary caregiver(s) can have both positive and negative effects (MacPherson et al., 2013). Lee (2013), for example, noted an association between attachment style and Social Capital, suggesting that people with secure attachment styles were more likely to seek out social relationships, whilst those with fearful styles of attachment were more likely to avoid social interaction; both having a consequential affect relating to the building Social Capital.

Secondly, Field (2003) suggested that the relationships a person develops within his or her school environment can promote or hinder the development of Social Capital. Indeed, Ferguson (2006, p. 2), in a synthesis of the available literature, noted that Social Capital “can facilitate positive outcomes with respect to ...well-being, including reducing adolescent pregnancy, delinquency, academic failure, and child maltreatment” in young people. Certainly, it has been argued that an increase in teenage problems such as depression, suicide, and violent behaviour, may be related to a decrease in social connectedness within the school community (Zeldin, 2004). Put simply, Putnam (2000, p. 296) suggested that “Social Capital keeps bad things from happening to good kids”.

Lastly, a person’s exposure, and access, to structured, group-based activities are said to be important in facilitating the further development of Social Capital (Jarrett, Sullivan, & Watkins, 2005). For example, Jarret et al. (p. 49 - 50) suggested that

community based activities can provide individuals with “information, assistance, support, and encouragement”; thus helping them to achieve their personal goals in life. However, as noted in the introduction to this chapter, it is assumed that to successfully interact with others and acquire Social Capital a person must be equipped of a number of prosocial skills, as well as being able to attribute those same skills to others (Frith & Frith, 2006). Those skills will now be discussed.

## **6.2: Social Capital and Prosociality.**

### **6.2.1: Social Capital and Theory of Mind.**

As noted in chapter five, Theory of Mind relates to how individuals ascribe mental states; thus allowing a person to understand and predict the behaviour of others. McCabe and Smith (2000) suggested an association between Social Capital and Theory of Mind, which they termed ‘goodwill-accounting’. They suggest that ‘goodwill-accounting’ is the mechanism by which people are able to assess and commit to memory the extent to which another person can be trusted or relied upon. This information is then used to decide whether the initiation or further development of a relationship is worthwhile. Coricelli, McCabe, and Smith (2000) suggested to do this a person must be able to ‘read the minds’ of others.

McCabe et al. (2001) gave support to the theory of ‘good-will-accounting’. In their study, they exposed participants to a simple two-player game of reciprocal trust, in which he or she was required to play against a human and/or a computer. During the game McCabe et al. noted the behaviour of each participant, whilst at the same time conducting a Functional Magnetic Resonance Imaging scan. Based on the participant’s behaviour, he or she was then placed into one of two groups; group one consisted of participants who had

demonstrated cooperative behaviours whilst playing against a human opponent but not against the computer and group two consisted of participants who had shown no cooperative behaviour at all. An analysis of the brain scans revealed that, in group one, the medial prefrontal cortex, an area of the brain implicated in Theory of Mind, was activated during episodes of ‘cooperation’ with a human opponent, but no similar activations occurred when the same participant played against a computer. In contrast, participants in group two groups showed no significant difference in brain activations during play against a human or a computer.

Further, as noted in chapter five, Theory of Mind is thought to require the recognition and understanding of both verbal and visual cues (Blair & Coles, 2000). From reviewing the literature there is an apparent void in the current understanding relating to a specific link between Social Capital and (i) verbal Theory of Mind and (ii) visual Theory of Mind, in either an offending or non-offending population. Study 3a will address this gap and the following hypotheses were made:

- Hypothesis 6.1a: There will be an association between Social Capital and verbal Theory of Mind (in a cohort of offenders and non-offenders).
- Hypothesis 6.1b: There will be an association between Social Capital and visual Theory of Mind (in a cohort of offenders and non-offenders).

### **6.2.2: Social Capital and Empathic Understanding.**

As detailed in chapter five, one characteristic that allows an individual to tune into the needs and feelings of another is Empathic Understanding (Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004). Indeed, Damasio (2004) noted Empathic Understanding to be a fundamental motivating force required to build human relationships; in other words

Social Capital. Petersen et al. (2009) concluded that the need to build Social Capital is not always motivated by conscious assessments of self-interest, but rather an unselfish need to build a trusting and reciprocal relationships with others. To provide empirical evidence of this link Venkatanathan et al. (2013) recruited 93 participants ( $M$  age = 28.2 years;  $SD$  = 5.1 years). Using social network structuring and regression analysis, they found a strong, positive relationship between Empathic Understanding and both bonding Social Capital and bridging Social Capital, as evidenced by the number of online ‘friends’ participants claimed to have. As a consequence, it was suggested that the ability to empathise enables an individual to interact effectively with others, and is therefore fundamental to the successful development of Social Capital.

However, as noted in study 2 (chapter five) past research has predominately used self-report measures to establish levels of Empathic Understanding. Specifically, Makino (2010) noted that self-report measures may not be an indication of a participant’s true belief but rather reflect their knowledge of how other people might expect them to think. Therefore, study 3a used both a self-reported Empathic Understanding and a performance-based Empathic Understanding measure to assess the relationship between Social Capital and Empathic Understanding. Further, although the measure for Social Capital in study 3a and b was a self-report assessment, it included questions beyond a simple ‘how many friends do you have?’ approach; thus tapping into both opinion and evidence (for a fuller example please see chapter three). To address the relationship between Social Capital and Empathic Understanding, Study 3a made the following hypotheses:

- Hypothesis 6.1c: There will be an association between Social Capital and self-reported Empathic Understanding (in a cohort of offenders and non-offenders).

- Hypothesis 6.1d: There will be an association between Social Capital and performance-based Empathic Understanding (in a cohort of offenders and non-offenders).

### **6.2.3: Social Capital and Moral Reasoning.**

According to Adler and Kwon (2000, p. 17) “Social Capital is often understood as the ‘goodwill’ that is engendered by the fabric of social relations and that can be mobilised to facilitate action”. Social Capital is generally portrayed as being a positive construct (Leana & Van Buren, 1999) at both a societal (Putnam, 2000), and a personal (Svendsen & Sorensen, 2006) level. As a construct, Social Capital is said to deliver positive economic, political, and personal outcomes, based on the existence of collective resources such as local solidarity, common norms, trusting communities, better mental health, and education; which Putman (2000) stated were vital to people in terms of their everyday lives and ongoing well-being.

However, a number of authors have acknowledged a downside to Social Capital (Edelman, Bresnen, Newell, Scarborough, & Swan, 2004). Portes (1998, p. 15) in particular summarises the problematic aspects of Social Capital as being “the exclusion of others, excessive claims on members of the group, restrictions on individual freedoms, group closure, and the downward levelling of norms based on group solidarity”. Indeed, from a practical perspective, Social Capital may be seen to exclude ‘outsiders’ from the benefits developed and accrued by ‘insiders’ (Adler & Kwon, 2002). This may in turn hinder entrepreneurship and impose non-reciprocal obligations that lead to the favouring of subgroups over the goals of the collective (Willem & Scarbrough, 2006). Other issues that may arise are related to a group’s norms and beliefs. Lin (2001), for example, noted that a

group with strong internal ties, but only few external ties, may become insular, xenophobic, and status driven.

Based on these theoretical examples the potential moral deficiencies of Social Capital are suggested (Ayios, Jeurissen & Spence, 2010). However, in order to determine the existence of a relationship between Social Capital and Moral Reasoning, further empirical study is needed. Study 3a in this chapter will address this and the following hypothesis was made:

- Hypothesis 6.1e: There will be an association between Social Capital and Moral Reasoning (in a cohort of offenders and non-offenders).

### **6.3: Social Capital and Offending Behaviour.**

The current literature appears to suggest that the construct of Social Capital is primarily conceptualised in terms of relationships at an individual level (Nagin & Paternoster, 1994), which are then utilised at a societal level (Rose & Clear, 1998; Sampson, Raudenbush, & Earls, 1997). The personal investment and collective efficacy that stems from these bonds, at both the personal and societal level, are said to be characterised by a sense of knowledge, obligation, expectation, and trustworthiness (Nagin & Paternoster, 1994). Further, it is claimed that the sanctions these bonds engender, by endorsing societal norms, can create a form of informal social control (Sampson & Laub, 2005).

As a consequence Social Capital theories and frameworks have been used to explain offending behaviours (Hirschi, 1969). Hirschi stated that all humans are equally predisposed to crime but suggested that forming attachments to others may help to inhibit potential offending behaviours. Certainly, it has been suggested that notable life events that

endorse such attachments, for example employment (Kazemian, Farrington, & Le Blanc, 2009) and marriage (Sampson, Laub, & Wimmer, 2006), may modify behavioural trajectories leading to desistance from crime. Indeed, Sampson and Laub (2005) in their Age-Graded Theory of Informal Social Control and Cumulative Disadvantage presented such an argument, stating that by forming attachments a person becomes more accepting of the norms and goals of the society in which they live; which often results in a more crime free life. In contrast, Gottfredson and Hirschi (1990) noted that it may not be the attachments themselves that make a difference to offending behaviours, but rather that such relationships reduce the amount of time and/or opportunities available to commit crimes. Thus, Social Capital is said to help protect individuals and communities from unacceptable behaviours (Piquero, Jennings, & Farrington, 2010). Further, whilst Moffitt (1994) suggested that as a person ages' changes in attachments are inevitable, and that this may have an impact, either positive or negative, in terms of offending behaviours, Sampson and Laub (2005) posited that offending behaviours were most probable when a person's relationships or bonds were absent, weakened, or broken.

However, as noted in subsection 6.2.3 of this chapter, it is apparent that Social Capital may be categorised as prosocial (Allan et al., 2012) or antisocial (Putnam, 2000). The major difference between (pro) Social Capital and (anti) Social Capital is that the former appears to be more reciprocal, whilst the latter uses social bonds as a way of promoting personal gratification or enhancement. Indeed, McCarthy and Hagan (2001) suggested that Social Capital theories relating to antisocial or offending behaviours draw on the assumption that a person's actions are driven by a desire to maximise their own welfare, whilst Heffernan (2015) found that members of a group characterised by a greater sense of societal norms are more likely to be socially alert to one another person's needs.

In other words, it seems that a person may be able to build Social Capital, using an identical process of networking, with individuals who value either prosocial behaviours, or offending behaviours (Putman, 2000). Therefore, it might be expected that in a comparison of an offenders and non-offenders, the offenders would be shown to have less Social Capital than the non-offenders. Whilst theoretical research exists to support this notion, there is paucity in terms of empirical research. Study 3b addressed this gap, and the following hypothesis was made:

- Hypothesis 6.2: There will be a difference in Social Capital according to status.

#### **6.4: Methodology.**

The sample for studies 3a and 3b comprised of 400 participants: male and female offenders (*male* =100, *female* = 100, aged 18- to 55- years) and male and female non-offender (*male* =100, *female* = 100, aged 18- to 55- years). The purpose of this study was twofold: (i) study 3a explored the relationship between Social Capital and Theory of Mind, Empathic Understanding, and Moral Reasoning using Pearson's product-moment correlation coefficient, and (ii) study 3b an independent t-test was conducted to compare the levels of Social Capital according to status.

#### **6.5: Results.**

Descriptive statistics and preliminary assumption testing were performed for each of the five measures in study 3a: (i) verbal Theory of Mind, (ii) visual Theory of Mind, (ii) self-reported Empathic Understanding, (iv) performance-based Empathic Understanding,

(v) and Moral Reasoning, and for the measure of Social Capital used in studies 3a and 3b. Table 6.1 on the following page shows the mean scores for each of the six measures. The standard deviations indicate that all the scores are located fairly close to the relevant mean score.

Skewness and kurtosis values were examined to further explore the distribution of the scores, which are also shown in table 6.1 on the following page. With regard to the skewness of the data, for all six measures, the negative results indicate that most of the scores were clustered towards the higher end, in relation to the maximum scores available in each measure. However, all score are located within the permitted range of -1 to +1 which indicates a relatively normal distribution of the data (Clark-Carter, 2010). With regard to kurtosis of the data, the following was identified: for verbal Theory of Mind, visual Theory of Mind-Visual, and self-reported Empathic Understanding the negative results suggest that the distribution of scores is relatively flat; for performance-based Empathic Understanding the positive results indicate that the scores are clustered towards the centre; and for Moral Reasoning and Social Capital, the negative result indicates a flat distribution of scores. However, with the exception of Empathic Understanding-Performance based, all scores are within the permitted range of -3 to +3, indicating that the data are relatively normally distributed (Clark-Carter, 2010).

**Table 6.1: Descriptive Statistics for verbal and visual Theory of Mind, self-reported and performance-based Empathic Understanding, Moral Reasoning, and Social Capital, across the whole data set.**

	<i>n</i>	<i>M</i> 5% <i>Trimmed</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
<b>Verbal</b>						
<b>Theory of Mind</b>	400	12.06	12.70	5.53	-.43	-.79
<b>Visual</b>						
<b>Theory of Mind</b>	400	23.90	24.07	8.26	-.431	-.66
<b>Self-Reported</b>						
<b>Empathic Understanding</b>	400	27.33	27.43	7.65	-.039	-.103
<b>Performance-Based</b>						
<b>Empathic Understanding</b>	400	122.26	122.39	23.03	-.178	.255
<b>Moral Reasoning</b>	400	299.95	301.06	39.75	-.223	-.316
<b>Social Capital</b>	400	80.95	81.06	19.67	-.203	-.097

### 6.5.1: Study 3a

As noted above, the relationships between Social Capital and: (i) verbal Theory of Mind; (ii) visual Theory of Mind ; (iii) self-reported Empathic Understanding; (iv) performance-based Empathic Understanding, and; (v) Moral Reasoning were investigated using Pearson’s product-moment correlation coefficient. The results are shown in Table 6.2 on the next page. To summarise, hypothesis 6.1a was supported as there was a moderate, positive association between Social Capital and verbal Theory of Mind; however, hypothesis 6.1b was not supported as was there was no association between Social Capital

and visual Theory of Mind. Hypothesis 6.1c was supported as there was a moderate, positive association between Social Capital and self-reported Empathic Understanding. Similarly, hypothesis 6.1d was supported as there was a small, positive association between Social Capital and performance-based Empathic Understanding. However, hypothesis 6.1e and 6.1f were not supported as there was no association between Social Capital and Moral Reasoning.

**Table 6.2: Correlations between verbal and visual Theory of Mind, self-report and performance-based Empathic Understanding, Moral Reasoning, and Social Capital.**

Measure	1	2	3	4	5	6
1. Verbal Theory of Mind	-					
2. Visual Theory of Mind	.157**	-				
3. Self-Reported Empathic Understanding	.298**	.236**	-			
4. Performance-Based Empathic Understanding	.272**	.286**	.086	-		
5. Moral Reasoning	.477**	.209**	.160**	.324**	-	
6. Social Capital	.327**	.091	.273**	.156**	.054	-

\*\*  $p < .001$ ,  $df = 398$

### 6.5.2: Study 3b.

Descriptive statistics and preliminary assumption testing were conducted for study 3b. Table 6.3 on the following page shows the mean scores for Social Capital. The mean scores for the offenders and non-offenders are relatively close and the standard deviation indicates that all the scores are located fairly close to the relevant mean score.

**Table 6.3: Descriptive Statistics for Social Capital According to Status.**

	Offenders			Non-Offenders		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
<b>Social Capital</b>	200	80.50	19.69	200	81.35	19.70

An independent t-test was conducted to compare the Social Capital scores of offenders ( $M = 80.5$ ,  $SD = 19.69$ ) and of non-offenders ( $M = 81.35$ ,  $SD = 19.7$ ). Hypothesis 6.2 was not supported as no significant difference was found in levels of Social Capital between the offending group and the non-offending group,  $t_{(398)} = -.437$ ,  $p = .663$ , two-tailed. This indicates that the offenders in the present study did not report having less Social Capital than the non-offending group.

## **6.6: Discussion.**

The current study had two objectives; (i) firstly to examine the association between Social Capital and verbal and visual Theory of Mind, self-reported and performance-based Empathic Understanding, Moral Reasoning, and (ii) secondly to identify any differences in levels of Social Capital between the offender group and the non-offender group, across a representative adult age range. The findings will now be discussed.

### **6.6.1: Social Capital and Theory of Mind.**

Study 3a found an association between verbal Theory of Mind and visual Theory of Mind (hypothesis 6.1a). Nahapiet and Ghoshal (1998) stated for the development and maintenance of Social Capital, individuals need to repeatedly interact with each other;

suggesting an ability to infer the thoughts, feelings, and intentions of those with whom an interaction is taking place. Cole and Griffiths (2007) concurred, suggesting that for successful reciprocal interactions, a person needs to properly assign suitable cognitive resources. As noted in the introduction to this chapter, an ability that enables this process is said to be Theory of Mind (Minio-Paluello, Avenanti, & Aglioti, 2006). More specifically, Saxe and Baron-Cohen (2006) stated that the ability to make inferences, or ‘read’ the minds of others, depends upon verbal signals. By processing these signals people are able to understand each other’s goals and desires (Saxe, Schulz, & Jiang, 2006) Therefore, the positive association between Social Capital and verbal Theory of Mind may be explained.

However, no such association was found between visual Theory of Mind and Social Capital (hypothesis 6.1b). Although unexpected, Schmidt and Cohn (2001) stated that the written or spoken word is insufficient for successful social exchange. Specifically, these researchers noted that words may sometimes be understood to convey the exact opposite of their literal meaning by adding visual accompaniments such as humour, anger, or sarcasm (Scheff, 1988). Indeed, Hansen (2009) suggested that a mixture of both verbal and visual signals are needed to build Social Capital as they allow for the decoding of figurative speech such as irony and metaphor. More recently, Vlahovic, Roberts, and Dubar (2012) noted that relationships based mainly on the written or spoken word require greater effort, as it is more difficult to substitute some facial expressions with words and symbols.

One possible explanation for the lack of association between Social Capital and visual Theory of Mind in study 3a may be found by examining the modern day phenomena of web-based communication (Park, 2010). Based on the notion that both verbal Theory of Mind and visual Theory of Mind are needed to form Social Capital, it could be hypothesised that individuals who largely communicate via technology, a medium to some

extent lacking in visual stimuli, might possess lower levels of Social Capital. However, Park suggested that through social media, the construct of Social Capital is more flexible, and as a result less reliant on both verbal and visual motivations. Antheunis, Vanden Abeele, and Kanters (2015) illustrated this view by noting that ‘pre-technology’ migrants (either within or outside of their home country) often suffered from social isolation. Whilst Binder and Sutcliffe (2014), noted that modern technologies assist migrants to ‘bridge’ large distances, and so maintain existing, as well as build new, Social Capital. In addition, through directed communication to known people, and public broadcasting to unknown people, an individual may be able strengthen both ‘bonding’ and ‘bridging’ capital (Antheunis et al., 2015). Moll, Pieschl, and Bromme (2015) agreed, noting that through social media less confident individuals can take part in exercises of self-disclosure; a process purported to be necessary for the building and maintaining of Social Capital as it allows for levels of trust to be reached. Collectively, this research suggests that visual stimuli may no longer be as important for the building of Social Capital.

Past research has largely considered Social Capital in non-offending populations. As a consequence of including an equal proportion of offenders and non-offenders (the offenders serving a prison sentence of six months or less at the time of interview) study 3a undoubtedly adds to the literature. However, in proposing that the building and maintenance of Social Capital in today’s society may no longer be dependent on both verbal and visual Theory of Mind, and that with the advent of social media the boundaries between emotional and informational support may have become blurred (Lomanowska & Guitton, 2016), another question is posed. Specifically, prisons in the UK prohibit any form of social media. Therefore, it could be expected that the offenders in this study are unable to maintain a level of Social Capital outside of the prison environment, as both face

to face and 'virtual' contact with friends and family is limited. As a consequence, offenders may be expected to demonstrate lower levels of Social Capital in comparison to non-offenders. This question was addressed by study 3b.

### **6.6.2: Social Capital and Empathic Understanding.**

The present study found, as predicted, an association between both self-report Empathic Understanding (hypothesis 6.1c) and performance-based Empathic Understanding. Empathic Understanding refers to an awareness of the social environment in which a person lives and suggests an ability to recognise and respond appropriately to the feelings and behaviours of others (Pinker, 2011). Greenberg, Gullotta, and Bloom (2016) suggested that to empathise with others is important from the perspective of building Social Capital, stating that the ability to recognise and understand another person's perspective helps to establish, nurture, and expand social networks. In addition, the ability to recognise that another's view may be different from one's own facilitates the regulation or modification of subsequent behaviours.

Wölfer, Cortina, and Baumert (2012) suggested that individuals are able to adjust levels of Empathic Understanding according to the social structures in which they find themselves. For example, these researchers noted that prosociality in school age children altered according to whether a particular relationship was at an individual, group, class, or whole school level. Venkatanathan et al. (2013) explained this further by suggesting that different levels of Empathic Understanding could be utilised according to the type of Social Capital being targeted; specifically, bridging and bonding Social Capital, as used in a social context, might require greater levels of Empathic Understanding than linking Social Capital which is generally used in a more formal context. This notion is of interest, in that an offender's ability to empathise with a fellow prisoner is different from his or her

ability to put themselves in the shoes of their victim. However, it was not considered in study 3a, and therefore may be of particular interest to future researchers.

Despite this, by including a performance-based, as well as a self-reported, assessment of Empathic Understanding, and showing the relationship between Social Capital and Empathic Understanding was statistically significant in both, study 3a added to the literature. Further, to the current author's knowledge, study 3a was the first to empirically consider an association between Social Capital and Empathic Understanding in a single cohort comprising of male and female, offenders and non-offenders; thus offering a unique view of the relationship between the two constructs.

### **6.6.3: Social Capital and Moral Reasoning.**

The present study found no association between Social Capital and Moral Reasoning. This was unexpected given that Social Capital is said to be mediated by trust, reciprocity, and mutual cooperation (Chen et al., 2015). Indeed, Tonkiss and Passey (1999) suggested that the trust aspect of Social Capital is the 'glue' that holds society together, whilst Uslaner (2001, p. 1) described it as "the chicken soup of life". Similarly, Popper (2013) suggested Social Capital is a coalition between reciprocity and cooperation; used to control societal behaviour. This is manifested, not only by encouraging individuals to behave in certain ways according to the situation, but also by offering sanctions that discourage individuals from socially deviant behaviour. Further, Akçomak and ter Weel (2008) argued that disparate levels of Social Capital can account significantly for observed differences in crime rates; with higher levels of Social Capital being positively associated with lower levels of crime. According to Castiglione, van Deth, and Wolleb (2008) this type of informal control' is characterised by agreed societal norms, values, and Moral Reasoning; thus adding to the explanation.

However, one explanation for the apparent lack of association between Social Capital and Moral Reasoning may be found by examining the construct of cooperation. Popper (2013) pointed out that having a predisposition to behaving cooperatively, as well as an increased sensitivity to recognising and not tolerating behaviour that abuses the concept of cooperation was not a sufficient guarantee that people will always or at least in the majority of situations, favour cooperative behaviour over deception. Popper noted a possible cause for this may be that humans often favour short-term benefits over those that take more time and effort to achieve. In other words, Moral Reasoning, as a characteristic of Social Capital, can be overlooked by some individuals in the pursuit of personal gain.

Another explanation for the current study's findings may derive from organised crime. According to Bourdieu (1986), organised crime is characterised by a mutual trust between its members. Putman (2000) concurred stating that the members of organised crime syndicates were in possession of a form of Social Capital. Pih, de Rosa, Rugh, and Mao (2008) agreed; however, they stated that ties, relationships, and interactions in this form were better described as 'illegitimate' Social Capital. They noted that the longevity of 'illegitimate' Social Capital was primarily due to the lack of ongoing 'legitimate' Social Capital available to gang members; meaning that involvement in organised crime often lasts into adulthood.

Further, whilst gang membership is believed to promote negative behaviours in terms of societal norms, within the context the gang itself, such behaviours maybe entirely normative (Decker, 2007). Therefore, gang membership should not be seen as simply chaotic and beyond moral boundaries, but rather that the moral boundaries of gangs may be very different from those considered acceptable by most of society; that is they tend to be

contentious and vengeful rather than harmonious and mutualistic, but are still grounded in honour and loyalty (Cooney, 2009).

#### **6.6.4. Differences in Social Capital according to Status (offenders and non-offenders).**

Study 3b found no difference in levels of Social Capital between the offender and the non-offender groups. This is somewhat surprising given that Venkatanathan et al., (2013) noted that high levels of Social Capital are associated with compliance with societal norms and social control. Indeed, Laub (2006) in his re-analysis of the Glueck and Glueck (1937) data suggested that investments in Social Capital, or the social relations between interdependent individuals, can help to redirect a criminal pathway from one that reflects persistence in crime to one reflecting desistance. In other words the development of social relationships or bonds can serve to correct previously deviant pathways, thereby placing an individual on a trajectory towards more prosocial outcomes. As a consequence, it may have been reasonable to expect that a difference in Social Capital might be found between an offending and a non-offending group, matched for age and IQ, with the offenders reporting lower levels than the non-offenders.

One explanation for this unexpected finding may be found by examining organised crime. As noted in subsection 6.6.3 of this chapter, the theories surrounding Social Capital do not successfully explain gangs, gambling syndicates, prostitution rings, and/or crime families. In each of these examples it could be said that Social Capital, in the form of trust, reciprocity, and veneration, is evident. Certainly, Wooditch, Tang, and Taxman (2014) noted that the relationship or bond between offenders is often characterised by a strong attachment. Whilst Fergusson et al. (2002), following a cohort of 1,265 young people (14- to 21- years) in New Zealand, noted that the existence of strong deviant-peer relationships

were positively associated with increasing rates of criminal activity. Wright and Cullen (2004) similarly found that deviant-peer relationships were the strongest predictor of criminal conduct; thus supporting the proposal that Social Capital “can be directed toward malevolent, antisocial purposes” (Putnam, 2000, p. 22). In explaining the possible negative side of the construct Putman cited the case of Timothy McVeigh, noting that the bombers “network of friends, bound together by a norm of reciprocity” (p. 21), may have assisted him to bomb the Murrah Federal Building in the USA, in 1995. This type of Social Capital was noted as ‘illegitimate’ by Popper (2013).

Whilst the similarities between ‘legitimate’ and ‘illegitimate’ Social Capital, in the form mutual trust (Bourdieu, 1986), cooperation (Popper (2013), loyalty, and honour (Cooney, 2009), are recognised, there are also notable differences. Simply, Popper (2013) suggested that ‘legitimate’ Social Capital tended to be mutualistic in nature, whereas ‘illegitimate Social Capital’ operated from a more egocentric perspective. In other words, the possession of Social Capital may not be sufficient to guarantee that people will always behave in a prosocial way. However, one limitation is that the measure of Social Capital used in study 3a and b did not distinguish between ‘legitimate’ and ‘illegitimate’ Social Capital. Further, participants were not asked to describe the age or location of the friendship they were claiming to have. In other words the offenders may have been reporting new relationships or networks acquired in prison, rather than those formed before he or she was incarcerated. Alternatively, it could be that a sentence of six months or less is too short a time to ‘lose’ existing Social Capital formed outside of the prison environment, or that the offender simply did not perceive it to be lost (Lafferty, Treloar, Butler, Guthrie, & Chambers, 2016). This may be an important factor in the current findings, and something future researchers may like to consider.

Further, in light of the theoretical back-ground relating to bridging, bonding and linking Social Capital, it may be important to consider a second limitation within study 3. Simply, the measure used primarily focused on bonding Social Capital as represented by the relationships between friends and family (Archuleta & Teasley, 2013). It did not consider the ability of individuals to access other groups or networks; thus employing ‘bridging’ Social Capital. Given that relationships at a personal level can be of an antisocial or offending nature (Popper, 2013), it may be that ties or networks at a societal level are needed to engender social control (Sampson & Laub, 2005). This would be termed bridging and/or linking Social Capital (Archuleta and Teasley, 2013) However, as indicated by study 3 offenders appear to have reduced abilities in relation to Theory or Mind, Empathic Understanding, and Moral Reasoning, and so may find the acquisition of bridging or linking Social Capital difficult; thus leaving them vulnerable to satisfying their social needs through less conventional means. Therefore, whilst this thesis concludes that similar levels of Social Capital, as characterised by social networks with strong norms and reciprocity, can be found in both offenders and non- offenders, future research may wish to consider the characteristics of the Social Capital under evaluation. Specifically, the age and location of the ties, as well as the nature of the Social Capital in terms of bonding, bridging, or linking may be of interest to future researchers .

## **6.7: Conclusion.**

Social Capital is said to be the availability of resources, from which individuals can draw, to reach their desired goals (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999). Whilst Social Capital has been of interest to psychologists for a number of years, the influence of Theory of Mind, Empathic Understanding, and Moral Reasoning on the

construct has to some extent been neglected. To the current author's knowledge study 3a is the first to demonstrate the relationship between Theory of Mind, Empathic Understanding, and Moral Reasoning, and Social Capital, within a mixed cohort of adult offenders and non-offenders, in a single study.

Further, the findings also add to the literature by firstly suggesting that the creation and maintenance of Social Capital may no longer be dependent on both verbal and visual stimuli. Indeed, in terms of modern day Social Capital, the boundaries between informational and emotional support may have become confused. Secondly, the current study highlights that bonding Social Capital, as measured by trust and reciprocity, can be found at similar levels in a non-offending sample and an offending sample.

To conclude, future studies may wish to consider the differences between offenders and non-offenders in relation to bridging or linking Social Capital, as well as the association Theory of Mind, Empathic Understanding, and Moral Reasoning has with these constructs. Nevertheless, from the perspective of bonding Social Capital, used as an aid to reducing offending behaviours, practitioners may wish to take into consideration the characteristics, as well as the amount of the Social Capital, a person claims to have.

## **Chapter Seven**

### **Study 4**

# **Executive Functioning, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.**

With regards to prosociality, which for the purposes of this chapter will include Social Capital; past research has largely concentrated on individual differences (Hilbig et al., 2014) or socio-environmental influences (Robinson, Zahn-Waxler, & Emde, 1994). However, a more recent focus has been on the cognitive mechanisms that make prosocial behaviour possible (Chernyak & Kushnir, 2014). These mechanisms not only include the capacity to feel, understand, and differentiate between complex thoughts, beliefs, and emotions, they also enable a person to self-regulate in order to adapt to the social environment in which they might find themselves (Marques et al., 2015). For example, in social interactions it is often necessary to control both positive and negative reactions in order to comply with the expected norms of a particular activity. Further, individuals often face situations where they must choose between competing options. To do this he or she must consider any rules and expectations associated with the choices available, as well as regulate his or her own need for immediate gratification (Rueda & Paz-Alonzo, 2013). Such behavioural and cognitive control is said to be related to Executive Functioning (Diamond, 2013).

Executive Functioning is described as a multidimensional cognitive control process that is characterised as being both voluntary and effortful on the part of the individual (Best & Miller, 2010). The Harvard Centre for the Developing Child described Executive Functioning as “an air-traffic control system for the brain” (Harvard University, 2011, p.1). In other words, Executive Functioning allows a person to navigate in a rapidly changing environment, to continuously evaluate and re-evaluate perceptions, and differentiate between what is or is not salient; all without being distracted or losing track of his or her long term goals (Rueda & Paz-Alonzo, 2013). To understand how this is achieved it is necessary to consider the abilities that are thought to underpin Executive Functioning; specifically Working Memory (Gordon & Olsen, 1998), Cognitive Flexibility (Welsh et al., 1991), and Inhibitory Control (Hala et al., 2003).

Working Memory is a ‘short-term store’, in which a person can temporarily hold a small amount of information. Compared to other memory systems, Working Memory is characterised by its transient properties in that information can quickly enter, be easily retrieved, and is rapidly lost if not actively engaged with (Cowan, 2001). One key function of Working Memory is to allow an individual to perform multi-step tasks whilst taking into account the social and structural rules that apply to the situation they are in. Cognitive Flexibility is the capacity to move between tasks or mental sets (Diamond, 2013). This includes the ability to produce different responses to identical stimuli; such as driving on the correct side of the road in different countries. Whilst, Inhibitory Control is the ability to deliberately ‘inhibit’ automatic responses based on habits or strong desires (Jasinska, 2013). This skill allows an individual to ignore distractions, give others a fair turn, whilst keeping their own emotions in check. Focus, self-control, prioritisation, sustained attention, and action are also associated with Inhibitory Control (Rothbart & Posner, 2015).

It is likely that Working Memory, Cognitive Flexibility, and Inhibitory Control are not distinct from one another, and that many tasks draw on more than one skill at any given time (McCabe, Roediger, McDaniel, Balota, & Hambrick, 2010). Further, whilst many pieces of information arrive and depart the brain on separate occasions, some overlap. It therefore may be more accurate to suggest that Working Memory, Inhibitory Control, and Cognitive Flexibility are needed to direct and manage that flow (Anderson, Richardson, & Chemero, 2012). Accordingly a person is able to evaluate, organise, and achieve goals, as well as flexibly adapt when confronted with novel problems and/or situations (Rothbart, 2007). Indeed, together these skills seem to allow a person to adjust his or her behaviour in response to changing circumstances by seeing things from different perspectives, applying the relevant rules for that setting, and recovering when things do not go as expected (Rueda & Paz-Alonzo, 2013). This is known as self-regulation (Rothbart, 2007).

### **7.1: Differences in Executive Functioning according to Status.**

Whilst the capacity to self-regulate complex thoughts, beliefs, and emotions is said to be functional from an early age, further development appears to occur during childhood and into early adulthood; thus allowing for greater self-control in later life (Gunnar & Quevedo, 2007). One example of this is the intrinsic and extrinsic self-regulatory processes that develop in a child in line with their own emotional control and their caregivers' responsiveness (Thompson, 2011). In other words, how a child exhibits emotions in the presence of stressors is influenced by the responsiveness of individuals to whom they have formed an attachment (Gunnar & Donzella, 2002). This not only lays the foundation for the development of emotional regulation in infants, but continues through adolescence and into adulthood (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003).

Language development is similarly thought to contribute to the early development of skilful self-regulation (Cole, Pathak & Schneider, 2010). In early childhood, a child's paired verbal and non-verbal expressions are sequential, rather than simultaneous (Bloom & Capatides, 1987). However, by school age a child is able to concomitantly animate their verbal exchanges with emotional expressions (Garner & Lemerise, 2007), as well as exerting a level of control over spontaneous negative emotions (Cole, 1986). Indeed, developmental neuroimaging studies have demonstrated that 'affective' language can reduce the impact of, and response to, aversive stimuli (Tabibnia, Satpute, & Lieberman, 2008). By middle childhood children are able to regulate emotions according to cognitive capacity and social experiences; thus learning the rules of acceptable prosocial behaviour (Gnepp & Hess, 1986).

Consequently, dysfunction in Working Memory, Cognitive Flexibility, and Inhibitory Control evidenced by a lack of self-regulation, may lead to offending behaviours (Meijers, Harte, Jonker, & Meynen, 2015). This association was demonstrated by Ogilvie, Stewart, Chan, and Shum (2011) in a meta-analysis relating to the relationship between offending behaviour and poor Working Memory, Cognitive Flexibility, and Inhibitory Control. These researchers found a positive association, with a moderate to large effect size ( $d = 0.6$ ), between poor self-regulation as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control and offending behaviours. However, this study largely focused on ex-detainees and patients in forensic hospitals.

As noted in chapter one, a key aim of this thesis was to establish the influence of specific factors in the development of prosocial behaviour, and as such reflect on whether they should be considered when designing new, or when making refinements to existing, interventions aimed at reducing recidivism. Therefore, to further determine the importance

of Executive Functioning in relation to interventions aimed at reducing recidivism it is necessary to consider differences according to status in the component parts of the construct. So, whilst the main focus of this thesis has been Theory of Mind, Empathic Understanding, and Moral Reasoning, the current author suggests that Working Memory, Cognitive Flexibility, and Inhibitory Control may also be important in relation to the development of prosocial or offending behaviours. To that end study 4a will consider differences in Working Memory, Cognitive Flexibility, and Inhibitory Control between a group of offenders (male and female) and a group of non-offenders (male and female); the following hypotheses are made:

- Hypothesis 7.1a: There will be a difference in Working Memory according to status.
- Hypothesis 7.2b: There will be a difference in Cognitive Flexibility according to status.
- Hypothesis 7.3c: There will be a difference in Inhibitory Control according to status.

## **7.2: Executive Functioning and Prosociality.**

Executive Functioning is said to provide people with the ability to understand, differentiate, and control the thoughts, beliefs, feelings, impulses, and behaviours that may be associated with a number of changing situations (Bargh & Morsella, 2008). Further, growth-promoting environments that establish routines, model social behaviour, and create and maintain supportive and reliable relationships, are said to provide scaffolding that can facilitate the development of Executive Functioning. However, as noted in chapter two, a number of cognitive skills are also necessary for the individual to understand their own, as

well as another's mental state, perceive and understand their own, as well as another's emotions, and both reason and behave from a moral perspective (Ashrafi & Estaki, 2013). These skills are thought to be Theory of Mind (Russell et al., 2007), Empathic Understanding (Eisenberg & Eggum, 2009), and Moral Reasoning (Malti & Latzko, 2010). In addition, it is possible that Executive Functioning is the result of evolutionary adaptations and may serve as a predictor for Social Capital (Maner & Kendrick, 2010). The following subsections will now discuss Executive Functioning in relation to Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.

### **7.2.1: Executive Functioning and Theory of Mind.**

The idea that Executive Functioning may influence the development of Theory of Mind was first suggested by Russell et al. (2007). A link between Executive Functioning and Theory of Mind has a lot of intuitive appeal, because in Theory of Mind it is necessary to inhibit the content of one's own perspective, flexibly switch to the mind-set of another, and process all salient information into a coherent picture. Yet, in assessing the current literature it appears that the theorised connection between Executive Functioning and Theory of Mind comes largely from correlational evidence. For example, Carlson and Moses (2001), in a study of 107 pre-school children, found an association between a person's performance on tasks relating to Executive Functioning and measures of Theory of Mind. The results demonstrated a strong positive association between the two constructs, independent of IQ, gender, and age.

However, as noted in the introduction to this chapter, Executive Functioning is thought to be an umbrella term for a collection of cognitive functions; Working Memory, Inhibitory Control, and Cognitive Flexibility (Goldstein, Naglieri, Princiotta, & Otero, 2012). Therefore, it might be more appropriate to consider which of these functions best

correlates with Theory of Mind. For example, in Theory of Mind, individuals need to represent information simultaneously; therefore a poor Working Memory could account for apparent deficits in this skill. Gordon and Olson (1998) supported this proposition by finding a significant positive association between a measure of Theory of Mind and a backwards digit span task; this task being a typical measure of Working Memory.

Similarly, Doherty (2008) investigated a link between Cognitive Flexibility and Theory of Mind by asking participants to tap their finger whilst also naming an object. Congruent with the findings of Gordon and Olsen (1998), performance on these tasks were also found to be positively associated, even after age and order effects were controlled for. Regarded in this light, Cognitive Flexibility appears to be important for effective levels of Theory of Mind.

Lastly, links can also be found between Theory of Mind and Inhibitory Control. Hughes (1998), for example, also using a backwards digit span task, asked participants recite the alphabet backwards (e.g. z, y, x ...); thus inhibiting the automatic response of repeating it in a standard order. It might then be concluded then that the development of Inhibitory Control is a correlate of the development of Theory of Mind, although it must be noted that poor performance in some measures has been attributed to fatigue, boredom, and depression (Siegel, 1987).

However, the main focus of this chapter is to establish if Executive Functioning is a necessary precursor for, and therefore a predictor of Theory of Mind (Carlson & Moses, 2001). Previous studies have offered mixed findings; for example, Hughes (1998) anticipated that early Executive Functioning would predict later Theory of Mind performance, but found that this predictive relationship did not hold for all tasks used in the study. In contrast, Wimmer (1989) and Perner (1991) argued for an association in the

opposite direction; stating that Theory of Mind allows a person to apply Inhibitory Control in a more systematic yet complex way. One explanation for this lack of consensus may be that Theory of Mind is believed to require both a verbal and a visual element (Blair & Coles, 2000). As discussed in chapter five, the development of Theory of Mind is thought to require the recognition and understanding of both verbal and visual cues (Blair & Coles, 2000).

So, whilst the examination of Executive Functioning (as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control) and Theory of Mind appears to have shifted from an isolated view to a more associative perspective, additional research is needed in relation to a predictive explanation that also considers both verbal and visual perspectives of the latter (Bradford, Jentsch, & Gomez, 2015). Further, the literature suggests that past research has largely been restricted to non-offending populations. Study 4b therefore addresses this gap by considering Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory control, in terms of both verbal and visual Theory of Mind, in a cohort of male and female, offenders and non-offenders. The following hypotheses are made:

- Hypothesis 7.2a: Working Memory will predict verbal Theory of Mind in a cohort of male and female offenders.
- Hypothesis 7.2b: Cognitive Flexibility will predict verbal Theory of Mind in a cohort of male and female offenders.
- Hypothesis 7.2c: Inhibitory Control will predict verbal Theory of Mind in a cohort of male and female offenders.
- Hypothesis 7.3a: Working Memory will predict visual Theory of Mind in a cohort of male and female offenders.

- Hypothesis 7.3b: Cognitive Flexibility will predict visual Theory of Mind in a cohort of male and female offenders.
- Hypothesis 7.3c: Inhibitory Control will predict visual Theory of Mind in a cohort of male and female offenders.

### **7.2.2: Executive Functioning and Empathic Understanding.**

There is evidence that Executive Functioning plays an important role in Empathic Understanding. Individuals who are well regulated are less likely to be overwhelmed by their emotions when witnessing another person in distress or need (Eisenberg & Eggum, 2009). Eisenberg and Eggum indicated that, as well as being the result of affective arousal and emotional contagion, Empathic Understanding may also arise from cognitive processes such as perspective-taking and/or memory retrieval. Further, it is claimed that individual differences, associated with a propensity to enact prosocial behaviours, are mediated by self-regulatory processes (Eisenberg & Fabes, 1998). These authors suggested that prosocial individuals tend to demonstrate good self-regulation and low impulsivity, whereas poor self-regulation and high impulsivity, throughout the lifespan, is associated with antisocial behaviours. Consequently, people who are able to exercise context dependent emotional self-regulation are most likely to possess effective Empathic Understanding.

Like Theory of Mind, it is believed that various social and contextual factors moderate both the acquisition and expression of Empathic Understanding (Decety, 2011). For example, Decety (2011) has shown that Empathic Understanding can be moderated by how the recipient is perceived, including how similar or likable they are (Batson, Lishner, Cook, & Sawyer, 2005), as well as by group membership (Yabar, Johnston, Miles, & Peace, 2006). Indeed, Zagefka, Binder, Brown, and Hancock (2013) noted two theories of

intergroup relations that are said to play an important role in determining the attitudes and behaviours of one group towards another. Both the Relative Deprivation theory (Walker & Smith, 2002) and the Social Identity theory (Brown, 2000) propose that attitudes towards the outgroup stem from comparisons, and subsequent feelings of (dis)satisfaction, based on aspiration and attainment.

Therefore, it might be expected that ingroup members would experience reduced concern for outgroup members. Indeed, this was evidenced by Hein, Silani, Preuschoff, Batson, & Singer (2010) who studied the reactions of a group of soccer enthusiasts whilst they were watching a film of: (i) ingroup members (fans of the 'watchers' favoured team) or, (ii) outgroup members (fans of a rival team) experiencing electric shocks. It was reported that the 'watchers' demonstrated more 'physical' concern for the ingroup members than the outgroup members, some even offering to take the place of an ingroup member. Moreover, a brain scan of the 'watchers', conducted at the same time as noting their physical reactions, revealed activity in the 'empathy' area of the brain in response to the perceived pain of the ingroup members, but not the outgroup members; thus suggesting that prosocial behaviour may be mediated by ingroup or outgroup status.

A number of other factors are also known to moderate empathic responses; these include contextual and personal experiences. For example, Decety, Michalska, Akitsuki, and Lahey (2009), in a neuroimaging study documenting brain activity associated with the perception of another person's distress, noted that differences appeared according to contextual factors. Specifically, these researchers found that participants were significantly more sympathetic to the 'pain' of individuals who had contracted AIDS following a blood transfusion than those who had contracted the disease as a result of drug-related needle sharing.

Personal experiences can also have an impact on a person's ability to demonstrate Empathic Understanding. For example, Echols and Correll (2011) compared the neural reactions of doctors and a non-medical control group (matched for both age and IQ) whilst they watched videos of faces, hands and feet being: (i) pricked by a needle or, (ii) being touched by a cotton bud. These researchers noted that the 'pain matrix' area of the brain was activated in the control group as they watched the first condition, but not the second. In contrast, the doctors demonstrated no reaction to either condition. Further, Echols and Correll noted that the cortical regions of the brain, the area underpinning Executive Functioning and in particular self-regulation, were activated in the doctors but not in the control group; thus suggesting that the ability to self-regulate is a learned process.

To conclude, from the literature reviewed, knowledge relating to an associative relationship between Executive Functioning and Empathic Understanding seems to be heavily reliant on neuroscience (Lamm & Majdandžić, 2015). Further, few studies have considered a link between the two constructs as determined by Working Memory, Inhibitory Control, and Cognitive Flexibility; each being required for Executive Functioning (Diamond, 2013). Finally, there is a paucity in the literature in relation to the predictive abilities of Working Memory, Inhibitory Control, and Cognitive Flexibility in relation to Empathic Understanding, in cohorts of offenders and of non-offenders. Therefore, to address these concerns, study 4b assessed the ability of Working Memory, Cognitive Flexibility, and Inhibitory Control to predict Empathic Understanding, using both a self-report and a performance-based measure, in a cohort of male and female, offenders and non-offenders. The following hypotheses were made:

- Hypothesis 7.4a: Working Memory will predict self-report Empathic Understanding in cohort of male and female offenders.

- Hypothesis 7.4b: Cognitive Flexibility will predict self-report Empathic Understanding in a cohort of male and female offenders.
- Hypothesis 7.4c: Inhibitory Control will predict self-report Empathic Understanding in a cohort of male and female offenders.
- Hypothesis 7.5a: Working Memory will predict performance-based Empathic Understanding in cohort of male and female offenders.
- Hypothesis 7.5b: Cognitive Flexibility will predict performance-based Empathic Understanding in cohort of male and female offenders.
- Hypothesis 7.5c: Inhibitory Control will predict performance-based Empathic Understanding in cohort of male and female offenders.

### **7.2.3: Executive Functioning and Moral Reasoning.**

Executive Functioning is also believed to play a role in the development of Moral Reasoning. Specifically, a major aspect of Executive Functioning is Inhibitory Control which enables a person to guide their attention and thoughts in accordance with their intentions or goals (Ponsioen, 2001). This skill is of importance when studying Moral Reasoning (Malti & Latzko, 2010). Whilst the ability to act in accordance with intentions and engage morally can be observed in early childhood, the quality and complexity of Moral Reasoning appears to evolve as a person ages (Kohlberg, 1979). Indeed, Kohlberg, in his Theory of Moral Maturation, described six stages of Moral Reasoning across three distinct periods in a person's lifetime. These periods are known as: (i) pre-conventional, (ii) conventional, and (iii) post-conventional, and range from a basic to a more complex form of Moral Reasoning.

Gibbs (2010) also believed that the ways in which decisions are made changes across a person's life time, from an immature or superficial level to a more mature or

profound level. This researcher also noted that very few individuals are able to progress beyond these two levels to develop more reflexive and theoretical reasoning. In the same way that Moral Reasoning is said to develop with age (Malti & Latzko, 2010), it has been suggested that Executive Functioning follows a similar trajectory; with developments in childhood leading to later social adjustment and resilience (Miller & Hinshaw, 2010). Indeed, the protracted development of the frontal lobes in the brain, which are associated with Executive Functioning, may partly explain the changes in decision-making abilities during a person's lifetime (Prencipe et al., 2011).

Risk factors, in the form of neglect, abuse, instability and ongoing threats, are also said to compromise the ability of the developing brain to form the connections required for normal Executive Functioning and Moral Reasoning (Petersen, Joseph, & Feit, 2014). According to the Harvard Centre for the Developing Child (2011), the brain regions associated with Executive Functioning have a multitude of interconnections that control the way in which a person responds to moral dilemmas. Narvaez (2010) suggested that in order to integrate the rational, emotional, and intuitive aspects involved in Moral Reasoning a better organised knowledge and understanding of societal rules and norms, as well as a more controlled ability to reason, are needed. The number of risk factors that a person is exposed to can therefore have a detrimental effect on early childhood brain development, and later manifest in problematic behaviours such as loss of control or a failure to retain information. This notion is supported by meta-analytic evidence suggesting that some injuries or impairments in childhood are linked to poor Executive Functioning in adulthood, and as a consequence a reduced ability to respond is a socially acceptable way (Ganesalingam et al., 2011). The ability to control thoughts and behaviours in a rapidly

changing environment is typically attributed to Executive Functioning (Rueda & Paz-Alonzo, 2013).

To conclude, although previous research has noted the importance of Executive Functioning and Moral Reasoning on social compliance (Vera-Estay, Dooley, & Beauchamp, 2014), and neuroscientific studies have shown that skills, such as mental abstraction, and flexibility, and regulation of thinking and behaviour, share a similar neural network (Decety, Michalska, & Kinzler, 2012), very little is known about the role of Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, as a predictive tool in relation to Moral Reasoning (Gibbs, 2010), in a cohort of offenders and non-offenders. Study 4a assessed these issues; the following hypotheses were made:

- Hypothesis 7.6a: Working Memory will predict Moral Reasoning in a cohort of male and female offenders.
- Hypothesis 7.6b: Cognitive Flexibility will predict Moral Reasoning in cohort of male and female offenders.
- Hypothesis 7.6c: Inhibitory Control will predict Moral Reasoning in a cohort of male and female offenders.

#### **7.2.4: Executive Functioning and Social Capital.**

Davis-Kean (2005) stated that as the social sciences have become more integrated, the need to study individuals in the context of their daily live has become clearer. An increasing amount of research has focused on this, particularly in relation to developmental psychology (Bronfenbrenner, 1979). Indeed, Flavell (1999) noted that by interacting with their environments, individuals accomplish social learning. To begin with this interaction is largely managed by parents or carers (Eccles, 1992). Later, teachers, relatives, peer groups,

and/ or significant others gain influence (Davis-Kean 2005). Thus, over the years, networks of stimuli combine to manage the information and resources available to inform the person about the world in which they live. This is known as Social Capital.

According to Bourdieu (1986) the amount of Social Capital an individual possesses depends on the size and quality of their social network. Anheier, Gerhards, and Romo (1995, p.862) noted that Social Capital “is the sum of the actual and potential resources that can be mobilised through membership in a social network of actors and organisation”. By means of Social Capital, individuals may gain “social rewards, such as status, privilege, and positions in certain social circles, professions, or organisation” (Brown & Davis, 2001, p. 41). Simply, Social Capital comprises of the people and/or influences in a person’s life, as well as the availability of resources within the environment on which he or she can draw to reach a desired goal (Furstenberg, et al, 1999).

The management of these resources, and the information that results, is reliant on the integration and coordination of a number of complex cognitive systems. As noted previously, Executive Functioning provides a useful tool to understand this integration and coordination process (Borkowski & Burke, 1996). Indeed, Executive Functioning appears to be critical in managing both the flow of information coming into the cognitive system, as well as the flow of information out, which results in thoughts or behaviours (Fletcher, 1996). At both an individual and societal level, Executive Functioning is said to provide a framework to explain how people manage their own behaviours, as well as how they work collaboratively to manage the socialisation of others and provide the scaffolding for successful social networking.

To conclude, it appears that understanding the factors that influence an efficient Executive Functioning may be important in terms of explaining successful social

functioning. Indeed, Tilly (2004) suggested that reduced abilities in Executive Functioning, which may be manifested as an inability to make plans and achieve goals, is often associated with a lack of Social Capital. According to Tilly, individuals with lower levels of Social Capital can have poor language and numeracy skills, which may mean they fail to grasp complex social issues or struggle to make themselves understood. However, whilst a link between the two constructs has been theorised, there is a paucity of empirical research assessing the predictive ability of Executive Functioning, as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control, in relation to a person's Social Capital. Study 4b will therefore address this gap; the following hypotheses were made:

- Hypothesis 7.7a: Working Memory will predict Social Capital in a mixed group of male and female offenders.
- Hypothesis 7.7b: Cognitive Flexibility will predict Social Capital in a mixed group of male and female offenders.
- Hypothesis 7.7c: Inhibitory Control will predict Social Capital in a mixed group of male and female offenders.

### **7.3: Methodology.**

#### **7.3.1: Design.**

**Study 4a:** As noted in chapter three, a one-way, between groups, multivariate analysis of variance MANCOVA (controlling for age and IQ) was conducted to investigate status related differences in Working Memory, Cognitive Flexibility, and Inhibitory Control. A sample of 400 male and female participants, in two status groups (offenders and non-offenders) was used in study 4a. The independent variable was the two status groups

and the three dependent variables were: Working Memory, Cognitive Flexibility, and Inhibitory Control. Further, to examine any indicated differences between the two status groups, in each of the three measures Working Memory, Cognitive Flexibility, and Inhibitory Control, several multiple ANCOVAS (controlling for age and IQ) were performed.

#### **Study 4b:**

In psychological research it is common to study theoretical constructs that cannot be *directly* observed and therefore cannot be *directly* measured. Executive Functioning (Huizinga, Dolan, & van der Molen, 2006), Theory of Mind (Suminar & Hastjarjo, 2016), Empathic Understanding (Hojat & LaNoue, 2014), Moral Reasoning (von Weltzien Hoivik, 2004), and Social Capital (Congdon Fors, 2012) are all examples of this. Therefore, to make such constructs measurable they are often defined in terms of behaviours that are quantifiable. This is true of Theory of Mind (Lawson et al., 2004), Empathic Understanding (Wakabayashi et al., 2006), Moral Reasoning (Gibbs et al, 1992), and Social Capital (Baron-Cohen et al., 2003). However, it is also possible to break down some constructs into their constituent factors, or latent variables which, in some instances, can be directly quantified. Executive Functioning is one such example (Cronin-Golomb, 1990). In the introductory section of this chapter it was noted that Executive Functioning can be viewed as comprising of three main factors: (i) Working Memory (Gordon & Olsen, 1998), (ii) Inhibitory Control (Hala et al., 2003), and (iii) Cognitive Flexibility (Welsh et al., 1991). Given that abilities in Working Memory, Inhibitory Control, and Cognitive Flexibility may separately vary, and can independently be quantified, it was decided to establish the predictability of each as distinct influences, in terms of Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital.

In deciding upon a design for study 4, both latent variable analysis and path analysis were considered. Firstly, latent variable analysis was deliberated. Latent variables are variables that are not directly observed but are rather inferred from other variables that are observed or measured. In study 2 it would have been possible to adopt three sets of measurable variables (see table 7.1):

**Table 7.1: Latent Variable and Measurable variable Relationship**

Latent Variable	Measurable Variable
1. Executive Functioning	Working Memory Cognitive Flexibility Inhibitory Control
2. Social Behaviour	Theory of Mind Empathic Understanding Moral Reasoning
3.	Social Capital

Adopting a latent variable design would have indicated if, statistically, Executive Functioning (as determined by Working Memory, Cognitive Flexibility, and Inhibitory Control) was predictive of Social Behaviour (as determined by Theory of Mind, Empathic Understanding, and Moral Reasoning) and Social Capital. However, the overriding aim of this thesis, as noted in chapter 1 (sub-section 1.3), was to establish if specific measurable factors should be considered when designing new, or when making refinements to existing, interventions aimed at reducing levels of recidivism. Those factors were noted as Theory of Mind, Empathic Understanding, and Moral Reasoning, Social Capital, and Executive

Functioning (as measured by individual abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control). As latent variable analysis would not have satisfied this aim, and was therefore rejected.

The second design to be considered was path analysis. A path design is usually directional, allowing the researcher to establish if one variable is able to predict another, in a pre-determined order. Simply, it is a multivariate procedure that allows for the examination of a set of relationships between one or more predictor variables and one or more outcome variables, both either continuous or discrete (Ullman, 1996). For example, in study 4 a path analysis design could determine if Working Memory was independently predictive of Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital. As a consequence, path analysis is generally considered the most appropriate statistical procedure for investigating the predictability of multiple behavioural measurable constructs on other behavioural constructs (Muthén & Muthén, 2012). In addition, path analysis has been found to offer more power to detect the predictive effects of one variable on another (Hayes & Scharkow, 2013). Given that the aim of Study 4b was to establish the predictability of Working Memory, Cognitive Flexibility, and Inhibitory Control, in relation to Theory of Mind, Empathic understanding, Moral Reasoning, and Social Capital, path analysis was considered the most appropriate tool and was therefore selected.

A sample of 200 male and female offenders was used in study 4b. This study used IBM SPSS Amos version 23 (path analysis) to establish if abilities in Working Memory, Inhibitory Control, and Cognitive Flexibility, and the component factors of Executive Functioning, could predict abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning and levels of Social Capital. The model fit was evaluated according to

the recommendations of Kline (2011), and included the chi-square likelihood ratio statistic, comparative fit index (CFI), root mean square error of approximation (RMSEA) with associated 90% CI, and the standardised root mean square residual (SRMR).

### 7.3:2: Participants, Materials, and Procedure.

For the participants, materials, and procedures used in this study please see chapter three.

## 7.4: Results.

### 7.4.1: Study 4a

As can be seen in Table 7.1 across the two status groups, there could be differences between the mean scores for each of the three measures. The standard deviations in each of the three measures, across the two status groups, indicated that most of the scores were located fairly close to the relevant mean score.

**Table 7.2: Descriptive statistics for Working Memory, Cognitive Flexibility and Inhibitory Control scores by Status Group**

	<u>Offenders</u>			<u>Non-Offenders</u>		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
<b>Working Memory</b>	200	46.47	6.46	200	51.29	7.57
<b>Cognitive Flexibility</b>	200	43.50	7.91	200	48.82	7.48
<b>Inhibitory Control</b>	200	92.20	19.93	200	11.927	16.19

Descriptive statistics and preliminary assumption testing was also conducted for each of the three measures for the whole sample (see table 7.2). Skewness and kurtosis values were obtained. With regard to the skewness, the following was identified: for Working Memory, Cognitive Flexibility, and Inhibitory Control, the positive results indicate that all the scores were clustered towards the lower end, whilst the negative result indicates that all the scores were clustered towards the higher end, in relation to the maximum scores available in this measure. However, all score were located within the permitted range of -1 to +1, indicating a relatively normal distribution of the data (Clark-Carter, 2010).

**Table 7.3: Descriptive statistics for Working Memory, Cognitive Flexibility and Inhibitory Control Scores across Whole Data Set**

	<i>n</i>	<i>M</i>	<i>SD</i>	<b>Skewness</b>	<b>Kurtosis</b>
<b>Working Memory</b>	400	48.86	7.42	.504	-.546
<b>Cognitive Flexibility</b>	400	46.14	8.14	.072	1.131
<b>Inhibitory Control</b>	400	104.95	22.24	-.394	-.33

With regard to the kurtosis of the data, the following were identified: for Working Memory, Cognitive Flexibility, and Inhibitory Control the negative results in Working Memory and Inhibitory Control indicate that the distribution of scores were relatively flat, whilst the positive result in Cognitive Flexibility indicates that the scores were rather peaked. However, all scores were within the permitted range of -3 to +3, indicating that

the data were relatively normally distributed (Clark-Carter, 2010). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations were noted.

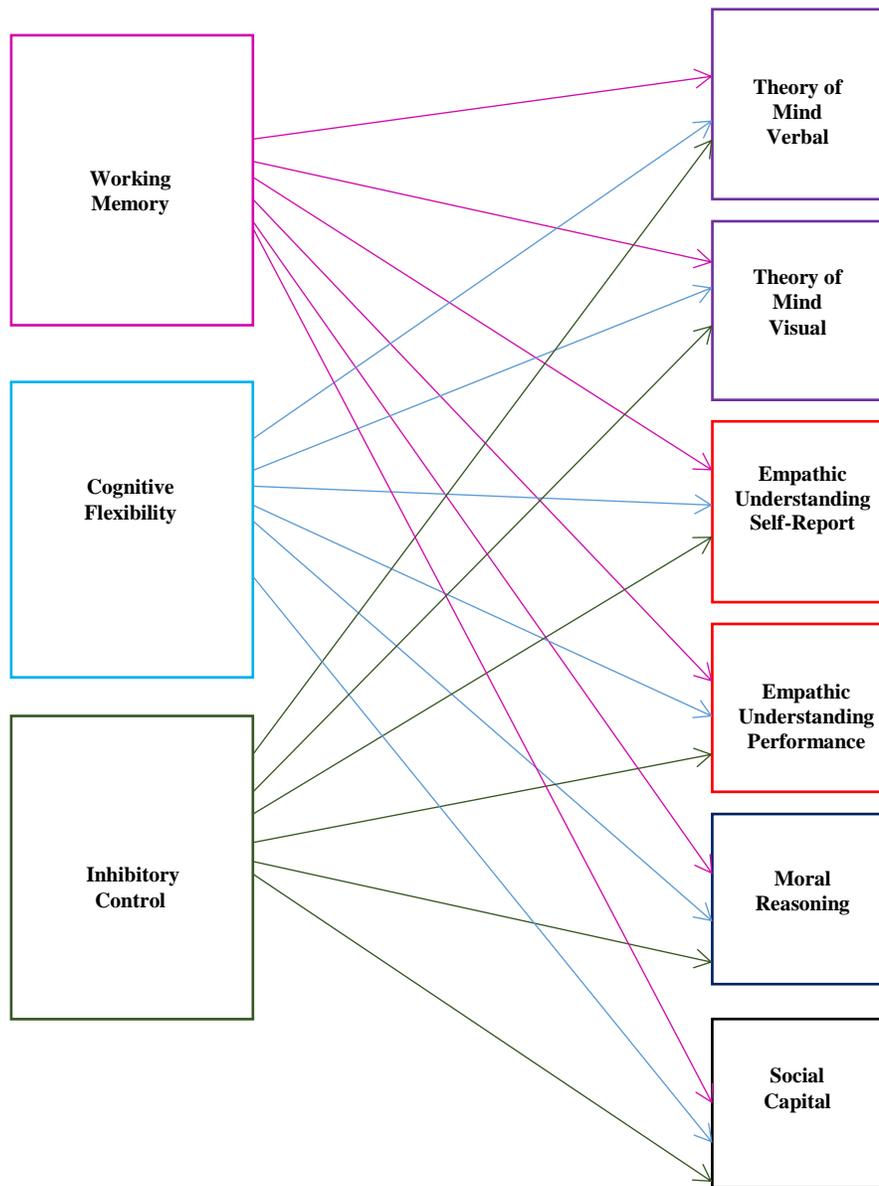
To investigate possible status differences in Working Memory, Cognitive Flexibility, and Inhibitory Control, and to control for type I error a one-way, a between groups, multivariate analysis of variance (MANCOVA) was performed. The independent variable was status group and the three dependent variables were: Working Memory, Cognitive Flexibility, and Inhibitory Control. A statistically significant difference was found between the two status groups,  $F_{(3, 396)} = 44.235, p = < .01$ ; Wilks' Lambda = .99; partial  $\eta^2 = .107$ . To examine the indicated difference between the two status groups for each of the three measures Working Memory, Cognitive Flexibility, and Inhibitory Control, further tests were conducted; a series of ANCOVAS was selected for this. Because doing this increases the risk of type I error, in line with Tabachnick and Fidell's (2013) recommendations, a more stringent  $p$  value was adopted,  $p < .025$ .

Firstly, to explore the impact of status on Working Memory a one-way, between groups ANCOVA was conducted (for the descriptive statistics see Table 7.2). Hypothesis 7.1a was supported as there was a statistically significant difference in Working Memory regarding status:  $F_{(1, 398)} = 28.61, p < .001$ . An effect size of .11 was calculated using eta squared. To explore the impact of status on Cognitive Flexibility and to test hypothesis 7.7b, another one-way, between groups ANCOVA was conducted. Hypothesis 7.1b was supported as there was a statistical significant difference in Cognitive Flexibility regarding status:  $F_{(1, 398)} = 28.20, p < .01$ . An effect size of .11 was calculated using eta squared. To explore the impact of status on Inhibitory Control and to test hypothesis 7.1c, a further one-

way, between groups ANCOVA was conducted. Hypothesis 7.1c was supported as there was a statistical significant effect of status on Inhibitory Control regarding status:  $F_{(1, 398)} = 120.17, p < .01$ . An effect size of .34 was calculated using eta squared. In all instances the offender group scored lower than the non-offender group.

#### **7.4.2: Study 4b.**

To test the hypotheses within study 4b, that is that Working Memory, Inhibitory Control, and Cognitive Flexibility, as component factors of Executive Functioning, would predict abilities in Theory of Mind, Empathic Understanding, Moral Reasoning, and levels of Social Capital, a path model was generated; all model variables were screened for missing data outliers and tested for assumptions; none were found. The hypothesised pathway is described in Figure 7.1.



**Figure 7.1: Hypothesised Path Analysis for Executive Functioning to predict Theory of Mind, Empathic Understanding, Moral Reasoning and Social Capital**

In path analysis, ‘fit’ indices are used to establish whether a model can be accepted. Table 7.1 presents the fit indices for study 4b using IBM SPSS Amos version 23. Marsh, Balla, and Hau (1996) recommend that a number of fit indices are utilised to overcome

individual index limitations and assess the model fit. Whilst the hypothesised path analysis model is significant;  $\chi^2_{(10, n=200)} = 64.998, p < .001$ , and a non-significant result is required for a good model fit. Raykov (2000) stated that when a sample size is 200 participants or over, such results may be disregarded, as a large sample is known to produce significant results in path analysis software. Similarly, the Root Mean Square residual (RMSEA) produced an index of .117, which is greater than the recommended index of .08 (Browne & Cudeck, 1993). However, more recently Moss (2016) indicated that whilst zero represents a perfect fit, the maximum should be unlimited, especially when using large participant groups.

**Table 7.4: Results for Path Analysis for Executive Functioning to predict Theory of Mind, Empathic Understanding, Moral Reasoning and Social Capital**

NFI	CFI	IFI	RMSEA	Chi-Square	DF	Probability
.935	.942	.944	.117	64.995	10	<.001

Note: Because AMOS is unable to incorporate means and intercepts, the current model used estimates. For this reason a Goodness of Fit Index (GFI) was not calculated

In contrast, the Normed Fit Index (NFI) was .935 and Byrne (1994) recommended that for an acceptable model fit this figure should exceed .90. The Comparative Fit Index (CFI) was .942 and Byrne (1994) recommended that for an acceptable model fit this figure should exceed .93. The CFI represents the ratio between the discrepancies of the target model to the discrepancy of the independence model. In simple terms, a value approaching 1.0 suggests that the default model is a better fit than is the independence model (Fan, Thompson, & Wang, 1999). Similarly, the NFI (also known as the Bentler-Bonett normed fit index) can vary from 0 to 1.0; with 1.0 equalling the ideal of 100%. The NFI equals the

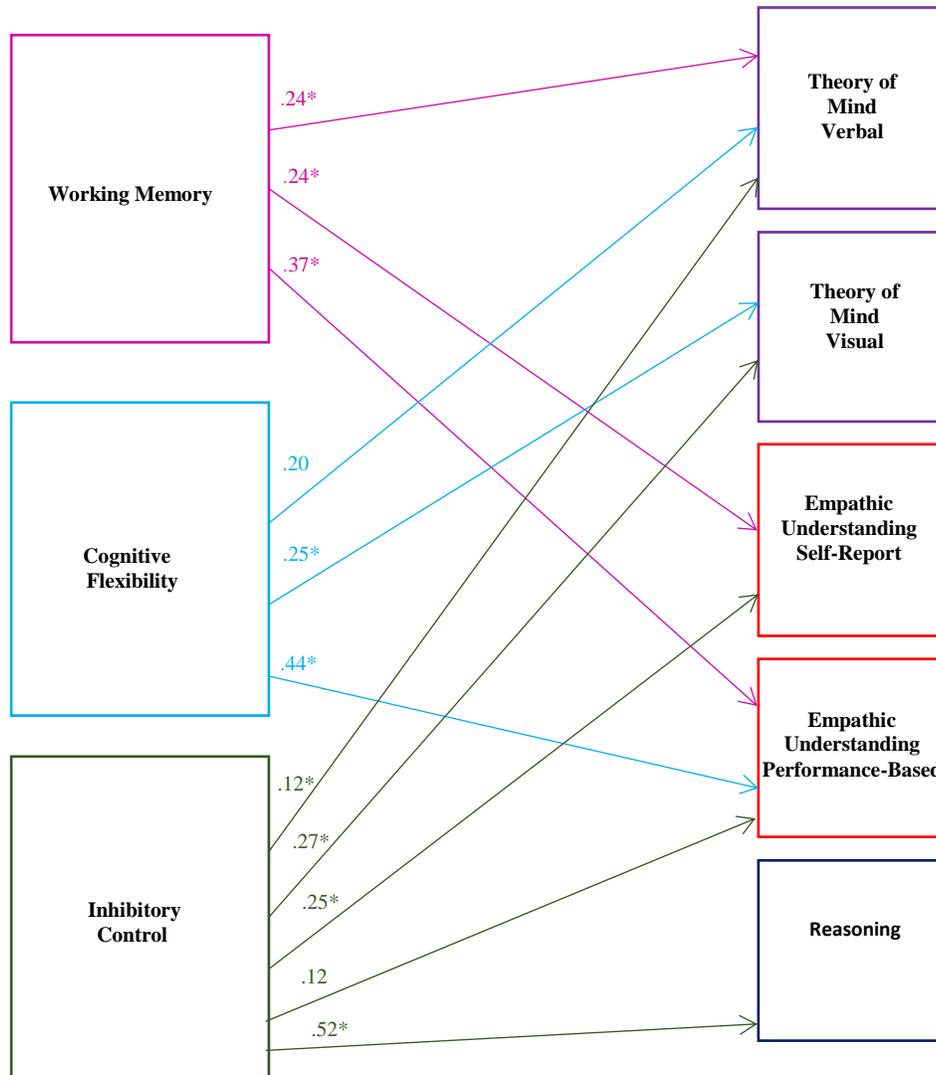
difference between the chi-square of the null model and the chi square of target model, divided by the chi-square of the null model. In other words, an NFI of .942 indicates the target model improves the fit by 94.2% relative to the independence model. Similarly the Incremental Fit Index (IFI) in the target model is .944 which exceeds the recommended figure of .90 (Bollen, 1990). Therefore, this model was considered to be acceptable and post-hoc modifications were not conducted.

Nine of a possible 18 path coefficients were found to be significant at the  $p < .001$  level and two were significant at the  $p < .05$  level (see Table 7.4 and Figure 7.4).

**Table 7.5: Standardised Path Coefficients**

	Theory of Mind Verbal	Theory of Mind Visual	Empathic Understanding Self-Report	Empathic Understanding Perf- Based	Moral Reasoning	Social-Capital
Working Memory	.24***	.05	.24***	.37***	.00	.03
Cognitive Flexibility	.20***	.25***	.05	.44***	.01	.05
Inhibitory Control	.12*	.27***	.25***	.12*	.52***	.02

Note: \* indicates vales of  $p < .05$  and \*\* \* indicates values of  $p < .001$ .



**Figure 7.2: Significant Path Coefficients Only**

To summarise, hypotheses 7.2a, 7.4a, and 7.5a were supported in that Working Memory was found to be predictive of verbal Theory of Mind, self-reported Empathic Understanding, and performance-based Empathic Understanding. Similarly, hypotheses 7.2b, 7.3b, and 7.5b were supported in that Cognitive Flexibility was found to be predictive of verbal Theory of Mind, visual Theory of Mind, and performance-based Empathic Understanding. Finally, hypotheses 7.2c, 7.3c, 7.4c, 7.5c, and 7.6c were supported in that Inhibitory Control was found to be predictive of verbal Theory of Mind, visual Theory of Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Reasoning.

Mind, self-reported Empathic Understanding, performance-based Empathic Understanding, and Moral Reasoning. All other hypotheses were not supported.

## **7.5: Discussion.**

### **7.5.1: Differences in Executive Functioning According to Status.**

Study 4a had one aim, which was to investigate the possible effect of status on abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control and such status related differences were found. The findings will now be discussed in relation to each measure.

**7.5.1a: Working Memory:** As predicted in hypothesis 7.1a the offender group achieved lower scores than the non-offender group on the measure for Working Memory. This finding may then go some way in answering the question of why some offenders appear not to learn from negative past experiences and continue to make poor quality decisions. This was evidenced by Zelazo and Muller (2002) who found that poor decision making, as manifested by the inability to control thoughts, actions, and emotions, to be positively associated with deficits in Executive Functioning. More recently, De Brito, Viding, Kumari, Blackwood, and Hodgins (2013) in a study of 45 offenders and 21 non-offenders, assessed for decision-making abilities and Working Memory, found that the offenders demonstrated impairments in both skills. The earlier work of Raine, Park, & Lencz (2001) may offer further explanation in that their study of Working Memory, with groups of offenders and non-offenders, who were neglected or abused as children, and a control group of non-abused individuals, found that the abused individuals, irrespective of status, showed reduced abilities in Working Memory. Consequently, an impaired Working Memory may be an important factor relating to offending. In particular it may offer an

explanation as to why some individuals, despite receiving repeated punishments, persist in offending.

**7.5.1b: Cognitive Flexibility:** With regard to hypothesis 7.1b, the offender's scores in the measure for Cognitive Flexibility differed significantly from those of the non-offenders, with the offenders scoring lower than the non-offenders. As with Working Memory, Cognitive Flexibility has been linked to criminal behaviour, for example in a modified version of the Wisconsin Card Sorting task, Vilà-Balló et al. (2015) found that offenders had a larger number of failures in terms of applying new sorting rules than the non-offenders in their study; thus suggesting that offenders have reduced abilities in Cognitive Flexibility. Given that Cognitive Flexibility is said to be needed for the successful decoding of cognitive and emotional cues that lead to adequate social functioning (Tirapu-Ustárroz, Pérez-Sayes, Erekatxo-Bilbao, & Pelegrín-Valero, 2007), a reduced ability may be associated with a failure to use all relevant information to predict the consequences of behaviours (Heinz et al., 2011), which may, in part, contribute to offending behaviours.

**7.5.1c: Inhibitory Control:** A significant differences in Inhibitory Control between the offender group and the non-offenders group, was found as predicted in hypothesis 7.1c. Whilst, Inhibitory Control is a complex construct, it has been linked to impulsive behaviours (Roberts et al., 2011). According to Robinson et al. (2012) individuals who demonstrate behavioural problems at an early age are more likely to suffer from low self-control and impulsivity; which often manifests as disrespect for authority and/or offending behaviours (Higgins, Kirchner, Ricketts, & Marcum (2011).

Whilst evidence exists to suggest that genetic factors (Walderhaug, Herman, Magnusson, Morgan, & Landro, 2010) or dispositional determinants (Rogers, Moeller, Swann, & Clark, 2010) play a role in problems relating to Inhibitory Control, deficits in

cognitive abilities have also been noted (Bruce, Steiger, Ng Ying Kin, & Israel, 2006); specifically Working Memory and Cognitive Flexibility (Dellu-Hagedorn, 2006). Further, Inhibitory Control is said to change throughout childhood and into adolescence (Caspi & Roberts, 1999); a notion supported by neuroscientific study relating to brain maturation and Executive Functioning (Knapp & Morton, 2013). Higgins et al. (2011) added to this in the context of Moffitt's (1993) developmental taxonomy of offending. Originally a dual taxonomy, Moffitt modified her theory in 2003 by adding a third group, low level-chronics, who are described as having "uncontrollable temperaments early in life", which continue into adulthood and are characterised by persistent offending behaviours (Higgins et al., 2011, p. 186). Higgins et al. supported this theory using data from the National Longitudinal Survey of Youth (1979), Child and Young Adult surveys ( $n = 413$ ), concluding that low levels of Inhibitory Control are more likely with life course persistent individuals.

Studies of specific types of offending behaviours have drawn similar conclusions. In particular, low levels of Inhibitory Control have been evidenced in sex offenders. For example, Ward, Keenan, and Hudson (1999) suggested that deficits in this type of offending fall into two categories: (i) inability to inhibit deviant sexual thoughts and actions, and (ii) inability to suppress inappropriate actions. Similarly, Enticott, Ogloff, Bradshaw, and Fitzgerald (2008) found low levels of Inhibitory Control and self-reported impulsivity in violent offenders. Specifically, these researchers investigated a link between cognitive inhibition and impulsive behaviour in violent offenders with schizophrenia ( $n = 18$ ) and healthy adults. Their participants completed a Stroop task and a self-report impulsivity measure, and evidence of negative priming was found. This is also suggestive of deficits in Working Memory, given that negative priming is a memory effect in which

prior exposure to a stimulus unfavourably influences the response to the same stimulus. So to conclude, individuals with low levels of Inhibitory Control may have difficulty in suppressing their own immediate responses long enough to behave in a considered way (Alexander et al., 2002); thus possibly contributing to offending behaviours.

### **7.5.2: The Predictive Ability of Working Memory, Inhibitory Control, and Cognitive Flexibility**

Study 4b had four aims which are summarised below:

- (i) to investigate the ability of Working Memory, Inhibitory Control, and Cognitive Flexibility to predict both verbal and visual Theory of Mind in male and female offenders;
- (ii) to investigate the ability each of Working Memory, Inhibitory Control, and Cognitive Flexibility to predict self-reported and performance-based Empathic Understanding in male and female offenders;
- (iii) to investigate the ability of Working Memory, Inhibitory Control, and Cognitive Flexibility to predict Moral Reasoning in male and female offenders, and;
- (iv) to investigate the ability of Working Memory, Inhibitory Control, and Cognitive Flexibility to predict Social Capital in male and female offenders.

**7.5.2a: Executive Functioning and Theory of Mind:** Study 4b suggested that Executive Functioning was predictive of Theory of Mind. However, as noted in the introduction to this chapter, Executive Functioning is thought to be made up of three separate cognitive skills: (i) Working Memory; (ii) Cognitive Flexibility and; (iii) Inhibitory Control, In

addition, both verbal and visual constructs contribute to a person's Theory of Mind. Consequently, and in response to the recommendations of Goldstein et al. (2012), the present study considered the predictive abilities of Working Memory, Cognitive Flexibility, and Inhibitory Control in terms of verbal Theory of Mind and visual Theory of Mind. When taking all of these sub-components into consideration the present study found that Working Memory (hypothesis 7.2a), Cognitive Flexibility (hypothesis 7.2b), and Inhibitory Control (hypothesis 7.2c) were predicative of verbal Theory of Mind, and Cognitive Flexibility (hypothesis 7.3b) and Inhibitory Control (hypothesis 7.3c) were predicative of visual Theory of Mind. The findings according to each will now be discussed.

With regard to Working Memory, one explanation for these findings may be found in the processing abilities of the construct. For example, Borst, Taatgen, and van Rijn (2010) described Working Memory as a cognitive 'bottle neck' in that it is only able to store a limited amount of information, for a short period of time, before that information is lost. According to Borst et al. this problem is addressed by transforming information into 'chunks' that can fit more easily through the 'bottleneck'; thus allowing a person to process complex pieces of information more effectively and efficiently. Arslan, Hohenberger, and Verbrugge (2017) noted that a less flexible or deficient Working Memory may constrain the ability to do this, and so may result in lower scores in complex measures of Theory of Mind.

However, contrary to expectations, study 4b found that Working Memory did not predict ability in visual Theory of Mind (hypothesis 7.3a). As noted above, Working Memory has limited capacity. This is addressed by 'sending' important information to long long-term memory, from possibly where it can be retrieved at a later time. According to

Anderson and Schooler (2000) retrieving information from long-term memory is complex and there is a chance of accessing the wrong information. One way to avoid this problem is to pair verbal concepts with meaningful images (Gutierrez, 2014). This may allow for easier retention and access to the information; for example, Kaputa and Palus (2013) found that after three days, participants in his study retained only 10 to 20 percent of written or spoken information but almost 65 percent of visual information. From this perspective, it may be that Working Memory is less useful, thus offering an explanation as to why the construct is not predictive of ability in visual Theory of Mind. Study 4b considered only three determinants of Executive Functioning; Working Memory, Cognitive Flexibility, and Inhibitory Control, and so the long term memory in relation to Theory of Mind was not assessed; something that future studies may wish to take this into consideration.

As expected, study 4b found Cognitive Flexibility to be predictive of both verbal Theory of Mind (hypothesis 7.2b) and visual Theory of Mind (hypothesis 7.3b). One explanation for this may lie with the ‘Cognitive Complexity and Control’ theory (Zelazo & Frye, 1998) which states that Cognitive Flexibility is needed to shift efficiently between multiple incompatible perspectives, descriptions, beliefs, intentions, or situations (Jacques & Zelazo, 2005). Indeed, Liszkowski (2013) proposed that such flexibility is critical for social understanding. This was supported by Bock, Gallaway, and Hund (2015) who found Cognitive Flexibility to be positively associated with social understanding, even after controlling for age and vocabulary. Bock et al. concluded that the ability to make simultaneous judgments, from multiple and sequentially shifting situations, is critical for understanding everyday interactions. However, past research has considered Cognitive Flexibility and Theory of Mind from only an associative perspective. The present study

adds to the literature by suggesting that Cognitive Flexibility is predictive of Theory of Mind in both verbal and visual form.

The present study found that Inhibitory Control to be predictive of both verbal Theory of Mind (hypothesis 7.2c) and visual Theory of Mind (hypothesis 7.3c). As noted in the introduction to this chapter, Executive Functioning is a multifaceted construct that includes the ability to shift between behavioural responses when the ‘rules’ relating to any given situation are changed (Lehto, Juujärvi, Kooistra, & Pulkkinen, 2003). Specifically, Inhibitory Control refers to the cognitive processes that inhibit automatic responses, and so allow for the accomplishment of goal-directed tasks. Alexander et al. (2002) offered an example, noting that individuals with weaker Inhibitory Control appear to have difficulty in suppressing their own immediate responses long enough to search in their memory for a more considered verbal or behavioural response to a given situation. However, as with Working Memory and Cognitive Flexibility, past research has only considered Inhibitory Control and Theory of Mind from an associative perspective. The present study adds to the literature by demonstrating that Inhibitory Control is not only correlated with Theory of Mind, but is also predictive of verbal and visual Theory of Mind.

**7.5.2b: Executive Functioning and Empathic Understanding:** As with Theory of Mind, the present study suggests that Executive Functioning is generally predictive of Empathic Understanding. However, as noted above, Executive Functioning is thought to be made up of three separate sub-constructs: (i) Working Memory; (ii) Cognitive Flexibility, and; (iii) Inhibitory Control. In addition, as previous research has questioned the reliability of self-report measures (Makino, 2010) the present study included both a self-report and a performance-based measure for Empathic Understanding. Study 4b found Working Memory (hypothesis 7.5a), Cognitive Flexibility (hypothesis 4.5b), and Inhibitory Control

(hypothesis 7.5c) to be predictive of performance-based Empathic Understanding, but only Working Memory (hypothesis 7.4a) and Inhibitory Control (hypothesis 7.4c) to be predictive of self-reported Empathic Understanding. These findings will now be discussed.

Working Memory and Empathic Understanding are core constructs in psychological research; each being considered essential for normal social functioning (Smith et al., 2014). Certainly, each construct has been extensively researched from a developmental (Baron-Cohen & Wheelwright, 2004), social (Blakemore, 2008), and neuroscientific (Decety & Jackson, 2004) perspective. However, whilst Empathic Understanding is said to require an individual to extract salient information relating to a given situation and form a coherent ‘mental’ representation; a skill which calls on Working Memory (Henderson & Hollingsworth, 2003), research considering the correlates of the two constructs has to some extent been neglected (Gao, Ye, Shen, & Perry, 2016). Indeed, Gao et al. reasoned that the more information a person is able to store in his or her Working Memory, the easier it should be for that person to extract social cues from a situation, and so understand the emotions and intentions of others. Therefore, study 4b adds to the literature by demonstrating the predictive nature of Working Memory in relation to Empathic Understanding, in both self-reported and performance based measures.

In contrast, the ability of Cognitive Flexibility to predict self-reported Empathic Understanding (hypothesis 7.4b) was not supported by study 4b. This was somewhat unexpected as previous studies have found that self-reported Empathic Understanding is related to Cognitive Flexibility (e.g. Shamay-Tsoory, Tomer, Goldsher, Berger, & Aharon-Peretz, 2004). However, the present study did find Cognitive Flexibility to be predictive of performance-based Empathic Understanding. Given that Makino (2010) suggested self-report measures do not always represent the true feelings and beliefs of an individual, the

current author suggests that the findings of the current study are more representative of the associative relationship between Cognitive Flexibility and Empathic Understanding.

As noted in chapter two, Empathic Understanding refers to the cognitive and emotional reactions of an individual to the observed experiences of another (Shamay-Tsoory, 2011). In particular, the cognitive element of Empathic Understanding allows a person to understand what someone else might be thinking and, thus, anticipate their behaviour (Zaki, 2014). One important characteristic of Cognitive Flexibility is the ability to accurately decode and understand numerous ‘expressions’ that may occur during any one social interaction (Gery, Miljkovitch, Berthoz, & Soussignan, 2009). This decoding process provides contextual information that enables a person to make situational judgements. Moreover, it allows for the adoption of another person’s perspective, to predict their actions, and so decide how to react to any resultant behaviour. Conversely, a reduced ability in Cognitive Flexibility may be associated with a failure to use salient information to predict the consequences of one’s own, as well as another person’s, actions (Heinz, Beck, Meyer-Lindenberg, Sterzer, & Heinz, 2011); and so lead to social inadequacy or inappropriate behaviours (Tirapu-Ustárrroz et al., 2007). Study 4b added to the literature by demonstrating the predictive nature of Cognitive Flexibility in relation to performance-based Empathic Understanding.

Similarly, study 4b found that Inhibitory Control was predictive of Empathic Understanding as assessed by both the self-report (hypothesis 7.4c) and the performance-based measures (hypothesis 7.5c). According to Eisenberg and Fabes (1998) prosocial individuals tend to be good ‘inhibitors’, with low impulsivity, whereas poor inhibition and high impulsivity are associated with antisocial behaviours. Eisenburg (2007) built on this by suggesting that when prosocial behaviours were ‘costly’ to a person, the ability to

successfully inhibit automatic responses, from both an emotional and a behavioural perspective, was extremely important. Eisenberg and Eggum (2009) also suggested that individuals who are able to ‘inhibit’ are less likely to be overwhelmed by their own emotions when witnessing another person in need or distress. However, whilst the associative nature of Inhibitory Control and Empathic Understanding has been proposed within the context of developmental psychology (Deater-Deckard, 2014) few empirical studies have considered the predictive abilities of Inhibitory Control in relation to Empathic Understanding (Posner & Rothbart, 2007). Therefore, study 4b adds to the literature by confirming this, from both a self-report and a performance-based perspective, in an adult population.

**7.5.2c: Executive Functioning and Moral Reasoning:** However, study 4b found that neither Working Memory (hypothesis 7.6a) nor Cognitive Flexibility (hypothesis 7.6b) predicted Moral Reasoning. One explanation for this may be that moral schemas, or frameworks, reside in long-term memory, and not working memory (Rest, Narvaez, Bebeau, Thoma, 1999). Moral schemas are said to form when a person notes similarities between his or her remembered experiences. According to Endicott, Bock, and Narvaez (2003) there are three different frameworks in which these moral schemas fit: (i) the personal interest framework, (ii) the maintaining norms framework, and (iii) the post-conventional framework. The ‘personal interest framework’ is the most primitive and relies on an egocentric and interpersonal perspective. In contrast the ‘maintaining norms framework’, which usually emerges in adolescence, is characterised by the perceived need for a society-wide system of cooperation and the uniform application of laws and social norms. Finally, the ‘post conventional framework’, which is the most complex of the three, is characterised by the core belief that “ moral obligations [should] be based on shared

ideals, which are reciprocal and are open to debate and tests of logical consistency, and on the experience of the community” (Rest et al., 1999, p. 307). Therefore, if moral judgements are based on schemes and frameworks, as well as personal memories, all of which are stored in long-term memory, the findings of study 4b appear appropriate. However, as noted in subsection 7.5.1 of this chapter, study 4b considered only factors related to Executive Functioning, and as such long term memory in relation to Moral Reasoning was not assessed, future studies may wish to take this into account.

Also noted above, the expected predictive relationship between Cognitive Flexibility and Moral Reasoning was not found. The hypothesis relating to the predicative abilities of Cognitive Flexibility in relation to Moral Reasoning was based on Kohlberg’s theory of Moral Development (1969). Kohlberg suggested that an age related ‘shift’ in Moral Reasoning was characterised by a move from a relatively rigid way of thinking to a more flexible style. This flexibility is said to enable a person to utilise the multiple moral schemas that are held in his or her long term memory (Ross, Krukowski, Putnam, & Adams, 2003). One explanation for this unexpected finding may lie in the theory of ‘Cognitive Blockade’ (Cañas, Fajardo & Salmerón, 2006), which is characterised by a tendency to continue with an initial behaviour, even when reasoning suggests that an alternative course of action is required. This was demonstrated by Whitton, Henry, and Grisham (2014) who assessed 68 individuals for Cognitive Flexibility using three types of moral dilemma: benign, impersonal, personal. Whitton et al. concluded that as a result of personal situations or obsessions, some individuals have a more rigid Moral Reasoning in response to moral dilemmas; thus offering an explanation for the fact that Cognitive Flexibility was not shown to be predictive of Moral Reasoning in study 4b.

In contrast, study 4b did find that Inhibitory Control (hypothesis 7.6c) was predictive of Moral Reasoning. Inhibitory Control has been defined as the ability to inhibit dominant, maladaptive responses, either under instruction or in novel or ambiguous situations (Rothbart, Ahadi, Hershey, & Fisher, 2001). Hoffman (1987) noted that Inhibitory Control, as well as regulating emotional responses, plays a role in moral decision making. Indeed, Narvaez (2010) stated that in order to integrate the rational, emotional, and intuitive aspects involved in Moral Reasoning, the ability to control or inhibit personal responses is needed. Confirmation of this is found in the earlier work of Eisenberg et al. (1994) who argued that over arousal, resulting from negative affect in moral conflict situations, may lead to personal distress.

In contrast, individuals who are able to inhibit such negative effects are thought to experience sympathy and consequently display other-centric response tendencies. In other words, individuals with high levels of Inhibitory Control are able to self-regulate, reflect upon their own behaviours, and when necessary feel guilt (Malti & Ongley, 2014). Such an association has been documented in recent twin studies. For example, Gagne and Saudino (2010) found Inhibitory Control to be a significant genetic component in terms of similarities in moral behaviours between twins. From this perspective, the self-regulation afforded by Inhibitory Control (Derryberry & Rothbart, 1997) may play a crucial role in the occurrence of sympathy and reparative behaviours (Malti & Ongley, 2014). In light of these findings, this thesis suggests that Inhibitory Control may form a basis for Moral Reasoning.

**7.5.2d: Executive Functioning and Social Capital:** Finally, study 4b found that Executive Functioning did not predict Social Capital from a Working Memory (hypothesis 7.7a), a Cognitive Flexibility (hypothesis 7.7b) or an Inhibitory Control (hypothesis 7.7c)

perspective. Whilst this may be unexpected, given that Executive Functioning provides a useful conceptual tool for understanding the coordination required to successfully manage a social network, the following sub-section will offer a possible explanation.

Like Moral Reasoning, research suggests that the shared historical experiences, or memories, of a group or community are a driving force for contemporary Social Capital (Puntscher, Hauser, Pichler, & Tappeiner, 2014). Puntscher et al. suggested that schemas or frameworks relating to common experiences, cultural attitudes, as well as ‘shocks’ in the history of the individual, group or the community, were key indicators for the building of Social Capital. Indeed, these researchers found that ‘significant shocks’ remained in the memory of an individual, group, and/or community, influencing behaviour long after the ‘incident’ occurred, and were thus instrumental in the establishing of collective frameworks and schemas. As noted previously, the multitude of schemas or frameworks held by a person, group or community are contained in the long term memory (Ross, Krukowski, Putnam, & Adams, 2003). As a result, the levels of social trust and networking, as key factors in the formation of Social Capital, are significantly influenced by events both inside, and outside, of the individual and collective memory; resulting in an individual, group, or community developing protective measures in order to secure the norms, values, and traditions of a network. Consequently, by measuring Working Memory, as opposed to long term memory, the present study did not tap into the cognitive area important for Social Capital in relation to other aspects of memory; something future studies may wish to take into consideration.

Similarly, Krishna and Schrader (2000) noted ‘flexibility’ to be important within Social Capital. However, these researchers suggested that such flexibility should be structural rather than cognitive; structural being the roles, rules, and precedents of a group,

rather than the cognitive norms, attitudes, values, and beliefs that are held individually. Gould (2001) noted that this structure applied to both individual Social Capital and cultural Social Capital; the latter accessed through shared celebrations, rites, and intercultural dialogue. According to Coleman (1988) and Putman (2000), Social Capital is a resource related to the social structure whose purpose is to facilitate meaningful activity. They identified Social Capital in terms of: (i) the requirement of reciprocity, including trust; (ii) the information channels and the flow of information, and (iii) norms, including effective sanctions. They state that only through these resources can a person achieve their goals. From this perspective it may be that Cognitive Flexibility in terms of Social Capital is unimportant; explaining the current study not finding a predictive relationship.

Finally, a review of the literature has suggested that the building of Social Capital may not require Inhibitory Control (Perry et al., 2015). Using the construct of prosocial behaviour to illustrate his theory, Perry et al. noted that the controlled inhibition of self-interested or antisocial responses may not be an essential part of building human relationships. Instead, he argued for an intuitive, automatic nature of prosociality; stating that costly prosocial responding in infants appears to emerge prior to the development of Inhibitory Control. Further, neuroimaging research suggests that prosocial behaviour that comes at a cost to the donor may be facilitated by the heightened values or personal rewards that are assigned to a particular course of action, rather than a conscious inhibition of automatic antisocial responses (Zaki & Mitchell, 2013). Together, these findings imply that building Social Capital does not necessarily require effortful Inhibitory Control; thus possibly explaining the negative findings in the current study.

## **7.6: Conclusion.**

In conclusion, cognitive mechanisms such as the capacity to feel, understand, and differentiate between complex thoughts, beliefs, and emotions, and the ability to self-regulate in order to adapt to different social situations are important for successful human social interaction (Marques et al., 2015). Such cognitive or behavioural control is thought to be related to Executive Functioning (Diamond, 2013).

To begin with study 4a considered differences in abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control between offenders and non-offenders and found that in all three of the key sub-constructs of Executive Functioning the offenders performed at a lower level than the non-offenders. Following on from this study 4b examined the ability of Working Memory, Cognitive Flexibility, and Inhibitory Control, to predict abilities in verbal and visual Theory of Mind, Empathic Understanding, and Moral Reasoning. This current author suggested that study 4a and b are the first to do this within a single study. Further, in suggesting that each sub-construct forms the basis of the main skills required for prosocial development, this adds to the literature, and may be of future use to both practitioners and researchers. Further, by demonstrating that Working Memory, Cognitive Flexibility, and perhaps most importantly, Inhibitory Control, are not prerequisites of Social Capital may guide future work in this area.

As noted in the introduction to this chapter, Working Memory, Cognitive Flexibility, and Inhibitory Control are said to be the key determinants of Executive Functioning. Further, given that offenders were shown in study 4a to have reduced abilities in each of the three constructs when compared to non-offenders, and that each construct was shown in study 4b to predict abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning (skills thought to be required for acceptable prosocial behaviour), the

ability to detect and measure such differences between offenders and non-offenders may be of interest to practitioners and researchers. Specifically, by measuring abilities in Working Memory, Cognitive Flexibility, and Inhibitory Control, practitioners may be able to more accurately assess offenders' suitability for rehabilitative programmes aimed at reducing offending behaviours by improving levels of prosociality, or indeed tailor such programmes to meet the specific needs an offender, given that Inciardi, Martin, and Clifford (2004) noted that more focused interventions, aimed at meeting the specific needs of an offender, would be more likely to have a greater the impact in terms of reducing re-offending behaviours. Therefore, study 4a and 4b add to the literature.

## **Chapter Eight**

### **The Discussion**

*‘How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him’ (Smith, 1790, p. 1).*

If prosociality defines humanity (Simpson & Van Vugt, 2009), and an obvious consequence of this is the inhibition of actions that have negative impacts on others (Eisenberg et al., 2010), then the ability to address deficiencies in this area is likely to be of benefit in the battle to lower recidivism in the UK and elsewhere (Spenser et al., 2015). The overriding aim of this thesis was to establish if certain factors are important to the acquisition and conveyance of socially acceptable behaviours; those factors being Theory of Mind, Empathic Understanding, and Moral Reasoning. Underpinning that aim were three key questions:

- (i) firstly, is it possible to assess abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning, and if so, are they moderated by status, gender, and age’?,
- (ii) secondly, given that Executive Functioning is said to be a multidimensional cerebral control mechanism utilised in the management of other cognitive processes (Best & Miller, 2010); does it predict

abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning?, and

- (iii) thirdly, assuming prosocial behaviour is regulated by socio-environmental influences; do Theory of Mind, Empathic Understanding, and Moral Reasoning facilitate the building of Social Capital?

These questions were addressed in four studies (chapters four to seven). In a study by study format, the following subsections will remind the reader of the key findings and note the unique contributions to the literature. Then the implications of each in terms of current practice will be discussed, the limitations will be examined, and finally recommendations will be made for future research.

## **8.1: Summary of Findings and Contribution to the Literature.**

### **8.1.1: Study 1.**

Study 1 investigated the association of age (i.e. adolescence, young adulthood, and adulthood) with abilities in verbal and visual Theory of Mind, self-report and performance-based Empathic Understanding, and Moral Reasoning a cohort of (a) male and (b) female non-offenders. The key findings are summarised in table 8.1 on the next page, where a tick indicates that a significant difference was found between the participant groups.

With regard to verbal Theory of Mind, study 1 revealed a significant difference between both the young-adult group and the adult group, when compared to the adolescent group. Similar differences were obtained using the visual measure. However, in contrast to the verbal measure, the visual measure also produced a statistical difference between: (i) the adolescent group and (ii) the young-adult group and the adolescent group and the adult group (see chapter four).

**Table 8.1: Summary of Significant Findings in Study 1**

	Male and Female Adolescent to Young-Adult	Male and Female Adolescent to Adult	Male and Female Young- Adult to Adult
<b>Verbal</b>			
<b>Theory of Mind</b>	✓	✓	-
<b>Visual</b>			
<b>Theory of Mind</b>	✓	✓	✓
<b>Self-Reported</b>			
<b>Empathic Understanding</b>	✓	✓	-
<b>Performance-Based</b>			
<b>Empathic Understanding</b>	-	✓	-
<b>Moral Reasoning</b>	✓	-	-

Note: A tick denotes a significant difference and a – denotes a non-significant difference.

Epley et al., (2004) suggested that such findings might be the result of practice, noting that even the most effortful cognitive processes become more efficient with time. However, an alternative explanation was offered by Blain- Brière et al., (2014) who suggested that improved ability in language may hold the key. The latter researchers noted that the ongoing development in, and ability to, recognise rules relating to language may be influential in terms of Theory of Mind. Simply, as language develops people may find it easier to recognise and understand the thoughts, beliefs, desires, and feelings of another.

In terms of Empathic Understanding, study 1 demonstrated a significant difference in the self-report scores of both the male and female young-adult group and the male and female adult group when compared to the male and female adolescent group. However, the performance-based measure only produced a significant difference between the male and

female adolescent group and the male and female adult group (see chapter four). One explanation for this may be the individual and social changes that take place during adolescence. For example, Yadav and Iqbal (2009) suggested that those who were well schooled in life skills and experiences during adolescence were able to exhibit greater abilities in Empathic Understanding during adulthood. There are two theories that go some way in explaining the relative stability of Empathic Understanding between young-adulthood and adulthood. Firstly, Socio-Emotional Selectivity Theory (Carstensen et al., 1999) suggests that by adulthood individuals are more able to regulate their emotions. The second explanation is found in Dynamic Integration Theory (Labouvie-Vief, 2003) which is concerned with the development of cognitive complexity; in other words by adulthood a person is more able to deal with and control a multitude of thoughts, beliefs, and feelings at the same time. Both theories suggest that cognitive representations become increasingly complex and well-balanced between adolescence and early adulthood, reaching stability by early to mid-adulthood.

Regarding Moral Reasoning, study 1 found a significant difference between the male and female adolescent group and the male and female young-adult group, following which abilities in this construct appeared to stabilise. This was in line with Kohlberg (1979) who suggested that a proficient ability in Moral Reasoning was achieved by early adulthood. However, Krebs et al. (1991) posited that whilst this may be true, as people get older they develop an ability to evoke different levels of Moral Reasoning, as suited to a particular situation. Simply, people become 'morally' flexible.

The conclusions that can be drawn from study 1 add to the current literature in that they shed light on the developmental plasticity of Theory of Mind, Empathic Understanding, and Moral Reasoning. Study 1 found verbal and visual Theory of Mind,

self-reported and performance-based Empathic Understanding, and Moral Reasoning to improve, to some extent, across the life span. In addition, whilst Theory of Mind, Empathic Understanding and Moral Reasoning have been of interest within psychological research for a number of years, studies have largely focused on the constructs within a young population, and research relating to their development in later life has been neglected. Study 1, to the current author's knowledge, is the first to demonstrate in a single study the effects of aging in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning, from adolescence to adulthood.

In chapter four links between Executive Functioning and Theory of Mind (Duval et al., 2011), Executive Functioning and Empathic Understanding (Lahat et al., 2010), and Executive Functioning and Moral Reasoning (Lahat et al., 2010), were examined, and similarities in the maturation processes of each were noted (Best & Miller, 2010). It was offered that the developmental similarities between the constructs may be important in understanding age related growth of Theory of Mind, Empathic Understanding, and Moral Reasoning. However, whilst the associations of Executive Functioning with Theory of Mind, Empathic Understanding, and Moral Reasoning have been previously researched, work on its ability to predict competencies in each of the three constructs appears to be limited; hence studies 4a and b were conducted (see chapter seven).

### **8.1.2: Study 2.**

Study 2 investigated abilities in verbal and visual Theory of Mind, self-report and performance-based Empathic Understanding, and Moral Reasoning in relation to gender, and status. The key findings are summarised in table 8.2, where a tick indicates a significant difference was found between the participant groups.

**Table 8.2: Summary of Significant Findings in Study 2.**

	<b>Gender</b>	<b>Status</b>
<b>Verbal Theory of Mind</b>	✓	✓
<b>Visual Theory of Mind</b>	-	✓
<b>Self-Reported Empathic Understanding</b>	-	✓
<b>Performance-Based Empathic Understanding</b>	✓	✓
<b>Moral Reasoning</b>	-	✓

Note: A tick denotes a significant difference and a – denotes a non-significant difference.

A significant gender difference was found for verbal Theory of Mind, with men scoring lower. One explanation for this might be the amount of ‘supportive’ and ‘emotional’ talk that parents and older siblings enter into with young children, as past research suggests such communications appear to favour girls over boys (Brown & Dunn, 1996). According to Leaper et al. (1998), this difference may be all that is needed to give girls a ‘boost’ with regard their ‘developing’ Theory of Mind. However, no gender difference was found for the visual task. This may be explained by Bolger et al. (2007) who reported that girls outperform boys in tasks where there is a verbal stimulus, whilst boys outperform girls in tasks when they are presented with visual stimuli. As the task to assess visual Theory of Mind, as used in this thesis, involved both a verbal and a visual stimulus (see subsection chapter 3, subsection 3.3.3 for an example) it is possible that each moderated for the other in terms of gender related abilities. In other words the verbal

stimuli provided an advantage for the male participants, whilst visual stimuli provided an advantage for the female participants, resulting in no difference in the scores for visual Theory of mind between the male and the female participants.

In terms of status, differences were found between the offender and the non-offender groups for both verbal and visual Theory of Mind; with the offender group scoring lower on both measures. It is known that carer stimulation is needed for the development of Theory of Mind (Suminar & Hastjarjo, 2016). Thus, one explanation for the lower Theory of Mind in the offender group may be related to the existence of ‘risk factors’ in their upbringing (Hoeve et al., 2009). In particular backgrounds of neglect, negative attitudes, and/or conflict and abuse are thought to be related to the onset of offending behaviours (Hoeve et al., 2009) and as such are said to impact on the development and shaping of a person’s capacity to mentalise (Happé & Frith, 1995).

With regard to Empathic Understanding, study 2 detected no gender difference in the self-reported measure; however a difference was detected in the performance-based measure, with the male participants scoring lower. One explanation for this may be that studies using self-report measures, where gender differences in Empathic Understanding have been identified, reflect societal expectations rather than participant beliefs (Makino, 2010). Indeed, Devlin, Zaki, Ong, and Grube (2014) noted that performance-based measures are more likely to report the true feelings and/or beliefs of participants; which may explain why the performance-based measure for Empathic Understanding found a gender difference. As to the origins of the difference in Empathic Understanding between offenders and non-offenders, the answer may be found in biology (Batrinos, 2012). Simply, men are generally known to have higher baseline levels of testosterone, which has been

associated with lower levels of empathy (Baron-Cohen, 2002); therefore it might be concluded that men are generally be less empathic than women.

With regard to Empathic Understanding and status, a significant difference was found; with the offender group scoring lower than the non-offender group on both the self-reported and the performance-based measures. These findings were expected as prior studies have reported a deficit in Empathic Understanding in offenders (Hoaken et al., 2007). In particular, Robinson et al. (2012) suggested that offenders were less able to distinguish between negative facial expressions such as sadness, fear, disgust, and anger, when compared to IQ-matched controls; thus suggesting a lower ability in terms of Empathic Understanding. One explanation for this may be found by looking back at the perspective taking or Theory of Mind of offenders. For example, Marshall and Marshall (2011) postulated that to understand the emotions of another it is necessary to comprehend a situation from their perspective; especially with regard to distress cues (Blair, 2005). As noted in subsection 8.1.1, some offenders have reduced abilities in Theory of Mind, also known as the ability to perspective take; thus potentially explaining the reduced level of Empathic Understanding in offenders.

With regard to Moral Reasoning study 2 found no gender difference. Whilst, some previous studies have reported a gender difference in Moral Reasoning (Gilligan, 1982; Ford & Richardson, 1994), Friesdorf et al., (2015) explained that this may be because they assumed moral behaviour to be an affective process. As a consequence, it was proposed that disparity in gender related morality was due to women having a stronger emotional aversion to harmful actions than men, rather than any actual differences in cognitive reasoning. However, Friesdorf et al. noted that when emotion was controlled for no difference was found. In using a task purported to measure both cognitive and affective

abilities in moral reasoning, study 2 was able to confirm this. In contrast, status related differences in Moral Reasoning were found. Palmer and Begum (2006) similarly found that offenders reasoned at Kohlberg's Moral Stage 2, whilst their matched non-offender control group reasoned at Moral Stage 3. However, Palmer and Begum's study was limited to 14- to 17- year olds.

Study 2 adds to the literature by demonstrating that offenders have reduced abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning, when compared to their non-offending counterparts. It was also noted that although females generally perform slightly better than males in measures of Theory of Mind, Empathic Understanding, and Moral Reasoning, women offenders do appear to have reduced abilities in these constructs when compared to the male and female non-offending control group (when matched for age and IQ); thus supporting the relevance of rehabilitative programmes aimed at reducing reoffending by improving prosocial abilities.

### **8.1.3: Study 3a and 3b.**

Study 3a investigated the association between Social Capital and (i) verbal and visual Theory of Mind, (ii) self-report and performance-based Empathic Understanding, and (iii) Moral Reasoning, as well as any differences in levels of Social Capital according to status (offenders and non-offenders). Table 8.3 summarises the key findings, where a tick indicates a significant difference was found between the participant groups.

**Table 8.3: Summary of Significant Findings in Studies 3a and b.**

	Social Capital
Verbal Theory of Mind	✓
Visual Theory of Mind	-
Self-Reported Empathic Understanding	✓
Performance-Based Empathic Understanding	✓
Moral Reasoning	-
Offender / Non-Offender Comparison	-

Note: A tick denotes a significant difference and a – denotes a non-significant difference.

With regard to Social Capital and verbal Theory of Mind, an association was found. Saxe and Baron-Cohen (2006) explained that the ability to make inferences (or ‘read’ the mind) and so understand the goals and desires of others, was dependent upon the ability to process verbal signals; which may explain the association between ability in Theory of Mind and Social Capital found in study 3a. In contrast, no association was found for visual Theory of Mind. Whilst, this is somewhat unexpected, modern use of web based communications might offer an explanation (Park, 2010). Simply, in contemporary culture it is apparent that through non-visual directed communication and non-visual public broadcasting individuals are able to build Social Capital (Antheunis et al., 2015); thus suggesting that face to face contact may have become less important in modern western society and that individuals no longer exclusively rely on face-to-face or visual contact to

build social networks. This adds to the literature by noting that the difference between informational and emotional understanding may have become blurred.

As expected, study 3a did find an association between Social Capital and both self-report and performance-based Empathic Understanding. These findings confirm that the ability to appreciate another person's situation and/or perspective helps to establish, nurture, and expand social networks (Greenberg et al., 2016). Indeed, Venkatanathan et al. (2013) noted that empathic people seem to be drawn to 'community orientated' activities (Williams, O'Driscoll, & Moore, 2014), and, possibly because of the help they offer to others, are well supported in return (Roberts et al., 2011); thus building Social Capital.

The findings in relation to Social Capital and Moral Reasoning (study 3a) and the differences in Social Capital between offenders and non-offenders (study 3b), were somewhat unexpected. However, in considering possible reasons for these findings, it was determined that the explanations for each were very similar. Firstly, although it has been suggested that higher levels of Social Capital, as characterised by moral cooperation, can act as a discouragement to individuals in terms of socially deviant behaviour (Popper, 2013), it has also been noted that this may not be sufficient to guarantee that people will always behave accordingly. In other words, higher levels of Social Capital do not mean that a person is more morally focused, and thus Moral Reasoning may be overlooked in the pursuit of personal gain.

The lack of association between Social Capital and Moral Reasoning might also be explained by work on organised crime. According to Bourdieu (1986) organised crime, for example, organised crime 'families', gangs, gambling syndicates, and/or prostitution rings, is characterised by a degree of mutual trust between their members. Putman (2000) noted that this is actually a form of Social Capital. Simply, whilst organised crime produces

negative effects in relation to societal moral norms, in terms of its members such behaviour is entirely normative (Decker, 2007). Indeed, whilst the moral boundaries of such groups may be very different from those considered acceptable by most of society, they are in many cases grounded in honour and loyalty (Cooney, 2009). Study 3a therefore adds to the literature by suggesting that to build Social Capital a person does not necessarily have to behave in moral way as prescribed by society.

Organised crime could also explain the similarity in levels of Social Capital between offenders and non-offenders found in study 3b. Wooditch, Tang, and Taxman (2014) noted that both groups possess Social Capital, in the form of trust, reciprocity, and veneration. Therefore, it may be concluded that Social Capital can be used for prosocial and antisocial purposes (Putnam, 2000), and can exist, in equal measure, from both a legitimate and illegitimate perspective (Pih et al., 2008). Whilst, this is a concept that has previously been discussed in terms of young offenders (Wooditch, Tang, & Taxman, 2014), the current thesis notes that it should also be considered with reference to groups of older offenders, thus adding to the literature.

To conclude, Theory of Mind, Empathic Understanding, Moral Reasoning, and Social Capital have been a focus of psychological research for a number of years. However, the influences of Theory of Mind, Empathic Understanding, and Moral Reasoning on the development of Social Capital have to some extent been neglected. To the current author's knowledge, the present research is the first to demonstrate, within a single study, the effects of Theory of Mind, Empathic Understanding, and Moral Reasoning, on Social Capital. Further, in finding no difference in levels of Social Capital between the offenders and the no-offenders, the current study revealed that offenders feel as supported, in terms of networks and ties, as non-offenders. Together the findings of

studies 3a and 3b add to the literature relating to the influence of Social Capital and the effects it may have on recidivism.

#### **8.1.4: Study 4a and 4b.**

According to Marques et al. (2015) cognitive mechanisms, such as the capacity to feel, understand, and differentiate between complex thoughts, beliefs, and emotions, and the ability to self-regulate in order to adapt to different social situations, are important for successful human social interaction. Such behavioural and cognitive control is related to the theory of Executive Functioning (Diamond, 2013). As noted in chapter three, subsection 3.3.8, Executive Functioning is perceived as not having a ‘gold-standard’ assessment tool (Chan et al., 2008; Salthouse, 2005), which may be because of its multidimensional nature (Brugger et al., 1998). However, McCloskey et al. (2009) suggested that certain cognitive abilities should be taken into consideration when assessing Executive Functioning; Working Memory; Cognitive Flexibility, and Inhibitory Control. Therefore based on their recommendation, this thesis focused on those constructs.

With regard to 4a, the current thesis found differences in levels of Working Memory, Cognitive Flexibility, and Inhibitory Control according to status, with the offending group achieving lower scores and study 4b found one or more of these observable and measureable skills to be predictive of Theory of Mind, Empathic Understanding, and Moral Reasoning (Table 8.4 summarises the key findings).

**Table 8.4: Summary of Significant Findings in Study 4**

	<b>Working Memory</b>	<b>Cognitive Flexibility</b>	<b>Inhibitory Control</b>
<b>Verbal Theory of Mind</b>	✓	✓	✓
<b>Visual Theory of Mind</b>	-	✓	✓
<b>Self-Reported Empathic Understanding</b>	✓	-	✓
<b>Performance-Based Empathic Understanding</b>	✓	✓	✓
<b>Moral Reasoning</b>	-	-	✓
<b>Social Capital</b>	-	-	-

Note: A tick denotes a significant difference and a – denotes non-significant difference.

In particular, study 4b investigated how Working Memory, Inhibitory Control, and Cognitive Flexibility, as the three key measurable factors said to make up the construct of Executive Functioning, might predict proficiency in verbal and visual Theory of Mind, self-report and performance-based Empathic Understanding, Moral Reasoning, and Social Capital. Study 4b found that Executive Functioning, in the form of Working Memory, Cognitive Flexibility, and Inhibitory Control, was able to predict verbal Theory of Mind, and that Cognitive Flexibility and Inhibitory Control were able to predict visual Theory of Mind. With regard to Cognitive Flexibility, Bock et al. (2015) suggested it is needed to move efficiently between multiple incompatible perspectives, descriptions, beliefs, intentions, or situations. In other words, Cognitive Flexibility allows a person to make simultaneous judgments, from multiple and sequentially shifting situations, and so ‘make

sense' of everyday interactions from both a verbal and a visual perspective, whilst Inhibitory Control allows the individual to suppress his or her own immediate responses long enough to allow for a considered response.

In contrast Executive Functioning, in the form of Working Memory, Cognitive Flexibility, and Inhibitory Control, was found not to predict visual Theory of Mind. One explanation for this may be that Working Memory can store a very limited amount of information for a short period of time. To resolve this issue important information is generally transferred to long-term memory for later retrieval. This requires larger pieces of information to be 'transformed' into smaller, more manageable 'chunks'. An inefficient Working Memory may act as a 'bottle neck', meaning that individuals are less able to successfully transform data to allow easier movement into, and recovery from long-term memory (Borst et al., 2010). However, according to Gutierrez (2014) visual imagery, including verbal data that has been successfully transformed into a visual metaphor, allows for easier access to information for longer periods of time, thus suggesting that visual information is much easier to manage and therefore not as reliant on an effective Working Memory.

Further, Executive Functioning, in the form of Working Memory, Cognitive Flexibility, and Inhibitory Control was able to predict Empathic Understanding in respect of the performance-based measure in study 4b, whilst Working Memory and Inhibitory Control were able to predict Empathic Understanding in respect of the self-report measure. This can be explained by the proposition that a more efficient Working Memory allows for an increased amount of information to be stored, thus making it easier for a person to extract the relevant social cues from any given situation to allow Empathic Understanding (Gao et al., 2016). Similarly, efficient Cognitive Flexibility allows a person to alternate

between salient pieces of information, thus allowing for the prediction, recognition, and understanding of emotional responses (Heinz et al., 2011). That Cognitive Flexibility was found not to predict self-reported Empathic Understanding may lie in the measure that was used. As noted in the preceding chapters in relation to Empathic Understanding, self-reports may reflect individuals' understanding of societal expectations, rather than their own true beliefs (Makino, 2010). Therefore, a performance-based measure may be more representative of how Cognitive Flexibility may predict Empathic Understanding.

Eisenberg and Eggum (2009) suggested that individuals who are unable to 'inhibit' are likely to be overwhelmed by their own beliefs in a particular situation, and so make a less appropriate decisions. Simply, to make moral judgements, people must be able to self-regulate, curb over-arousal, and reflect upon the rights and wrongs of their own, as well as others', behaviour (Derryberry & Rothbart, 1997), as well as integrate the rational, emotional, and intuitive aspects of a situation (Malti & Ongley, 2014). In other words, Inhibitory Control is necessary when making moral judgements (Hoffman, 1987); thus giving explanation to the hypothesised findings in study 4b. In contrast, Working Memory and Cognitive Flexibility did not predict Moral Reasoning was unexpected. This is particularly the case for Cognitive Flexibility, given that Kohlberg (1969) suggested that the move to a higher stage of Moral Reasoning is characterised by a more flexible way of thinking.

However, as before, these findings can be explained within the context of moral schemas. According to Kohlberg and Candee (1984) moral schemas are developed through previous interactions and inform expectations relating to appropriate behaviour in a particular situation. However, as noted above, moral schemas do not reside in Working Memory, but rather in long-term memory (Rest et al., 1999), thus explaining that Working

Memory did not predict Moral Reasoning. Further, Cañas, Fajardo, and Salmerón (2006) suggested that some people may have a ‘cognitive blockade’ in relation to these schemas. Such a blockade may then prevent him or her from executing Cognitive Flexibility in the advent of a new moral dilemma. In other words, personal schemas may be so engrained that the ability to change in the face of a new moral situation becomes impaired.

In contrast, study 4b found that Social Capital was not predicted by Working Memory, Cognitive Flexibility, or Inhibitory Control. This was unexpected given that Executive Functioning, as the overriding construct, is thought to provide for the coordination required to successfully manage a social network. However, as with Moral Reasoning, the building of Social Capital is said to be influenced by schemas or frameworks that relate to common experiences, especially ‘shocks’ (Puntscher et al., 2014). As noted above, these schemas are lodged in long-term memory; which offers an explanation as to why Working Memory may not predict Social Capital. Further, Krishna and Schrader (2000) noted that structural flexibility was more important than Cognitive Flexibility in building Social Capital. Specifically, structural flexibility refers to the roles, rules, and precedents of a group, rather than the cognitive norms, attitudes, values, and beliefs that are held individually. Finally, Perry et al., (2015) noted that the controlled inhibition of self-interested or maladaptive automatic responses was not an essential part of building human relationships. For example, prosocial behaviour may result from the value assigned to a particular course of action, rather than the conscious inhibition of an antisocial response (Zaki & Mitchell, 2013), or a helping behaviour may also have self-serving motives (Jensen et al., 2014). Study 4b contributed to the literature as, to the current author’s knowledge, it is the first to examine, within a single study, the ability of the three key sub-constructs of Executive Functioning in terms of Working Memory,

Cognitive Flexibility, and Inhibitory Control, to predict abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning; thus suggesting potential alternative tools for measuring levels of prosociality.

To summarise, section 8.2 noted a number of unique contributions arising from studies one to four. These include:

- Study 1 offered empirical evidence in terms of the effects of aging in relation to Theory of Mind, Empathic Understanding, and Moral Reasoning, from adolescence to adulthood in both male and female participants.
- Study 2 demonstrated that offenders, in general, have reduced abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning. It was also noted that women offenders also have reduced abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning; thus supporting the relevance of rehabilitative programmes aimed at reducing reoffending by improving prosocial abilities.
- Study 3a offered empirical evidence of the associations of Theory of Mind, Empathic Understanding, and Moral Reasoning with Social Capital, in a single study. In addition study 3b suggested that Social Capital can be used for prosocial and antisocial purposes, and can exist from both a legitimate and illegitimate perspective.
- Study 4b found that offender's score lower on measures of Working Memory, Cognitive Flexibility, and Inhibitory Control thus providing alternative mechanisms for measuring prosociality. In addition, Study 4b was the first study to examine, within a single study, the ability of Working Memory, Cognitive Flexibility, and Inhibitory Control (as the three key sub-

constructs of Executive Functioning) to predict abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning (as the three key sub-constructs of prosocial behaviour).

### **8.3: Practical Implications of Studies 1 to 4.**

Reducing the level of recidivism is an important goal for Criminal Justice Systems. Indeed, in the last ten years there has been a shift from a “punish them hard enough and they won’t come back” ethos, to a more integrated rehabilitative approach to reducing reoffending (Hooley, 2010, p. 3). From the perspective of this thesis, that ‘rehabilitative approach’ involves the development of certain cognitive skills that are said to underpin prosocial behaviour (i.e. Theory of Mind, Empathic Understanding, and Moral Reasoning).

In the UK, the most commonly used rehabilitative intervention, within both the prison and probation services, is the TSP. Initially piloted in 2008, TSP began its roll-out in 2009, and has now completely replaced its predecessor, ETS. A main focus of TSP appears to be the development and improvement of Theory of Mind, Empathic Understanding, and Moral Reasoning, specifically:

- (i) the ‘Stop and Think’ principle which aims to help offenders to solve problems by developing the ability to see situations from a number of different perspectives; in other words Theory of Mind (McGuire et al, 2007);
- (ii) the development of an emotional awareness element by which the offender is encouraged to recognise and manage his or her own emotions, and subsequently make more effective and controlled decisions; simply Empathic Understanding (Solomon, 2007);

- (iii) the introduction of moral concepts, where the offender is helped to understand society's point of view, and as well as explore his or her own personal values; namely Moral Reasoning (Ward & Nee, 2008).

Although official government statistics relating to the ability of TSP to impact upon levels of recidivism are yet to be released, the success of its predecessor (ETS) was less than anticipated (Sadlier, 2010). For example, whilst initial evaluations of the ETS programme found statistically significant reductions in the reconviction rate of male participants; 14% for medium-to-low risk offenders and 11% for medium-to high risk offenders, (Friendship et al., 2002), research at the two year mark failed to find a statistically significant difference; suggesting that any changes to offending patterns were short lived (Falshaw et al., 2003). Other factors that may have driven these variable results include: (i) the inability to control for potential differences in dynamic risk factors such as age, gender, ethnicity, and criminal career variables (Cann, 2006), and (ii) the suitability of the selection criteria (Sadlier, 2010).

Whilst the introduction of TSP is said to have addressed a number of these issues, another concern was identified by the current author in 2012 during a programme of research at HMP Nottingham, which was approved by the Ministry of Justice and the National Offender Management Services (unpublished master's thesis, Staffordshire University, 2011). Firstly, pre-programme assessments (specifically relating to TSP) do not allow for any individual 'cognitive' differences, with the exception of IQ; thus meaning that any one group of participants will include individuals with a range of skill levels and abilities. The current author suggests that this may be an issue given that Weaver and McNeill (2010) noted that it was essential to allow for individual differences in rehabilitation, particularly with reference to persistent offenders, if desistance is to be

achieved. Simply, Weaver and McNeil stated that a one-size-fits-all approach will not work. Further, Inciardi et al. (2004) noted that the more focused the intervention is to the specific needs of an offender, the greater the impact in terms of reducing re-offending behaviour will be. However, in defence of the apparent assumption that all potential participants have a similar basic level of ability in the three key skills said to underpin prosocial functioning on which TSP can build (Spenser et al., 2015), few studies have been conducted relating to Theory of Mind, Empathic Understanding, and Moral Reasoning, and their importance in terms of offender rehabilitation.

To conclude, whilst differences in abilities, across various populations, in Theory of Mind, Empathic Understanding, and Moral Reasoning have been of interest to psychologists for a number of years, to the current author's knowledge the current study is the first to consider each, within a single study. Therefore, in light of the unique contributions to literature described in section 8.2, the following subsections will comment on how the new findings in this thesis may impact on current practice.

### **8.3.1: Study 1.**

Firstly, whilst it is known that the acquisition of Theory of Mind, Empathic Understanding, and Moral Reasoning begins in early childhood (Grusec et al., 2000), previously it has not been understood whether each continues to change across adolescence and into adulthood, or if at a certain point in late childhood they become fixed (Smith et al., 2003). Study 1 found that Theory of Mind, Empathic Understanding, and Moral Reasoning are relatively plastic and, in most cases, continue to develop or improve until early adulthood. At this point the development of Empathic Understanding and Moral Reasoning appears to slow down or plateau. However, these findings should be generally encouraging for practitioners, as had these skills become fixed in childhood or adolescence, the

relevance of interventions aimed at modifying them in older offenders may have been questioned.

Therefore, of key importance to practitioners, is the suggestion that age may not be a prohibitive factor in relation to the later development or re-enforcement of values and behaviours necessary for acceptable social behaviour; specifically Theory of Mind, Empathic Understanding, and Moral Reasoning. However, given that approximately 18% of the prison population is aged 18- to 24- years (Bromley Report, 2017); approximately one third serving short term sentences, and that 44% of all adult offenders and 69% of under 18- year olds will reoffend within one year (Commons Library Briefing, 2017), this thesis suggests that a TSP type programme, focussing on the improvement of prosocial skills, would be of benefit to this previously rather neglected group of offenders.

### **8.3.2: Study 2.**

Vessels and Huitt (2005) proposed that any early deficiencies in prosociality could be addressed by programmes which focus on the development of offenders prosocial abilities. A second objective of this thesis was therefore to establish if differences in Theory of Mind, Empathic Understanding, and Moral Reasoning could be identified according to gender and status. The key findings in study 2 were:

- (i) that offenders, across a representative age range, generally have reduced abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning;
- (ii) that women (both offenders and non-offenders), generally perform better than men in measures for Theory of Mind, Empathic Understanding, and Moral Reasoning;

- (iii) improved knowledge relating to the relevance of rehabilitative programmes aimed at reducing reoffending by improving prosocial abilities.

The current author suggests that to maximise the success of TSP (or similar interventions), assessing individual abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning may assist in confirming a person's suitability for the programme. That is, if offenders' score below the established norm in measures for these skills it may not be unreasonable to expect that he or she would benefit from an intervention aimed at improving prosocial abilities. In addition, and perhaps most pertinently, if and when reduced abilities in Theory of Mind, Empathic Understanding, and/or Moral Reasoning are identified, practitioners may wish to group individuals with similar abilities together and/or tailor interventions to meet the specific needs of that cohort. Finally, TSP is not generally offered to offenders serving a sentence of less than 4 years; a cohort that represents approximately 30% of today's prison population (Commons Library Briefing, 2017). Yet, according to reoffending data, this group reoffends at particularly high rate (Ministry of Justice, 2016). Overall, consideration of these factors could be of benefit in terms of improving prosocial abilities and reducing levels of recidivism, given that the offending population used in this thesis were male and female prisoners serving sentences of less than six months,

### **8.3.3: Study 3a and 3b.**

Study 3a found that Social Capital may not depend on both verbal *and* visual Theory of Mind, and study 3b found that offenders and non-offenders appear to 'own' a similar level of Social Capital. These findings may be of particular interest to people within the Criminal Justice System who advocate the creation of Social Capital as a means to help

redirect a person from a criminal pathway, to one reflecting desistance. In particular, this thesis has identified that Social Capital can exist in similar levels in both a legitimate and an illegitimate form (Pih at al., 2008). Although, this has previously been recognised in young offenders (Wooditch, Tang, & Taxman, 2014), this thesis suggests that it should also be considered with reference to older offenders; in particular those involved with gangs, gambling syndicates, prostitution rings, and/or organised crime families.

Whilst the current view within the Criminal Justice System appears to be that building Social Capital supports the reduction of offending behaviours, this thesis submits that practitioners may wish to consider not only the amount, but also the nature, of those networks. Although, desistance is likely to be the result of relationships formed for reasons other than the involvement in crime, practitioners may need to be aware that Social Capital exists in both the real, and the virtual world (Park, 2010). Therefore, whilst the focus of the probation service in the UK has been the risks and needs of offenders; this thesis suggests that a greater understanding of, and support for, the development of positive and legitimate Social Capital may be a useful tool to help offenders involved in the revolving door of crime, on the road to desistance.

#### **8.3.4: Study 4a and 4b.**

Study 4a found differences in Working Memory, Cognitive Flexibility, and Inhibitory Control according to status. However, whilst further research will be needed before recommending these constructs as additional pre-programme assessments, practitioners may wish to take their predictive nature when designing new, or modifying existing, programmes in relation to interventions aimed at improving prosociality in offenders. In addition, study 4b found that Executive Functioning, broken down into its main constructs of Working Memory, Cognitive Flexibility, and Inhibitory Control, is

largely predictive of Theory of Mind, Empathic Understanding, and to a lesser extent, Moral Reasoning. Indeed, it appears that a developed Executive Functioning is necessary for a person to comprehend and ‘shift’ between multiple incompatible perspectives, descriptions, beliefs, intentions, and/or situations, whilst suppressing automatic responses. In contrast, an underdeveloped Working Memory, Cognitive Flexibility, and Inhibitory Control may contribute, at least in part, to offending behaviours. The current author notes that previous studies have largely focused on the associative relationship between the constructs; study 4b therefore contributes to the literature by proposing a predictive connection between Working Memory, Cognitive Flexibility, and Inhibitory Control and Theory of Mind, Empathic Understanding, and Moral Reasoning.

#### **8.4: General Considerations, Limitations and Future Studies.**

In quantitative research, generalisability is considered a major criterion for evaluating the quality of a study (Polit & Beck, 2008). However, researchers recognise that generalisations involving quantitative evaluations can never be made with certainty (Cronbach, 1975). Instead such studies are said to form a working hypothesis “to be tested again in the next encounter and again in the encounter after that” (Guba, 1978, p. 70). Nevertheless this section will attempt to address the question of generalisability.

##### **8.4.1: Population.**

The ‘population’ is the totality of elements or people that have common, defined characteristics, and about whom the study results are relevant (Polit, 2010). Whilst the best strategy for achieving a representative sample of the population is to use probability (random) methods of sampling, it is recognised that this is not always practical (Polit, 2010). This study adopted opportunity sampling, whilst controlling for age and IQ across

the different groups, which allows a degree of transferability of the findings (Lincoln & Guba, 1985).

In terms of sample size, Clark-Carter (2010) suggests in studies where performance between two groups is the focus, and a medium effect size (.5) and a power of 0.8 are desired, a target of 20 participants in each group is desirable. In study 1 a total of 23 participants per group were used, in study 2 50 participants per group were used, and studies three and four 100 participants per group were used.

It is noted that the research within this thesis purposely used a cohort of offenders serving short term sentences. Therefore, further study is needed to determine whether the current findings are generalisable to those serving longer prison sentences, as well as those who have been dealt with by way of a community disposal. Further, Donmoyer (1990) cautioned against generalising the findings from a specific group of individuals, but rather use the findings as a starting point. However, although this study was conducted in the Midlands, the offender groups were recruited from representative prisons, and therefore may generalisable to other areas of the UK.

#### **8.4.2: Replication.**

In discussing replication, Firestone (1993, p. 17) noted that “when conditions vary, successful replication contributes to generalisability”. Indeed, Fahs et al. (2003) suggested that there should be greater encouragement for the planned replication of studies. In other words, if findings can be confirmed with different cohorts of people, validity, and applicability can be strengthened (Shadish et al., 2002). The present thesis used documented screening criteria to select participants, thus facilitating future replication. However, it must be noted that opportunity sampling was used; with participants volunteering for the research in response to notice placed in appropriate places in the

schools, prisons, and community, and as such, may not be truly reflective of the whole population.

Further, to facilitate replication, the present thesis adopted well established measures to assess abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as IQ, Working Memory, Cognitive Flexibility, Inhibitory Control, and levels of Social Capital. In addition, in recognition of Makino's (2010) concern relating to the risks associated with self-report measures, performance-based measures were used for the assessment of Theory of Mind, Empathic Understanding, Moral Reasoning, IQ, Working Memory, Cognitive Flexibility, and Inhibitory Control. However the assessment of Social Capital was based on a self-report measure. Therefore, the reader must consider that the findings relating to Social Capital may not be truly reflective. .

#### **8.4.3: Limitations and Future Studies.**

There are a number of limitations within the four studies in this thesis; each will now be discussed. Firstly, study 1 did not include male or female offender as participants. This is especially pertinent in relation to female offenders as, although it is acknowledged that women are accused of far fewer crimes than men, a total of 297,034 recorded offences were committed by females in 2012 (Criminal Justice Statistics, Quarterly Update, 2012) constituting about 24% of all offences committed in England and Wales in that year. Further, the Corston report (2007) recommended the creation of a “distinct, radically different, visibly-led, strategic, proportionate, holistic, woman-centred, integrated approach” to the rehabilitation of female offenders (Prison Reform Trust, 2017, p. 1). Theories regarding age related development of Theory of Mind, Empathic Understanding, and Moral Reasoning cannot simply be generalised from male to female offenders.

Consequently, future studies considering age related changes in Theory of Mind, Empathic Understanding, and Moral Reasoning may wish to include a female cohort.

Secondly, studies 1, 2 and 3 did not:

- (i) differentiate between the crime categories,
- (ii) include individuals serving sentences of more than six months, or
- (iii) take into consideration the socio-environmental backgrounds of the offending and non-offending groups.

Whilst this is not uncommon, as Chen and Howitt (2007) noted that past studies rarely took note of other individual differences, for example, types of crimes committed. In addition, the importance of noting factors such as drug dependency, education, or employment status should not be overlooked (Entorf & Spengler, 2000). Therefore, in the future, more fine grained approaches could further establish the generalisability of the current findings.

Thirdly, studies 3 and 4 used a measure that assessed only bonding Social Capital. As such it omitted to ask participants to describe the age, location, or nature of the friendship they were claiming to have; and so did not measure levels of bridging or linking Social Capital. Simply, the offenders may have been reporting new relationships or networks acquired in prison, rather than those formed before he or she was incarcerated. Therefore, whilst this thesis concluded that similar levels of Social Capital, as characterised by social networks with strong norms and reciprocity, can be found in both offenders and non-offenders, future researchers may wish to more closely consider the characteristics of the Social Capital under evaluation.

Lastly, the current thesis focused on offenders in custody. However, according to the Ministry of Justice, Offender Management Statistics (2016), 224,823 offenders were being managed by probation. This figure is likely to be around 65,000 higher since the

‘post-sentence supervision’ ruling of 2013. As in 2007 the recidivism rate for individuals serving short sentences in the UK was 69.6% at the one year mark, this ruling may increase the burden of how to help offenders escape the ‘revolving door of crime’ firmly in the hands of the probation service. Therefore, future studies may wish to consider offenders serving a community sentence, as well as a custodial sentence.

## **8.6: Conclusion.**

There is general accord that Theory of Mind, Empathic Understanding, and Moral Reasoning are first detected in children between the ages of 12 and 18 months (Smith et al., 2003). Eventually, most people learn to comply with societal standards and develop the belief that prosocial behaviour is an obligatory part of acceptable social functioning (Sanstock, 2014). However, empirical evidence is mixed in relation to the development of Theory of Mind, Empathic Understanding, and Moral Reasoning beyond their initial emergence. Nevertheless, Lam (2012) stated that an understanding of prosocial behaviour, and the constructs that support it, were important when considering research and practice within the Criminal Justice System in the UK. This is supported by findings suggesting that the risk of offending behaviour is lowered if a person acquires certain prosocial skills (Prior & Paris, 2005), and is increased if those same skills were reduced or absent (Farrington, 2010; Palmer, 2013). Indeed, this premise is recognised by the Ministry of Justice which as a result has developed a number of accredited rehabilitative interventions, with the focus of improving levels of prosociality and thus seeking to reduce offending behaviour (Palmer, 2013).

The overriding aim of this thesis was to establish whether specific factors should be considered when designing new (or when making refinements to existing) interventions

aimed at reducing recidivism. Those factors are Theory of Mind, Empathic Understanding, and Moral Reasoning. This thesis also considered Social Capital and Executive Functioning. As a consequence, the specific objectives of the four studies within this thesis were to establish:

- (i) a clearer understanding of how age might affect the ongoing development of Theory of Mind, Empathic Understanding, and Moral Reasoning;
- (ii) a better understanding of how status and gender might affect abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning;
- (iii) a clearer understanding of how abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning might affect a person's ability to build Social capital, and;
- (iv) if cognitive specific influences, in the form of Working Memory, Cognitive Flexibility, and Inhibitive Control, as a components of Executive Functioning, are able to predict abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning.

In conclusion, the studies within this thesis provide empirical evidence that male and female offenders, and offenders and non-offenders differ in their abilities regarding Theory of Mind, Empathic understanding, and Moral. However, these abilities remain relatively plastic; with a general ability to develop and improve into adulthood. These finding suggest that if skills are underdeveloped they may lead to reduced social functioning and, as a result may contribute, at least in part, to anti-social or offending behaviours. Indeed, it was found that Theory of Mind, Empathic Understanding, and Moral

Reasoning are relatively plastic and that improvement in ability can occur, to some extent, during the life span of an individual.

Further, it was suggested that an inefficient Executive Functioning may lead to poorer problem-solving, self-regulation, and behaviour (Zelaszo & Frye, 1998). However, whether such ‘disabilities’ reflect a deficient functioning at the individual level, which may be addressed by programmes or are due to inefficient external influences resulting from inadequate resources, information, and monitoring, requires further research to determine.

Nevertheless, when combined the studies within this thesis offer further insight into factors that may be considered when designing new, or when making refinements to existing interventions and programmes aimed at reducing recidivism through the medium of improved prosociality. The current author recognises that there may be a cost implication associated with this proposal and further economic evaluation will be needed. However, by prioritising people involved in the ‘revolving door’ of offending, as well as those classed as ‘high risk’ of reoffending, the costs associated with additional pre-programme assessments and targeted TSP sessions may be offset by a reduction in prison capacity requirements.

Therefore, taking into consideration the premise that the more focused the intervention is to the specific needs of a group of offenders, the greater the impact may be in terms of reducing re-offending (Inciardi et al., 2004), this thesis proposes that an accurate measure of offender abilities in Theory of Mind, Empathic Understanding, and Moral Reasoning, as well as consideration of Working Memory, Cognitive flexibility, and Inhibitory Control would allow practitioners to:

- (i) assess the suitability of a prospective programme participant,
- (ii) group individuals with similar levels of ability together, and

- (iii) adjust the initiative to meet the needs to that specific group, which in turn may help to reduce levels of recidivism.

However, it must be noted that ‘psychological’ rehabilitation can take a person only part of the way towards a better life, and if the route is blocked by the practical effects of having a criminal record or the refusal of a community to accept that someone has changed, then desistance may be threatened. Indeed, the Owers review (2011) noted that desistance is a social process as much as a personal one, and that no amount of prison or community based support for change will secure desistance without a broader social and political commitment to ex-prisoner reintegration. As such, the Criminal Justice System in the UK may like to consider the need for state, voluntary, and private agencies to support those who have served their punishments, and especially those who have succeeded in achieving the aims of their offender programmes, and as such have made improvements in the skills and qualities focused on within this thesis.

## References

- Abdullahi, I A. & Kumar, P. (2016). Gender Differences in Prosocial Behaviour. *The International Journal of Indian Psychology*, 3(4), 56. ISBN: 978-1-365-23992-2.
- Adler, F. (1975). *Sisters in Crime: The Rise of the New Female Criminal*. New York: McGraw-Hill.
- Adler, P. S. & Kwon, S.W. (2000). *Social capital: The good, the bad, and the ugly*. In E. Lesser (Ed.), *Knowledge and social capital: Foundations and applications* (p. 89-115). Boston: Butterworth-Heinemann.
- Aknin, L., Van Boven, L. and Johnson-Graham, L. (2014). Abstract construals make the emotional rewards of prosocial behavior more salient. *The Journal of Positive Psychology*, 10(5), 458-462.
- Alexander, K. W., Goodman, G. S., Schaaf, J. M., Edelstein, R. S., Quas, J. A., & Shaver, P. R. (2002). The role of attachment and cognitive inhibition in children's memory for a stressful event. *Journal of Experimental Child Psychology*, 83, 262-290.
- Aljabber, J. M. (2001). Is intelligence influenced by heritability, environmental influences? or both? How is intelligence influenced by these factors? (Unpublished doctoral thesis).
- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The 'other-raising' emotions of elevation, gratitude, and admiration. *Journal of Positive Psychology*, 4(2), 105-127. DOI: 10.1080/17439760802650519
- Allan, J., Catts, R., & Stelfox, K. (2012). *Introduction*. In Allan, J., & Catts, R. (Eds.), *Social capital, Young Children and Young People: Implications for practice, policy and research*, (p. 1-11). Bristol: The Policy Press.

- Altay, F.B. & Gure, A. (2012). Relationship among the parenting styles and the social competence and prosocial behaviours of the children who are attending to state and private preschools. *Educational Sciences: Theory and Practice*, 12 (4), 2699-2718.
- Amodio, D. M., & Frith, C. D. (2006). Meeting of minds: The medial frontal cortex and social cognition. *Nature Reviews Neuroscience*, 7, 268-277.
- Anderson, J. R., & Schooler, L. J. (2000). *The adaptive nature of memory*. In E. Tulving & F. I. M. Craik (Eds.), *The Oxford Handbook of Memory* (p. 557–570). New York: Oxford University Press.
- Anderson, M. L., Richardson, M. J., and Chemero, A. (2012). Eroding the boundaries of cognition: Implications of embodiment. *Topics in Cognitive Science*, 4, 1-14
- Andreoni, J. (1990). Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving. *The Economic Journal*, 100, 464-477.  
DOI: 10.2307/2234133
- Andrews, D. & Bonta, J. (1998). *The psychology of criminal conduct 2*. Cincinnati, OH: Anderson.
- Anheier, H., Gerhards, J., & Romo, F. (1995). Forms of Capital and Social Structure in Cultural Fields: Examining Bourdieu's Social Topography. *American Journal of Sociology*, 100, 859–903.
- Antheunis, M.L., Vanden Abeele, M.M.P., & Kanters, S. (2015). The impact of Facebook use on micro-level social capital: A synthesis. *Societies*, 5, 339-419.
- Antonowicz, D. H., & Ross, R. R. (2005). *Social problem-solving deficits in offenders*. In M. McMurrin & J. McGuire (Eds.), *Social problem-solving and offending: Evidence, evaluation and evolution*, (p. 91-102). Chichester, England: John Wiley

& Sons.

- Apperly, I. A., Samson, D., & Humphreys, G. W. (2009). Studies of adults can inform accounts of theory of mind development. *Developmental Psychology*, 45(1), 190–201.
- Archuleta, A.J., & Teasley, M. (2013). Acculturative stress among people of Mexican descent: The role of acculturation, social capital, and family role expectations. *Social Work in Mental Health*, 11(4), 311-333.
- Arslan, B., Hohenberger, A., & Verbrugge, R. (2017). Syntactic Recursion Facilitates and Working Memory Predicts Recursive Theory of Mind. *PLoS ONE*, 12 (1).
- Ashrafi, V. & Estaki, M. (2013). Relation between moral development and executive functions of brain. *Journal of Behavioural Sciences in Asia*, 1(1), 49 - 60.
- Astington, J. W. (2004). Bridging the gap between theory of mind and moral reasoning. *New Directions for Child and Adolescent Development*, 103, 63-72.  
DOI: 10.1002/cd.98.
- Astington, J. & Jenkins, J. (1995). Theory of mind development and social understanding. *Cognition and Emotion*, 9,151–165.
- Ayios, A., Jeurissen, R., & Spence, L. J. (2010). *Social Capital: A review from an ethics perspective*. Brunel University: Brunel Business School Research Papers.
- Baek, H. (2002). A comparative study of moral development of Korean and British Children. *Journal of Moral Education*, 31(4), 373-391.
- Baillargeon, R.H., Morisset, A., Keenan, K., Normand, C.L., Séguin, J.R., Japel, C., & Cao, G. (2012). Development of disruptive behaviours in young children: A prospective population-based cohort study. *Infant Mental Health Journal*. 33, 633-650.  
DOI: 10.1002/imhj.21353

- Ball, K.K., Edwards, J.D., & Ross, L.A. (2007). The impact of speed of processing training on cognitive and everyday functions. *Journal of Gerontology Series B. Psychological Sciences and Social Sciences*, 62, 19–31.
- Balliet D., & Van Lange, P. A. M. (2013). Trust, conflict, and cooperation: A meta-analysis. *Psychological Bulletin*, 139, 1090-1112.
- Barbalet, J. (2009). A characterisation of trust, and its consequences. *Theory and Society*, 38, 367. DOI: [org/10.1007/s11186-009-9087-3](https://doi.org/10.1007/s11186-009-9087-3)
- Barkley, R. A. (2010). *Taking Charge of Adult ADHD*. New York: Guilford Press.
- Baron-Cohen, S. (1991). Do people with autism understand what causes emotion? *Child Development*, 62, 385-395.
- Baron-Cohen, S, (2002). The extreme male brain theory of autism. *Trends in Cognitive Sciences*, 6, 248-254
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a Theory of Mind? *Cognition*, 21(1), 37–46. DOI: [10.1016/0010-0277\(85\)90022-8](https://doi.org/10.1016/0010-0277(85)90022-8)
- Baron-Cohen, S, Leslie, A.M., & Frith, U, (1986) Mechanical, behavioural and Intentional understanding of picture stories in autistic children. *British Journal of Developmental Psychology*, 4, 113-125.
- Baron-Cohen, S, O’Riordan, M, Jones, R, Stone, V, & Plaistead, K, (1999). Recognition of faux pas by normally developing children and children with Asperger Syndrome or high functioning autism. *Journal of Autism and Developmental Disorders*, 29, 407-418.
- Baron-Cohen, S, Richler, J, Bisarya, D, Gurunathan, N, & Wheelwright, S, (2003). The systemizing quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Philosophical Transactions of*

*the Royal Society, Series B*, 358, 361-374.

- Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The 'Reading the Mind in the Eyes' test revised version: a study with normal adults and adults with Asperger Syndrome or high-functioning autism. *Journal of Child Psychiatry and Psychology*, 42, 241-252
- Baron-Cohen, S., & Wheelwright, S. (2004) The Empathy Quotient: an investigation of adults with Asperger Syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders*, 34, 163- 175.
- Bartels, D. M., Bauman, C. W., Cushman, F. A., Pizarro, D. A., & McGraw, A. P. (2015). *Moral Judgment and Decision Making*. In The Wiley Blackwell Handbook of Judgment and Decision Making (p. 478–515). DOI: 10.1002/9781118468333.
- Bargh, J. A., & Morsella, E. (2008). The unconscious mind. *Perspectives on Psychological Science*, 3, 73–79. DOI: 10.1111/j.1745-6916.2008.00064.x
- Baskin-Sommers, A., Krusemark, E., & Ronningstam, E. (2014). Empathy in narcissistic personality disorder: From clinical and empirical perspectives. *Personality Disorder: Theory, Research and Treatment*, 5(3), 323-333.
- Batrinou, M. L. (2012). Testosterone and aggressive behaviour in man. *International Journal of Endocrinology & Metabolism*, 10(3), 563-568.
- Batson, C. D. (1987). *Prosocial motivation: Is it ever truly altruistic?* In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 20 (pp. 65-122). New York: Academic Press.
- Batson, C. D., Lishner, D. A., Cook, J., & Sawyer, S. (2005). Similarity and nurturance: Two possible sources of empathy for strangers. *Basic and Applied Social*

*Psychology*, 27, 15-25.

- Beadle, J. N., Sheehan, A. H., Dahlben, B., & Gutchess, A. H. J. (2015). Aging, empathy, and prosociality. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 70(2), 215-24. DOI: 10.1093/geronb/gbt091.
- Begeer, S., Malle, B. F., Nieuwland, M. S., & Keysar, B. (2010). Using Theory of Mind to represent and take part in social interactions: Comparing individuals with high-functioning autism and typically developing controls. *European Journal of Developmental Psychology*, 7, 104–122. DOI: 10.1080/17405620903024263.
- Berk, L. E. (2013). *Child Development*. Boston: Pearson Education.
- Berkowitz, L., & Daniels, L.R. (1964). Affecting the Salience of the Social Responsibility Norm: Effects of Past Help on the Responses to Dependency Relationships. *Journal of Abnormal Psychology*, 68, 275–281.
- Bennett, S., Farrington, D.P., & Huesmann, L.R. (2005). Explaining gender differences in crime and violence: The importance of social cognitive skills. *Aggression and Violent Behavior*, 10, 263–288.
- Bernstein, D.M., Thornton, W.L., & Sommerville, J.A. (2011) Theory of mind through the ages: Older and middle-aged adults exhibit more errors than do younger adults on a continuous false-belief task. *Experimental Aging Research*, 37, 481– 502.
- Best, J. R., & Miller, P. H. (2010). A developmental perspective on executive function. *Child Development*, 81, 1641–1660. DOI: 10.1111/j.1467- 8624.2010.01499.x
- Beven, S. (2006). *Interpersonal emotional responses in violent offenders: (Re) examining the role of empathy*. School of Law. Murdoch University: Western Australia.
- Binder, J.F. & Sutcliffe, A.G. (2014). The Best of Both Worlds? Online Ties and the

- Alternating Use of Social Network Sites in the Context of Migration. *Societies*, 4, 753–769. DOI: 10.3390/soc4040753. ISSN 2075-4698.
- Birch, S.A.J. & Bloom, P. (2003). Children are cursed: An asymmetric bias in mental-state attribution. *Psychological Science*, 3, 283–286.
- Birditt, K. S., & Fingerman, K. L. (2005). Do we get better at picking our battles? Age differences in descriptions of behavioural reactions to interpersonal tensions. *Journals of Gerontology, Psychological Sciences and Social Sciences*, 60(B), 121–128.
- Blair, I.V. (2002). The Malleability of Automatic Stereotypes and Prejudice. *Personality and Social Psychology Review*, 6; 242. DOI: 10.1207/S15327957PSPR0603\_8
- Blair, R.J.R. (2005). Applying a cognitive neuroscience perspective to the disorder of psychopathy. *Development and Psychopathology*, 17(03), 865-891. DOI: 10.1017/S0954579405050418.
- Blair, R.J. R. (2008). Fine cuts of empathy and the amygdala: dissociable deficits in psychopathy and autism. *The quarterly journal of experimental psychology*, 61(1), 157- 170.
- Blair, R. J. R., & Cipolotti, L. (2000). Impaired social response reversal. A case of 'acquired sociopathy'. *Brain: A Journal of Neurology*, 123(6), 1122-1141.
- Blair, R.J.R., & Coles, M. (2000). Expression recognition and behavioural problems in early adolescence. *Cognitive Development*, 15, 421-434. DOI: 10.1016/S0885-2014(01)000039-9.
- Blain-Brière, B., Bouchard, C., & Bigras, N. (2014). The role of executive functions in the pragmatic skills of children age 4–5. *Frontiers in Psychology*, 5(240), 1-14.
- Blakemore, S.J. (2008). The social brain in adolescence. *Nature Reviews Neuroscience*,

9, 267-277.

Bloom, L., & Capatides, J. B. (1987). Sources of meaning in the acquisition of complex syntax: The sample case of causality. *Journal of Experimental Child Psychology*, 43 (1), 112-128. DOI: 0965(87)90054-3).

Bock, A. M., Gallaway, K. C., & Hund, A. M. (2015). Specifying links between executive functioning and theory of mind during middle childhood: Cognitive flexibility predicts social understanding. *Journal of Cognition and Development*, 16, 509-521.

Bolger, D.J., Hornickel, J., Cone, N.E., Burman, D.D., & Booth, J.R. (2007). Neural correlates of orthographic and phonological consistency effects in children. *Human Brain Mapping*, 29(12), 1416–29.

Bollen, K. A. (1990). Political Democracy: Conceptual and Measurement Traps. *Studies in Comparative International Development*, 25(1), 7-24.  
DOI: 10.1007/BF02716903

Borkowski, J. G., & Burke, J. E. (1996). *Theories, models, and measurements of executive functioning: An information processing perspective*. In G. R. Lyon & N. A. Krasnegor (Eds.), *Attention, memory, and executive function* (p. 235–261). Baltimore: Paul Brookes.

Borst, J. P., Taatgen, N. A., & Van Rijn, H. (2010). The problem state: A cognitive bottleneck in multitasking. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 36(2), 363–382. DOI:org/10.1037/a0018106.

Bonawitz, E. B., van Schijndel, T., Friel, D., & Schulz, L. (2012). Balancing theories and evidence in children’s exploration, explanations, and learning. *Cognitive Psychology*, 64, 215–234. DOI:10.1016/j.cogpsych.2011.12.002

- Bosancianu, C. M., Powell, S., & Bratović, E. (2013). Social capital and pro-social behavior online and offline. *International Journal of Internet Science*, 8, 49–68.
- Bottos, S. (2007). *Women and violence: Theory, risk and treatment implications*. Research report no. R-198. Ottawa, ON, Canada: Research Brand Correctional Service Canada.
- Bourdieu, P. (1986). *The forms of capital*. In: Richardson, J., Handbook of Theory and Research for the Sociology of Education (p. 241 -58). Westport, CT: Greenwood:
- Bouchard, K.E., Mesgarani, N., Johnson, K., & Chang, E.F. (2013). Functional organization of human sensorimotor cortex for speech articulation. *Nature*, 495(7441):327–332. DOI:doi.org/10.1038/nature11911.
- Bowlby, J. (1969). *Attachment. Attachment and loss: Vol. 1. Loss*. New York: Basic Books.
- Bradford, E.E., Jentsch, I., & Gomez, J.-C. (2015). From self to social cognition: Theory of Mind mechanisms and their relation to Executive Functioning. *Cognition*, 138, 21-34.
- Bradley, R.H. & Corwyn, R.F. (2002). Socioeconomic status & child development. *Annual Review of Psychology*, 53, 371-399.
- Branch, W.T. (2000). Supporting the moral development of medical students. *Journal of General Internal Medicine*, 15,503-508.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, Mass.: Harvard University Press.
- Brown, C. M., II, & Davis, E. J. (2001). The historically Black college as social contract, social capital, and social equalizer. *Peabody Journal of Education*, 76(1), 31-49.

- Brown, R. (2000). Social identity theory: Past achievements, current problems and future challenges. *European Journal of Social Psychology*, 30, 745–778.
- Brown, J. R., & Dunn, J. (1996). Continuities in emotion understanding from three to six years. *Child Development*, 67(3), 789-803.
- Browne, M. W., & Cudeck, R. (1993). *Alternative ways of assessing model fit*. In K. Bollen & J. S. Long (Eds.), *Testing structural equation models* (p. 136-162). Newbury Park, CA: Sage.
- Bruce, K. R., Steiger, H., Ng Ying Kin, N. M. K., & Israel, M. (2006). Reduced platelet [<sup>3</sup>H-] paroxetine binding in anorexia nervosa: relationship to eating symptoms and personality pathology. *Psychiatry Research*, 142, 225–32.
- Brugger, P. W., Alderman, N., Evans, J., Emslie, H., & Wilson, B. A. (1998). The ecological validity of tests of executive function. *Journal of the International Neuropsychological Society*, 4, 547–558.
- BPS Guidelines for Ethical Practice in Psychological Research Online (2007).
- British Psychological Societies, Code of Ethics and Conduct (2009).
- Bucciarelli, M., Khemlani, S., & Johnson-Laird, P. N. (2008). The psychology of moral reasoning. *Judgment and Decision Making*, 3(2), 121–139.
- Byrne, B. M. (1994). *Structural equation modelling with EQS and EQS/Windows*. Thousand Oaks, CA: Sage Publications.
- Bzdok, D., Schilbach, L., Vogeley, K., Schneider, K., Laird, A.R., Langner, R., Eickhoff, S.B. (2012) Parsing the neural correlates of moral cognition: ALE meta-analysis on morality, theory of mind, and empathy. *Brain Structure and Function*, 217(4), 783–796. DOI: 10.1007/s00429-012-0380-y.

- Calero, C.I., Salles, A., Semelman, M., & Sigman, M. (2013). Age and gender dependent development of Theory of Mind in 6- to 8-years old children. *Frontiers in Human Neuroscience*, 7, 281. DOI: 10.3389/fnhum.2013.00281
- Callaghan, T., Rochat, P., Lillard, A., Claux, M. L., Odden, H., Itakura, S., Tapanya, S., Singh, S. (2005). Synchrony in the onset of mental-state reasoning: Evidence from five cultures. *Psychological Science*, 16, 378–384.
- Cañas, J.J., Fajardo, I., & Salmerón, L. (2006). Cognitive flexibility. *International Encyclopaedia of ergonomics and human factors*, 297-300
- Cann, J., Falshaw, L., Nugent, F. & Friendship, C. (2003). *Understanding What Works: cognitive accredited skills programmes for adult men and young offenders*. Research Findings 226. London: Home Office.
- Cann, J. (2006) *Cognitive skills programmes: impact on reducing reconviction among a sample of female prisoners*. Home Office Research Study 276. London: Home Office.
- Carlo, G., Crockett, L. J., Randall, B. A., & Roesch, S. C. (2007). Parent and peer correlates of pro-social development in rural adolescents: A longitudinal study. *Journal of Research on Adolescence*, 17, 301-324.
- Carlo, G., Fabes, R., Laible, D., & Kupanoff, K. (1999). Early adolescence and prosocial /moral behaviour II: The role of social and contextual influences. *Journal of Early Adolescence* 19, 132–133.
- Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development*, 72, 1032-1053. DOI: 10.1111/1467-8624.00333.

- Carstensen, L. L., Isaacowitz, D., & Charles, S. T. (1999). Taking time seriously: A theory of socio-emotional selectivity. *American Psychologist*, 54, 165-181.
- Caspi, A. & Roberts, B.W. (1999). *Personality continuity and change across the life course*. In: Pervin, L. & John, O.P. (Eds). *Handbook of personality psychology: Theory and research*. 2nd ed. Guilford Press; New York: p. 300–326
- Castiglione, D., van Deth, J. W. & Wolleb G. (Eds.). *The handbook of social capital*. Oxford, UK: Oxford University
- Catalano, R.F. & Hawkins, J.D. (1996). *The Social Development Model: A Theory of Antisocial Behavior*. In J.D. Hawkins (Ed.), *Delinquency and Crime: Current Theories* (p. 149-197). New York: Cambridge University Press.
- Chan, R.C.K., Shum, D., Touloupoulou, T., & Chen, E.Y.H. (2008). Assessment of executive functions: review of instruments and identification of critical issues. *Archives of Clinical Neuropsychology*, 23(2), 201-216.
- Chen, C., & Howitt, D., (2007). Different crime types and moral reasoning development in young offenders compared with non-offender controls. *Psychology, Crime & Law*, 13 (4), 405-416. DOI: 10.1080/10683160601060788.
- Chen, W.Y., Shih, H.T., Liu, K.Y., Shih, Z.S., Chen, L.K., Tsai, T.H., Chen, M.J., Liu, H., Tan, B.C., Chen, C.Y., Lee, H.H., Loppin, B., Ait-Ahmed, O., & Wu, J.T. (2015). Intellectual disability-associated dBRWD3 regulates gene expression through inhibition of HIRA/YEM-mediated chromatin deposition of histone H3.3. *EMBO Reports*, 16(4), 528--538.
- Chernyak, N., & Kushnir, T. (2014). The self as a moral agent: Pre-schoolers behave morally but believe in the freedom to do otherwise. *Journal of Cognition and Development*, 15, 453-464.

- Churchland, P. M. (1981). Eliminative Materialism and the Propositional Attitudes, *Journal of Philosophy*, 78, 67– 90.
- Churchland, P. M. (1990). *Eliminative Materialism and the Propositional Attitudes*  
In: W. G. Lycan (Ed.), *Mind and Cognition* (p. 206 -223). Oxford: Blackwell.
- Chadha, N. & Misra, G. (2006). Prosocial Reasoning and Behaviour among Indian Children: A Naturalistic Study. *Psychology and Developing Societies*, 18 (2).  
DOI: 10.1177/097133360601800202
- Clark-Carter, D. (2010). *Quantitative Psychological research: The complete student's companion*. Hove: Psychology Press.
- Clopton, N. A. & Sorell, G. T. (1993). Gender differences in moral reasoning: Stable or situational? *Psychology of Women Quarterly*, 17, 85–102.
- Coie, J.D., Dodge, K.A., & Kupersmidt, J.B. (1990). *Peer group behaviour and social status*. In: Asher SR, Coie JD (Eds.), *Peer rejection in childhood* (p. 17 -59). New York: Cambridge University Press.
- Colby, A., & Kohlberg, L. (1987). *The Measurement of Moral Judgment Vol. 2: Standard Issue Scoring Manual*. Cambridge University Press.
- Cole, H. & Griffiths, M.D. (2007). Social Interactions in Massively Multiplayer Online Role-Playing Gamers. *Cyber-Psychology and Behavior*, 10 (4), 575-583.
- Cole, M.W., Pathak, S., & Schneider, W. (2010). Identifying the brain's most globally connected regions. *Neuroimage*. 49, 3132–3148.
- Cole, P.M. (1986). Children's spontaneous control of facial expression. *Child Development*, 57, 1309–1321.
- Coleman, J.S., (1988), Social capital in the creation of human capital. *American*

*Journal of Sociology*, 94, S95-S120.

- Congdon Fors, H. (2012). *Social Globalization and Child Labour. Working Paper No. 533*. School of Business, Economics and Law, University of Gothenburg, Gothenburg, Sweden.
- Cooney, M., (2009). *Is Killing Wrong? A Study in Pure Sociology*. Charlottesville, VA: University of Virginia Press.
- Coricelli, G., McCabe, K. & Smith, V. (2000). *Theory-of-mind mechanism in personal exchange*. In G. Hatano, N. Okada & H. Tanabe (Eds.), *Affective minds* (p. 249 – 259). Amsterdam: Elsevier.
- Corston, J. (2007). *The Corston Report: a review of women with particular vulnerabilities in the criminal justice system*. London: Home Office.
- Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Odessa, FL: Psychological Assessment Resources.
- Cosmides, L., & Tooby, J. (1987). *From evolution to behaviour: Evolutionary psychology as the missing link*. In J. Dupre (Ed.), *The latest on the best: Essays on evolution and optimality* (.p. 276–306). Cambridge, MA: MIT Press.
- Courbalay, A., Deroche, T., Descarreaux, M., Prigent, E., O’Shaughnessy, J., & Amorim, M.A. (2016). Facial expression overrules lumbopelvic kinematics for clinical judgments regarding low back pain intensity. *Pain Research & Management*. DOI:10.1155/2016/7134825
- Cowan, N. (2001). The magical number 4 in short-term memory: A reconsideration of mental storage capacity. *Behavioural and Brain Sciences*, 24, 87.
- Crosen, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 448-474. DOI: 10.1257/jel.47.2.448.

- Cox, C. L., Uddin, L. Q., Di Martino, A., Castellanos, F. X., Milham, M. P., & Kelly, C. (2012). The balance between feeling and knowing: affective and cognitive empathy are reflected in the brain's intrinsic functional dynamics. *Social Cognitive and Affective Neuroscience*, 7(6), 727–37. DOI: 10.1093/scan/nsr051
- Cronin-Golomb, A. (1990). *Abstract thought in aging and age-related neurological disease*. In F. Boller & J. Grafman (Eds), *Handbook of neuropsychology* (p. 279–309). Amsterdam, Netherlands: Elsevier.
- Daly, M., & Wilson, M. I. (1999). Human evolutionary psychology and animal behaviour. *Animal Behaviour*, 57, 509-519.
- Damasio, A.R. (2004). *Looking for Spinoza: Joy, Sorrow, and the Feeling*. Brain Vintage, London.
- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *Catalogue of Selected Documents in Psychology*, 10, 85.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44(1), 113-126.
- Davis-Kean, P. E. (2005). The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment. *Journal of Family Psychology*, 19(2), 294-304.
- De Brito, S.A., Viding, E., Kumari, V., Blackwood, N., & Hodgins, S. (2013). Cool and Hot Executive Function Impairments in Violent Offenders with Antisocial Personality Disorder with and without Psychopathy. *PLoS ONE*, 8(6). DOI:10.1371/journal.pone.0065566

- Decker, N. (2007). *The effectiveness of online social networks*. Unpublished master's thesis. University of Maastricht, Netherlands.
- Deater-Deckard, K. (2014). Family matters: Intergenerational and interpersonal processes of executive function and attentive behaviour. *Current Directions in Psychological Science*, 23(3), 230–236. DOI: 10.1177/0963721414531597.
- Decety, J. (2008). *Empathy: From Bench to Bedside*. MIT Press: Cambridge.
- Decety J. (2010). The neurodevelopment of empathy in humans. *Developmental Neuroscience*. 32: 257-67. DOI: 10.1159/000317771.
- Decety J. (2011). Dissecting the neural mechanisms mediating empathy. *Emotional Review*, 3, 92–108. DOI: 10.1177/1754073910374662.
- Decety, J., & Jackson, P.L. (2004). The functional architecture of human empathy. *Behavioural and Cognitive Neuroscience Reviews*, 3, 71– 100.
- Decety, J., Michalska, K. J., Akitsuki, Y., & Lahey B. (2009). Atypical empathic responses in adolescents with aggressive conduct disorder: a functional MRI investigation. *Biological Psychology*, 80, 203–211. DOI: 10.1016/j.biopsycho.2008.09.004.
- Decety, J., Michalska, K.J., & Kinzler, K.D. (2012). The contribution of emotion and cognition to moral sensitivity: a neurodevelopmental study. *Cerebral Cortex*, 22, 209–220.
- Dellu-Hagedorn, F. (2006). Relationship between impulsivity, hyperactivity and working memory: a differential analysis in the rat. *Behavioural and Brain Functions*, 2(10). DOI: 10.1186/1744-9081-2-10.
- Delves, J. & Norfolk-Whittaker, R. (2013). *Reducing reoffending in England and Wales*. TWS Policy Paper.
- Dennett, D. (1978). *Brainstorms*. Cambridge, MA: MIT Press.

- Derryberry, D. & Rothbart, M. K. (1997). Reactive and effortful processes in the organization of temperament. *Development and Psychopathology*, 9, 633-652.
- de Villiers, J. (2007). The interface of language and theory of mind. *Lingua*, 117, 1858-1878. DOI: 10.1016/j.lingua.2006.11.006.
- de Vries, B. & Walker, L. J. (1986). Moral reasoning and attitudes towards capital punishment. *Developmental Psychology*. 22, 509-513.
- Diamond, A. (2013). Executive functions. *Annual Review Psychology*, 64, 135–168. DOI: 10.1146/annurev-psych-113011-143750
- Dix, A.J. (1991). *Formal Methods for Interactive Systems*. Academic Press.
- Doherty, M. J. (2009). *Theory of mind: How children understand others' thoughts and feelings*. New York: Psychology Press.
- Dolan, M., & Fulam, R. (2004). Theory of mind and mentalising ability in antisocial personality disorders with and without psychopathy. *Journal of Moral Education*, 27(3), 371-391.
- Dovidio, J.F., Piliavin, J. A., Schroeder, D. A. & Penner, L.A. (2006). *The Social Psychology of Prosocial Behaviour*. Mahwah, N.J.: Lawrence Erlbaum.
- Deary, I. J., Johnson, W., & Houlihan, L. M. (2009). Genetic foundations of human intelligence. *Human Genetics*, 126, 215–232.
- Duan, C., & Hill, C. E. (1996). The current state of empathy research. *Journal of Counselling Psychology*, 43(3), 261–274.
- Dunfield, K.A. & Kuhlmeier V.A., (2013). Classifying Prosocial Behaviour: Children's Responses to Instrumental Need, Emotional Distress, and Material Desire Issue. *Child Development*, 84 (5), 1766–1776.

- Dunn, J., & Brophy, M. (2005). *Communication, relationships and individual differences in children's understanding of mind*. In J. W. Astington & J. A. Baird (Eds.), *Why language matters for theory of mind*. Oxford, UK: Oxford University Press.
- Duval, C., Piolino, P., Bejanin, A., Eustache, F., & Desgranges, B. (2011). Age effects on different components of theory of mind. *Consciousness and Cognition*, 20(3), 627-642.
- Eagly, A. H. & Crowley, M. (1986). Gender and Helping Behavior. A Meta-Analytic Review of the Social Psychological Literature. *Psychological Bulletin*, 100 (3), 283- 308. DOI: 10.1037/0033-2909.100.3.283
- Echols, S., & Correll, J. (2011). *It's more than skin deep: Empathy and helping behaviour across social groups*. In J. Decety (Ed.), *Empathy: From Bench to Bedside* (p. 55–72). MIT Press: Cambridge.
- Einolf, C. J. (2001). Gender Differences in the Correlates of Volunteering and Charitable Giving. *Non-profit and Volunteering Quarterly*, 40, 1092-1114.
- Egan, G. (2010). *The skilled helper: A problem-management and opportunity-development approach to helping (9th ed.)*. Belmont, CA: Thompson Brooks/Cole.
- Eggum, N.D., Eisenberg, N., Kaob, K., Spinrad, T.L., Bolnick, R., Hofer, C. & Fabricius, W.V. (2011). Emotion understanding, theory of mind, and prosocial orientation: Relations over time in early childhood. *The Journal of Positive Psychology*, 6, 4-16.
- Eisenberg, N. (2000). Emotion, Regulation, and Moral. Development. *Annual Review of Psychology*, 51, 665-697.
- Eisenburg, N. (2007). *Handbook of Child Psychology*. Wiley. DOI: 10.1002/9780470147658.chpsy0301.

- Eisenberg, N. (2010). *Empathy-related responding: Links with self-regulation, moral judgment, and moral behaviour*. In M. Mikulincer & P. R. Shaver (Eds), *Pro-social motives, emotions, and behaviour: The better angels of our nature*. Washington: American Psychological Association. DOI: 10.1037/12061-007.
- Eisenberg, N., Carlo, G., Murphy, B. C., & van Court, P. (1995). Prosocial Development in Late Adolescence: A Longitudinal Study. *Child Development*, 66, 1179-1197.
- Eisenberg, N., Cumberland, A., Guthrie, I. K., Murphy, B. C., & Shepard, S. A. (2005). Age changes in pro-social responding and moral reasoning in adolescence and early adulthood. *Journal of Research in Adolescence*, 15, 235–260.
- Eisenberg, N., & Eggum, N.D. (2009). *Empathic responding: sympathy and personal distress*. In: Decety, J., & Ickes, W. (Eds.), *The Social Neuroscience of Empathy* (p. 71-83). Cambridge: MIT Press.
- Eisenberg, N., & Fabes, R. (1998). *Pro-social development*. In W. Damon & N. Eisenberg (Eds), *Handbook of child psychology (Vol. 3). Social, emotional, and personality development (5th Ed.)*. New York: Wiley.
- Eisenberg, N., Fabes R., Miller P., Fultz J., Shell R., Mathy R., & Reno, R.R. (1989). Relation of sympathy and personal distress to prosocial behaviour: a Multi-method study. *Journal of Personality and Social psychology*, 57, 55-66. DOI: 0.1037/0022-3514.57.1.55
- Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I. K., Murphy, B. C., & Reiser, M. (1999). Parental reaction to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development*, 70, 513–534.

- Eisenberg N, Fabes, R, Spinrad, T. (2006). *Pro-social development*. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology (Vol. 3). Social, emotional and personality development*. (6th Ed.). New York: Wiley.
- Eisenberg, N., Fabes, R.A., & Spinrad, T.L. (2010). *Prosocial development*. In: N. Eisenberg & W. Damon (Eds.), *Handbook of child psychology. Vol. 3. Social, emotional, and personality development (6th edition, p. 646 -718)*. Wiley: New York.
- Eisenberg, N., & Lennon, R. (1983). Sex differences in empathy and related capacities. *Psychological Bulletin*, 94, 100-131.
- Eisenberg, N., Miller, P. A., Shell, R., McNalley, S., & Shea, C. (1991). Prosocial development in adolescence: A longitudinal study. *Developmental Psychology*, 27, 849–857.
- Eisenberg, N., Morris, A.S., & Spinrad, T.L. (2005). *Emotion-related regulation: The construct and its measurement*. In D. Teti (Ed.), *Handbook of research methods in developmental science (p. 423 -442)*. Oxford: Blackwell Publishers.
- Eisenberg-Berg, N., & Mussen, P. (1978). Empathy and moral development in adolescence. *Developmental Psychology*, 14(2), 185-186. DOI: 10.1037/0012-1649.14.2.185
- Eisenberg, N., Spinrad, T.L., & Eggum, N.D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Clinical Psychology*, 6, 495–525.
- Elliott, S. N., Racine, C. N., & Busse, R. T. (1995). *Best practices in pre-school social skills training*. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology-III (p.1009-1020)*. Washington, DC: National Association of School

Psychologists.

- Edelman, L., Bresnen, M., Newell, S., Scarborough, H. & Swan, J. (2004). The Benefits and Pitfalls of Social Capital: Empirical Evidence from Two Organizations in the United Kingdom. *British Journal of Management*, 15, 59-69.
- Endicott, L., Bock, T., & Narvaez, D. (2003). Moral Reasoning, Intercultural Development, and Multicultural Experiences: Relations and Cognitive Underpinnings. *International Journal of Intercultural Relations*, 27, 403-419.
- Enticott, P. G., Ogloff, J. R. P., Bradshaw, J. L. & Fitzgerald, P. B. (2008). Cognitive inhibitory control and self-reported impulsivity among violent offenders with schizophrenia. *Journal of Clinical and Experimental Neuropsychology*, 30(2).
- Entorf, H. & Spengler, H. (2000). Socio-economic and demographic factors of crime in Germany: Evidence from Panel Data of the German States. *International Review of Law and Economics*, 20, 75-106.
- Epley, N., Morewedge, C. K., & Keysar, B. (2004). Perspective taking in children and adults: Equivalent egocentrism but differential correction. *Journal of Experimental Social Psychology*, 40, 760–768. DOI:10.1016/j.jesp.2004.02.002
- Epstein, R. (2015). Women in the Criminal Justice System. *Criminal Law and Justice Weekly*, 179 (1)
- Erdle, S., Sansom, M., Cole, M. R. & Heapy, N. (1992). Sex differences in personality correlates of helping behaviour. *Individual Differences*, 13, 931-936.
- Espinosa, M.P. & Kovářík, J. (2015). Prosocial behaviour and gender. *Frontiers in Behavioural Neuroscience*, 9.
- Evans, A.D., & Lee, K. (2011). Verbal deception from late childhood to middle adolescence and its relation to executive functioning skills. *Developmental*

*Psychology*, 47:1108–1116. DOI: 10.1037/a0023425.

Eysenck, M. (2004). *Psychology: An International Perspective*. New York: Psychology Press Whiting & Whiting.

Eysenck, H. J., & Eysenck, S. B. G. (1991). *Eysenck Personality Scales (EPS Adult)*. London: Hodder & Stoughton.

Falshaw, L., Friendship, C., Travers, R. & Nugent, F. (2003). *Searching for 'What Works': an evaluation of cognitive skills programmes*. Home Office Research Findings No. 206. London: Home Office

Fan, X., Thompson, B., & Wang, L. (1999). The effects of sample size, estimation methods, and model specification on SEM fit indices. *Structural Equation Modelling*, 6, 56–83.

Farrington, D. (2010) *Life-Course and Developmental Theories in Criminology*. In E. McLaughlin & T. Newburn (Eds), *The Sage Handbook of Criminological Theory*. London: Sage.

Fevre, R. (2000). *The Demoralization of Western Culture: Social Theory and the Dilemmas of Modern Living*. London: Continuum.

Ferragina, E. (2013). The Socio-Economic Determinants of Social Capital and the Mediating Effect of History. Making Democracy Work revisited. *International Journal of Comparative Sociology*, 54(1), 48-73.

Ferguson, K. M. (2006). Social capital and children's wellbeing: A critical synthesis of the international social capital literature. *International Journal of Social Welfare*, 15(1), 2-18. DOI: 10.1111/j.1468-2397.2006.00575.x

Field, J. (2003). *Social Capital*. Routledge, London.

Filonowicz, J. (2008). *Fellow-Feeling and the Moral Life*. Cambridge: Cambridge

University Press.

- Flavell, J. H. (1999). Cognitive Development: Children's Knowledge about the Mind. *Annual Review of Psychology*, 50, 21-45. DOI: [org/10.1146/annurev.psych.50.1.21](https://doi.org/10.1146/annurev.psych.50.1.21)
- Fletcher, J. M., Brookshire, B. L., Landry, S. H., Bohan, T. P., Davidson, K. C., Francis, D. J., Levin, H. S., Brandt, M. E., Kramer, L. A. & Morris, R. D. (1996). Attentional skills and executive functions in children with early hydrocephalus. *Developmental Neuropsychology*, 12, 53-76.
- Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J. (2015). Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness based kindness curriculum. *Developmental Psychology*, 51(1), 44-51. DOI: [10.1037/a0038256](https://doi.org/10.1037/a0038256)
- Fodor, J. (1987). *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*. Cambridge, MA: MIT Press.
- Ford, R.C. & Richardson, W.D. (1994). Ethical Decision Making: A review of the empirical literature. *Journal of Business Ethics*, 13(3), 205 – 221.
- Friendship, C., Blud, L., Erikson, M. and Travers, R. (2002). *An evaluation of cognitive behavioural treatment for prisoners*. Home Office Research Findings No. 161. London: Home Office.
- Friesdorf, R., Conway, P., & Gawronski, B. (2015). Gender Differences in Responses to Moral Dilemmas: A Process Dissociation Analysis. *Personality and Social Psychology Bulletin*, 41(5), 696-713. DOI: [10.1177/0146167215575731](https://doi.org/10.1177/0146167215575731).
- Frith, C.D. & Frith, U. (2006). The neural basis of mentalising. *Neuron*, 50, 531-34
- Fung, H., & Carstensen, L. L. (2003). Sending memorable messages to the old: Age differences in preferences and memory for advertisements. *Journal of*

*Personality and Social Psychology*, 85, 163-178. DOI: 10.1037/0022-3514.85.1.163.

Furstenberg, F. F., Cook, T.D., Eccles, J., Elder, G. H., Jr., & Sameroff, A. (1999).

*Managing to make it: Urban families and adolescent success*. Chicago: University of Chicago Press.

Gächter, S. Nosenzo, D., & Sefton, M. (2012). The impact of social comparisons on reciprocity. *The Scandinavian Journal of Economics*, 114, 1346–1367.

DOI.org/10.1111/j.1467-9442.2012.01730.x

Gagne, J.R., & Saudino, K.J. (2010). Wait for it! A twin study of inhibitory control in early childhood. *Behavior Genetics*. 40,327–337. DOI: 10.1007/s10519-009- 9316-6.

Gallagher, M.B., Pettigrew, J. & Muldoon, O. (2015). Occupational choice of youth in a disadvantaged community. *British Journal of Occupational Therapy*, 78(10), 622-629.

Gallese, V. & Goldman, A. (1998). Mirror neurons and the simulation theory of mindreading. *Trends in Cognitive Sciences*, 2, 493-501.

Garner, P.W., & Lemerise, E.A. (2007). The role of behavioural adjustment and conceptions of peers and emotions in preschool children’s peer victimization.

*Development and Psychopathology*, 19, 57–71.

Ganesalingam, J &, Bowser, R. (2010). The application of biomarkers in clinical trials for motor neuron disease. *Biomarkers in Medicine*. 4,281–297.

DOI:10.2217/bmm.09.71.

Gao, Z., Ye, T., Shen, M., & Perry, A. (2016). Working memory capacity of biological movements predicts empathy traits. *Psychonomic Bulletin & Review*, 23(2), 468-475.

- Gelfand, D.M. & Hartmann, D.P. (1984). *Child Behavior Analysis and Therapy (2nd Edition)*. New York: Pergamon Press.
- Gergely, G., Nádasdy, Z., Csibra, G., & B'iró, S. (1995). Taking the intentional stance at 12 months of age. *Cognition*, 56, 165–193.
- Gery, I., Miljkovitch, R., Berthoz, S., & Soussignan, R. (2009). Empathy and recognition of facial expressions of emotion in sex offenders, non-sex offenders and normal controls. *Psychiatry Research*, 165, 252-262. DOI:10.1016/j.psychres.2007.11.006
- Gibbs, J. C. (2003). *Moral Development and Reality - Beyond the Theories of Kohlberg and Hoffman*. London: Sage Publications Ltd
- Gibbs, J. C. (2010). *Moral Development and Reality: Beyond the Theories of Kohlberg and Hoffman (2nd edition.)*. Boston: Pearson, Allyn & Bacon.
- Gibbs, J. C., Basinger, K.S., Fuller, D., & Fulkler, R.L. (1992). *Moral maturity: measuring the development of sociomoral reflection*. New Jersey: Lawrence Erlbaum Associates. Inc.
- Gibbs, R. W. (1979). Contextual effects in understanding indirect requests. *Discourse Processes*, 2, 1-10.
- Gilbert, P. (1998). *What Is Shame? Some Core Issues and Controversies*. In P. Gilbert & B Andrews (Eds), *Shame: Interpersonal Behaviour, Psychopathology and Culture* (p. 3-36). New York: Oxford University Press.
- Gilligan, C. (1982). *In a different voice: psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Giordano, P.C., Cernkovich, S.A., & Rudolph, J. L. (2002). Gender, crime and desistance: Toward a theory of cognitive transformation', *American Journal of Sociology*, 107, 990-1064

- Glück, J., Bluck, S., Baron, J., & McAdams, D. P. (2005). The wisdom of experience: Autobiographical narratives across adulthood. *International Journal of Behavioural Development*, 29(3), 197-208. DOI: 10.1080/01650250444000504.
- Glueck, S. & Glueck, E (1937). *Later Criminal Careers*. New York: The Commonwealth Fund.
- Gnepp, J. G., & Hess D. L. R. (1986). Children's understanding of verbal and facial display rules. *Developmental Psychology*, 22, 103–108. DOI:10.1037/0012-1649.22.1.103
- Gobbett, M. J. & Sellen, J.L. (2014). An Evaluation of the HM Prison Service “Thinking Skills Programme” Using Psychometric Assessments. *International Journal of Offender Therapy and Comparative Criminology*, 58 (4).
- Goddard, K. (2012). *Automation bias and prescribing decision support – rates, mediators and mitigators*. Unpublished Doctoral thesis, City University London.
- Goetz, P. J. (2003). *The effects of bilingualism on theory of mind development*. *Bilingualism: Language and Cognition*, 6, 1–15.
- Goldman, A. I. (1989). Interpretation psychologized. *Mind and Language*, 4, 161-185.
- Goldstein, S., Naglieri, J. A., Princiotta, D., & Otero, T. M. (2013). *Introduction: a history of executive functioning as a theoretical and clinical construct*. In S. Golstein & J. A. Naglieri (Eds), *Handbook of Executive Functioning*, (p. 3.12). NY: Springer.
- Gopnik, A. & Meltzoff, A. N. (1997). *Words, Thoughts, and Theories*. Cambridge, MA: MIT Press.
- Gordon, R.M. (1986). Folk Psychology as Simulation. *Mind and Language*, 1(2), 158 – 171. DOI: 10.1111/j.1468-0017.1986.tb00324.

- Gordon, A.C.L. & Olson, D.R. (1998). The relation between acquisitions of a theory of mind and the capacity to hold in mind. *Journal of Experimental Child Psychology*, 68, 70–83.
- Goring, C. (1919). *The English convict*. His Majesty's Stationary Office: London.
- Gosling, S. D., Augustine, A. A., Vazire, S., Holtzman, N., & Gaddis, S. (2011). Manifestations of personality in Online Social Networks: Self-reported Facebook-related behaviours and observable profile information. *Cyberpsychology, Behaviour, and Social Networking*, 14, 483-488. DOI: 10.1089/cyber.2010.0087.
- Gottfredson, M.R. & Hirschi, T. (1990). *A general theory of crime*. University Press: Stanford
- Gould, M. S. (2001). *Suicide and the media*. In H. Hendin & J. J. Mann (Eds.), *Suicide prevention: Clinical and scientific aspects* (Annals of the New York Academy of Sciences, (p. 200-224). New York: New York Academy of Sciences.
- Green, L., Kreuter, M., Deeds, S., & Partridge, K. (1980). *Health Education Planning: A Diagnostic Approach*. Palo Alto, CA: Mayfield.
- Greenberg, A.G., Gullotta, T. P., & Bloom, M. (2016). *Social Capital and Community Well-Being: The Serve Here Initiative*. Springer International Publishing,
- Gross, J. J., Carstensen, L. C., Pasupathi, M., Tsai, J., Gottestam, K., & Hsu, A. Y. C. (1997). Emotion and aging: Experience, expression, and control. *Psychology and Aging*, 12, 590-599.
- Gross, J.J., & John, O.P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362.

- Grotevant, H. (1998). *Adolescent development in family contexts*. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology (Vol. 3). Social, emotional, and personality development*. New York: John Wiley.
- Grühn, D., Rebucal, K., Diehl, M., Lumley, M., & Labouvie-Vief, G. (2008). Empathy across the adult lifespan: Longitudinal and experience – Sampling findings. *Emotion, 8*, 753–765.
- Grusec, J. E., Goodnow, J. J., & Kuczynski, L. (2000). New directions in analyses of parenting contributions to children's acquisition of values. *Child Development, 71* (1), 205–211. DOI: 10.1111/1467-8624.00135.
- Grusec, J. E., Davidov, M., & Lundell, L. (2002). *Prosocial and helping behaviour*. In: Smith, P.K., & Hart, C.H. (Eds.), *Blackwell handbook of childhood social Development* (p. 457–474). Malden, MA: Blackwell Publishing
- Gunnar, M. R., & Donzella, B. (2002). Social regulation of the cortisol levels in early human development. *Psycho-neuroendocrinology, 27*, 199-22.
- Gunnar, M., & Quevedo, K. (2007). The neurobiology of stress and development. In *Annual Review of Psychology, 58*, 145-173. DOI: 10.1146/annurev.psych.58.110405.085605.
- Guralnick, M. J., & Groom, J. M. (1985). Correlates of peer-related social competence of developmentally delayed preschool children. *American Journal of Mental Deficiency, 90*, 140-150.
- Gutierrez, K. (2014). eLearning: *These mistakes will make you look unprofessional*. Available from <http://info.shiftelearning.com/blog/bid/348644/eLearning-Start-ups-These-Mistakes-Will-Make-You-Look-Unprofessional> [Accessed 30th June 2016].

- Happé, F.G.E., & Frith, U. (1996). Theory of mind and social impairment in children with conduct disorders. *British Journal of Developmental Psychology*, 14(4), 385-398.
- Han, R., Shi, J., Yong, W., & Wang, W. (2012). Intelligence and Prosocial Behavior: Do Smart Children Really Act Nice? *Current Psychology*, 31 (1), 88-101.
- Hansen, T. (2009). "Applying Social Network Theory and Analysis in the Struggle for Social Justice." *Peace Research: The Canadian Journal of Peace and Conflict Studies*, 41(1),5-43.
- Hardy, S.A, Bean, D.S. & Olsen, J.A. (2015). Moral Identity and Adolescent Prosocial and Antisocial Behaviours: Interactions with Moral Disengagement and Self-regulation. *Journal of Youth and Adolescence*, 44(8), 1542-54.  
DOI: 10.1007/s10964-014-0172-1.
- Hardy, S. A., & Carlo, G. (2011). Moral identity: What is it, how does it develop, and is it linked to moral action. *Child Development Perspectives*, 5, 212–218.  
DOI:10.1111/j.1750-8606.2011.00189.
- Harper, G. & Chitty, C. (2005). *The Impact of Corrections on Reoffending: A Review of What Works*, Home Office Research Study 291, London: Home Office.
- Harpham, T. (2008). *The measurement of community social capital through surveys*. In I. Kawachi, S.V. Subramanian, & D. Kim (Eds.), *Social Capital and Health* (p. 51–62). Springer; New York, NY.
- Harris, J. A., Rushton, J. P., Hampson, E., & Jackson, D. N. (1996). Salivary testosterone and self-report aggressive and pro-social personality characteristics in men and women. *Aggressive Behavior*, 22, 321–331.
- Hart, D., & Carlo, G. (2005). Moral development in adolescence. *Journal of Research on*

*Adolescence*, 15, 223–233. DOI:10.1111/j.1532-7795 .2005.00094.x

- Hastings, P.D., Miller, J.G., & Troxel, N. (2014). *Making good: The socialization of children's prosocial development*. In P.D. Hastings & J.E. Grusec (Eds.), *Handbook of socialization* 2nd ed. (pp. 637–660). Guilford: New York.
- Hala, S., Hug, S., & Henderson, A. (2003). Executive function and false-belief understanding in preschool children: Two tasks are harder than one. *Journal of Cognition and Development*, 4, 275–298.
- Hawkins, R. L. and Maurer, K. (2010) 'Bonding, bridging, and linking: How social capital operated in New Orleans following Hurricane Katrina', *British Journal of Social Work*, 40(6), 1777 – 93.
- Hay, D. F. & Cook, K. V. (2007). *The transformation of prosocial behavior from infancy to childhood*. In C.E. Brownell & C.B. Kopp (Eds.), *Socioemotional Development In the Toddler Years: Transitions and Transformations* (p. 100-131). NY: Guilford Press.
- Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter? *Psychological Science*, 24, 1918-1927.
- Henderson, J.M. & Hollingworth, A. (2003). Eye movements and visual memory: detecting changes to saccade targets in scenes. *Perception & Psychophysics*, 65, 58. DOI: 10.3758/BF03194783.
- Heal, J. (1986). *Replication and functionalism*. In J. Butterfield (Ed), *Language, Mind, and Logic* (p. 135 – 150). Cambridge: Cambridge University Press.
- Heffernan, M. (2015). *Beyond measure*. Simon & Schuster: New York.
- Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York: Wiley.

- Hein, G., Silani, G., Preuschhoff, K., Batson, C.D., & Singer, T. (2010). Neural responses To ingroup and outgroup members' suffering predict individual differences in costly helping. *Neuron*, 68(1), 149-60. DOI: 10.1016/j.neuron.2010.09.003.
- Heinrichs, M., Baumgartner, T., Kirschbaum, C., & Ehlert, U. (2003): Social support and oxytocin interact to suppress cortisol and subjective responses to psychosocial stress. *Biological Psychiatry*, 54, 1389 –1398.
- Heinz, A. J., Beck, A., Meyer-Lindenberg, A., Sterzer, P. & Heinz, A. (2011). Cognitive and neurobiological mechanisms of alcohol-related aggression. *Nature Reviews Neuroscience*, 12, 400–413.
- Henig, J. (2013). *The End of Exceptionalism in American Education: The Changing Politics of School Reform*. Cambridge, Massachusetts: Harvard Education Press.
- Hepper, E. G., Hart, C. M., Meek, R., Cisek, S. Z., & Sedikides, C. (2014). Narcissism and empathy in young offenders and non-offenders. *European Journal of Personality*, 28, 201-210.
- Hermans, E. J., Ramsey, N. F., & van Honk, J. (2008). Exogenous testosterone enhances responsiveness to social threat in the neural circuitry of social aggression in humans. *Biological Psychiatry*, 63, 263–270.
- Higgins, G. E., Kirchner, E. E., Ricketts, M. L., & Marcum, C. D. (2011). Developing self-control: the role of parental stress. *Criminal Justice Studies: A Critical Journal of Crime, Law, and Society*, 24, 183–199.
- Hilbig, B. E., Glöckner, A., & Zettler, I. (2014). Personality and prosocial behaviour: Linking basic traits and social value orientations. *Journal of Personality and Social Psychology*, 107(3), 529–539.

- Hiller, R.M., Young, R.L., & Weber, N. (2014) Sex differences in autism spectrum disorder based on DSM-5: evidence from clinician and teacher reporting. *Journal of Abnormal Child Psychology*, 42(8), 1381–1393.
- Hines, S. (2013) *Gender Diversity, Recognition and Citizenship: Towards a Politics of Difference*. Palgrave MacMillan
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.
- Hoffman, M. L. (2000). *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press.
- Hojat, M., & LaNoue, M. (2014). Exploration and confirmation of the latent variable structure of the Jefferson scale of empathy. *International Journal of Medical Education*, 5, 73-81.
- Hoeve, M., Semon Dubas, J., Eichelsheim, V.I., van der Laan, P.H., Smeenk, W. & Gerris, J.R.M. (2009).The Relationship between Parenting and Delinquency: A Meta-analysis. *Journal of Abnormal Child Psychology*, 37(6), 749–775.  
DOI: 10.1007/s10802-009-9310-8.
- Hooghe, M. (2002). Watching television and civic engagement. Disentangling the effects of time, programs, and stations. *Harvard International Journal of Press/Politics*, 7(2), 84–104. doi: 10.1177/1081180X0200700206
- Huizinga, M., Dolan, C.V., & van der Molen, M.W. (2006) Age-related change in executive function: Developmental trends and a latent variable analysis. *Neuropsychologia*, 44(11): 2017–2036.
- Hughes, C. (1998). Executive function in pre-schoolers: Links with theory of mind and verbal ability. *British Journal of Developmental Psychology*, 16, 233-253.
- Imuta, K., Henry, J.D., Slaughter, T Selcuk, B., & Ruffman, T. (2016).Theory of

- Mind and prosocial behaviour in childhood: a meta-analytic review.  
*Developmental Psychology*, 52, 1192–1205. DOI: 10.1037/dev0000140
- Inciardi, J. A., Martin, S.S. & Clifford, A.B. (2004). Five year outcome of therapeutic community treatment of drug-involved offenders after release from prison. *Crime and Delinquency*, 50(1) 88-107.
- Jacques, S., & Zelazo, P. D. (2005). *Language and the Development of Cognitive Flexibility: Implications for Theory of Mind*. In J. W. Astington, & J. A. Baird (Eds.), *Why Language Matters for Theory of Mind* (pp. 144-162). New York, NY: Oxford University Press. DOI: 10.1093/acprof:oso/9780195159912.003.0008
- Jaffee, S.R., Caspi, A., Moffitt, T. E., & Taylor A. (2004). Physical maltreatment victim to antisocial child: Evidence of an environmentally-mediated process. *Journal of Abnormal Psychology*, 113, 44–55.
- Jarrett, R. L., Sullivan, P. J., & Watkins, N. D. (2005). Developing social capital through participation in organized youth programs: Qualitative insights from three programs. *Journal of Community Psychology*, 33(1), 41-55. DOI: 10.1002/jcop.20038
- Jensen, K., Vaish, A., & Schmidt, M.F.H. (2014). The emergence of human prosociality: Aligning with others through feelings, concerns, and norms. *Frontiers in Psychology*, 5. DOI:10.3389/fpsyg.2014.00822
- Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the Basic Empathy Scale. *Journal of Adolescence*, 29, 589-611.
- Kanacri, B.P. L., Pastorelli, C., Zuffiano, A., Eisenberg, N., Ceravolo, R., & Caprara, G. V. (2014). Trajectories of prosocial behaviours conducive to civic outcomes during the transition to adulthood: The predictive role of family dynamics. *Journal of*

- Adolescence*, 37 (8), 1529-1539. DOI: 10.1016/j.adolescence.2014.07.002.
- Kaputa, V. & Palus, H. (2013). Users' attitudes towards print and digital. *Intercathedra*, 2(29).
- Kazemian, L. (2007). Desistance from crime: Theoretical, empirical, and methodological and policy considerations. *Journal of Contemporary Criminal Justice*, 23(1), 5-27.
- Kazemian, L., Farrington, D. P. & LeBlanc, M. (2009). Can we make accurate long-term predictions of patterns of de-escalation in offending behaviour? *Journal of Youth and Adolescence*, 38, 384-400.
- Keenan, T., & Ward, T. (2000). A theory of mind perspective on cognitive, affective, and intimacy deficits in child sexual offenders. *Sexual Abuse: A Journal of Research and Treatment*, 12, 49-58.
- Keysers, C., Wicker, B., Gazzola, V., Anton, J.L., Fogassi, L. & Gallese, V. (2004). A touching sight: SII/PV activation during the observation and experience of touch. *Neuron*, 42, 335–346.
- Kim, S., & Kou, X. (2014). Not All Empathy Is Equal: How Dispositional Empathy Affects Charitable Giving. *Journal of Non-profit & Public Sector Marketing*, 26 (4).
- Klein, K.J.K. & Hodges, S.D. (2001). Gender differences, motivation, and empathic accuracy: When it pays to understand. *Personality and Social Psychology Bulletin*, 27, 720–730.
- Knafo, A., C. Zahn-Waxler, C. Van Hulle, J. L. Robinson, & S. H. Rhee (2008). The developmental origins of a disposition toward empathy: Genetic and Environmental contributions. *Emotion*, 8, 737-752.

- Knapp, K. & Morton, J.B. (2013). *Brain development and executive functioning*. In: Tremblay, R.E., Boivin, M., & Peters, R.D.V. (Eds.). *Encyclopaedia on Early Childhood Development*. Montreal, Quebec: Centre of Excellence for Early Childhood Development and Strategic Knowledge Cluster on Early Child Development, 1 - 7.
- Knickerbocker, R. L. (2015). *Prosocial Behavior*. Retrieved November 7, 2015, from <http://www.learningtogive.org/resources/prosocial-behavior>
- Koenen, K.C., Caspi, A., Moffitt, T.E., Rijdsdijk, F., & Taylor, A. (2006). Genetic influences on the overlap between low IQ and antisocial behaviour in young children. *Journal of Abnormal Psychology*, 115(4), 787-97
- Kohlberg, L. (1969). *Stage and sequence: The cognitive-developmental approach to socialization*. In D. Goslin (Ed.) *Handbook of socialization theory and research* (pp. 347-480). Chicago, IL: Rand McNally.
- Kohlberg, L. (1978). Revisions in the theory and practice of moral development. *New Directions for Child and Adolescent Development*, (2), 83–87, DOI: 10.1002/cd.23219780207.
- Kohlberg, L. (1976). *Moral stages and moralization: The cognitive-developmental approach*. In T. Lickona (Ed.) *Moral development and behaviour: Theory, research, and social issues*. New York: Holt, Reinhart & Winston.
- Kohlberg, L. (1978). Revisions in the theory and practice of moral development. *New Directions for Child and Adolescent Development*, 2, 83–87, DOI: 10.1002/cd.23219780207.
- Kohlberg, L., & Candee, D. (1984). *The relationship of moral judgment to moral action*. In

- L. Kohlberg (Ed.) *Essays in moral development: Vol.2. The psychology of moral development*, (p. 498 –581). New York: Harper & Row.
- Kopp, C. B., Baker, B. I., & Brown, K. W. (1992). Social skills and their correlates: Pre-schoolers with developmental delays. *American Journal on Mental Retardation*, 96, 357–366.
- Krebs, D. L., & Denton, K. (2006). Explanatory limitations of cognitive-developmental approaches to Morality. *Psychological Review*, 113, 672–675.
- Krebs, D.L., Denton, K.L., Vermeulen, S.C., Carpendale, J.I., & Bush, A. (1991) Structural flexibility of Moral Judgment. *Journal of Personality and Social Psychology*, 61(6), 1012-1023.
- Krishna, A., & Schrader, E. (2000). *Cross-cultural measures of social capital: A tool and results from India and Panama*. Washington, DC: World Bank.
- Labouvie-Vief, G. (2003). Dynamic integration: Affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*, 12, 201–206.
- Labouvie-Vief, G., & Márquez, M. (2004). *Dynamic integration: Affect optimization and differentiation in development*. In D.Y. Dai & R. J. Steinberg (Eds.), *Motivation, emotion, and cognition* (p.2.37 -272). Mahwah, NJ: Erlbaum.
- Leslie, A.M. (1994). “*ToMM, ToBy, and agency: Core architecture and domain specificity.*” In L. Hirschfeld and S. Gelman (Eds.), *Mapping the Mind: Domain Specificity in Cognition and Culture* (p. 119 -148). Cambridge, MA, Cambridge University Press.
- Lafferty, L., Treloar, C., Butler, T., Guthrie, J., & Chambers, G.M. (2016). Unlocking dimensions of social capital in the prison setting, *Health Justice*, 4 (9). DOI: 10.1186/s40352-016-0040-z.

- Lahat, A., Todd, R. M., Mahy, C. E. V., & Zelazo, P. D. (2010). Neurophysiological correlates of executive function: a comparison of European-Canadian and Chinese-Canadian 5-year-old children. *Frontiers in Human Neuroscience*, 3, 72, 1-10.
- Lam, A. (2012). Chewing in the name of justice: The taste of law in action. *Law Text Culture*, 16(1), 155–182.
- Lamm, C. & Majdandžić, J. (2015). The role of shared neural activations, mirror neurons and morality in empathy – A critical comment. *Neuroscience Research*, 90, 15–24. DOI:10.1016/j.neures.2014.10.008.
- Lane, J. D., Wellman, H.M., Olson, S. L., La Bounty, J., & Kerr, D. C. R. (2010). Theory of mind and emotion understanding predict moral development in early childhood. *British Journal of Developmental Psychology*, 28, 871–889.
- Langdon, P. E., Clare, I. C. H., & Murphy, G. H. (2011). Moral reasoning theory and illegal behaviour by adults with intellectual disabilities. *Psychology, Crime & Law*, 17, 101 - 115.
- Laub, J.H. (2006). Edwin Sutherland and the Michael-Adler report: Searching for the soul of criminology seventy years later. *Criminology*, 44, 235-258.
- Law, B.M., Siu, A.M., & Shek, D.T. (2012). Recognition for positive behavior as a critical youth development construct: conceptual bases and implications on youth service development. *Scientific World Journal*.
- Lawford, H., Pratt, M. W., Hunsberger, B., & Pancer, S. M. (2005). Adolescent generativity: A longitudinal study of two possible contexts for learning concern for future generations. *Journal of Research on Adolescence*, 15, 261- 273.
- Lawrence, E. J., Shaw, P., Baker, D., Baron-Cohen, S., & David, A. S. (2004).

- Measuring empathy: Reliability and validity of the empathy quotient.  
*Psychological Medicine*, 34(5), 911–919.
- Lawson, J., Baron-Cohen, S., & Wheelwright, S. (2004). Empathising and Systemising in adults with and without Asperger's Syndrome. *Journal of Autism and Developmental Disorders*, 34, 301-310.
- Leana, C. R., & Van Buren, H. J., III. 1999. Organizational social capital and employment practices. *Academy of Management Review*, 24, 538-555.
- Leaper, C., Anderson, K. J., & Sanders, P. (1998). Moderators of gender effects on parents' talk to their children: a meta-analysis. *Developmental Psychology*, 34, 3 - 27.  
DOI: 10.1037/0012-1649.34.1.3.
- Lee, D. Y. (2013). The role of attachment style in building social capital from a social networking site: The interplay of anxiety and avoidance. *Journal Computers in Human Behavior archive*, 29 (4), 1499-1509. DOI:10.1016/j.chb.2013.01.012.
- Lehto, J. E., Juujärvi, P., Kooistra, L., & Pulkkinen, L. (2003). Dimensions of executive functioning: evidence from children. *British Journal of Developmental Psychology*, 21, 59–80. DOI: 10.1348/026151003321164627.
- Lin, N. (2001) Social Capital: Social Networks, Civic Engagement or Trust? Hong Kong Journal of Sociology (2), 1-38.
- Liszkowski, U. (2013). Using theory of mind. *Child Development Perspectives*, 7, 104 - 109.
- Liszkowski, U, Albrecht, K., Carpenter, M. & Tomasello, M. (2008). Infants' visual and auditory communication when a partner is or is not visually attending. *Infant Behavior and Development*, 31 (2), 157-167. DOI: 10.1016/j.infbeh.2007.10.011

- Lomanowska, A.M. & Guitton, M.J. (2016). Online intimacy and well-being in the digital age. *Internet Interventions*, 4 (2), 138-144. DOI: 10.1016/j.invent.2016.06.
- Lösel, F. & Beelmamm, A. (2005): *Social problem-solving programs for preventing antisocial behaviour in children and youth*. In: McMorran, M., McGuire, J. (Eds.): *Social problem solving and offending: Evidence, evaluation and evolution*. New York, NY: Wiley, 127–143.
- Lynam, D., & Henry, B. (2001). *The role of neuropsychological deficits in conduct disorders*. In J. Hill & B. Maughan (Eds.), *Conduct problems in childhood and adolescence* (p. 235–263). Mahwah, NJ: Erlbaum
- Lynam, D., Moffitt, T.E., & Stouthamer-Loeber, M. (1993). Explaining the relation between IQ and delinquency: Class, race, test motivation, school failure, or self-control? *Journal of Abnormal Psychology*, 102, 187–196.
- MacKinnon, B., & Fiala, A. (2015). *Ethics: Theory and contemporary issues (8th ed.)*. Stamford, CT: Cengage.
- McCrae, C. N., Bodenhausen, G. V., Schloerscheidt, A. M., & Milne, A. B. (1999). Tales of the unexpected: Executive function and person perception. *Journal of Personality and Social Psychology*, 76, 200 – 213.
- McCrae, R. R., & Costa, P. T. Jr. (1990). *Personality' in adulthood*. New York: Guilford.
- Makino, H. (2010). *The development of a new performance based test for measuring emotional intelligence: Humanity-Empathy-Assertiveness-Respect Test*. Unpublished doctoral thesis. Retrieved from UMI Dissertation Publishing. (UMI Number: 3409390).
- Malti, T., & Latzko, B. (2010). Children's moral emotions and moral cognition:

- Towards an integrative perspective. *New Directions in Child and Adolescent Development*, 129, 1–10. DOI: 10.1002/cd.272
- Malti, T., & Ongley, S. (2014). *The development of moral emotions and moral reasoning*. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (2nd ed., p. 163-183). New York, NY: Psychology Press.
- Maner, J. K. & Kendrick, D.T. (2010). When Adaptations Go Awry: Functional and Dysfunctional Aspects of Social Anxiety. *Social Issues Policy Review*, 4(1), 111–142. DOI: 10.1111/j.1751-2409.2010.01019.x
- Mann, R.E., Hanson, R.K., & Thornton, D. (2010) Assessing risk for sexual recidivism: some proposals on the nature of psychologically meaningful risk factors. *Sexual Abuse: A Journal of Research and Treatment*, 22, 191–217.
- Marsh, H. W., Balla, J. R., & Hau, K. T. (1996). *An evaluation of incremental fit indices: a clarification of mathematical and empirical properties*. In G. A. Marcoulides & R. E. Schumacher (Eds.), *Advanced structural equation modelling issues and techniques* (p. 315 – 353). Mahwah, NJ: Erlbaum.
- Marshall L.E. & Marshall W.L. (2011). Empathy and antisocial behavior. *Journal of Forensic Psychiatry and Psychology*, 22(5), 742–759.
- Marques, T, Pereira, A. I., Goes, A. R., & Barros, L. (2015). *Interpretation bias, judgment bias and Coping Strategies in Anxious Children*. International Convention of Psychological Science (ICPS). 12 a 14 de Março, Amsterdam, Netherlands.
- Martin, G.B., & Clark, R.D. (1982). Distress crying in neonates: Species and peer specificity. *Developmental Psychology*, 18, 3–9.
- Ma, H.K. (2013). The Moral Development of the Child: An Integrated Model. *Frontiers in*

*Public Health*, 1, 57. DOI: 10.3389/fpubh.2013.00057.

- Maruna, S. (2001) *Making good: How ex-convicts reform and rebuild their lives*, American Psychological Association Books: Washington DC
- Mason, M.G., & Gibbs, J.C. (1993). Social perspective taking and moral judgment among college students. *Journal of Adolescent Research*, 8, 109-123.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer-Salovey-Caruso emotional intelligence test (MSCEIT) user's manual*. Toronto, Canada: Multi-Health Systems.
- Meijers, J., Harte, J. M., Jonker, F. A., & Meynen, G. (2015). Prison brain? Executive dysfunction in prisoners. *Frontiers in Psychology*, 2015(6), [43].  
DOI: 10.3389/fpsyg.2015.00043
- McCabe, K. & Smith, V. (2000). *Goodwill Accounting in Economic Exchange*. In G. Gigerenzer & R. Selten (Eds.), *Bounded Rationality: The Adaptive Toolbox*. MIT Press.
- McCabe, K., Houser, D., Ryan, L., Smith, V., & Trouard, T. (2001). A functional imaging study of cooperation in two-person reciprocal exchange. *Proceedings of the National Academy of Science, USA*, 98, 11832–11835.
- McCabe, D. P., Roediger, H. L., McDaniel, M. A., Balota, D. A., Hambrick, D. Z. (2010). The Relationship Between Working Memory Capacity and Executive Functioning: Evidence for a Common Executive Attention Construct. *Neuropsychology*, 24, 222-243.
- McCarthy, B., & Hagan, J. (2001). When crime pays: capital, competence and criminal success. *Social Forces*, 79, 1035–59

- McCloskey, G., Perkins, L., & Van Divner, B. (2009). *Assessment and intervention for executive function difficulties*. New York, NY US: Routledge/Taylor & Francis Group.
- McDonald, N., & Messinger, D. (2011). *The development of empathy: How, when, and why*. In A. Acerbi, J. A. Lombo, & J. J. Sanguinetti (Eds.), *Free will, Emotions, and Moral Actions: Philosophy and Neuroscience in Dialogue*. IF-Press.
- McDougall, C., Clabour, J., Perry, A. and Bowles, R. (2009). *Evaluation of HM Prison Service Enhanced Thinking Skills Programme: Report on the outcomes of a randomised controlled trial*. London: Ministry of Justice.
- McGuire, J., Bilby, C. A., Hatcher, R. M., Hollin, C. R., Hounsome, J., Palmer, E. J. (2007). Evaluation of Structured Cognitive-Behavioural Treatment Programmes in Reducing Criminal Recidivism. *Journal of Experimental Criminology*, 4, 21-40.
- McHale, S.M., Kim, J., & Whiteman, S.D. (2006). *Sibling relationships in childhood and adolescence*. In P. Noller & J. A. Feeney (Eds.), *Close relationships: Functions, forms, and processes* (p. 127–149). New York: Psychology Press.
- McKenzie, K., Whitley, R. and Weich, S. (2002). Social Capital and Mental Health, *British Journal of Psychiatry*, 181(4), 280-3.
- McNeill, F., Farrall, S., Lightowler, C., & Maruna, S. (2012). *How and why people stop offending: Discovering desistance*. Insights No. 15, Glasgow: IRISS.
- MacPherson, H., Richmond, S., Bland, M., Brealey, S., Gabe, R., Hopton, A., Keding, A., Lansdown, H., Perren, S., Sculpher, M., Spackman, E., Torgerson, D., & Watt, I. (2013). Acupuncture and Counselling for Depression in Primary Care: A Randomised Controlled Trial. *PLoS Med*, 10(9). DOI;

- 10.1371/journal.pmed.1001518.
- McRae, K., Ochsner, K.N., Mauss, I.B., Gabrieli, J.D.E., & Gross, J.J. (2008). Gender differences in emotion regulation: An fMRI study of cognitive reappraisal. *Group Processes and Intergroup Relations*, 11, 143–62.
- Messing, K., Randoin, M., Tissot, F., Rail, G., & Fortin, S. (2004). Unnecessary suffering: posture Static standing in service jobs. *Labour, Gender and Societies*, 12, 77-104.
- Michalska, K.J., Zeffiro, T.A., & Decety, J. (2016). Brain response to viewing others being harmed in children with conduct disorder symptoms. *Journal of Child Psychology and Psychiatry*, 57, 510–519.
- Midlarsky, E., & Hannah, M. E. (1985). Competence, reticence, and helping by children and adolescents. *Developmental Psychology*, 21, 534-541.
- Miller, M., & Hinshaw, S.P. (2010). Does childhood executive function predict adolescent functional outcomes in girls with ADHD? *Journal of Abnormal Child Psychology*, 38, 315–326. DOI: 10.1007/s10802-009-9369-2.
- Milligan, K., Astington, J. W., & Dack, L. A. (2007). Language and theory of mind: Meta-analysis of the relation between language ability and false-belief understanding. *Child Development*, 78, 622–646.
- Minio-Paluello, I., Avenanti, A., & Aglioti, S.M. (2006). Left hemisphere dominance in reading the sensory qualities of others' pain? *Social Neuroscience*, 1, 320-333.
- Ministry of Justice (2010). *The Thinking Skills Programme Submission Document February 2010*. London: Ministry of Justice.
- Ministry of Justice (2016). *Offender management statistics annual tables 2015*. London: Ministry of Justice

- Moffitt, T. (1993). Life-course persistent and adolescent-limited antisocial behaviour: A developmental taxonomy. *Psychological Review*, 100, 674-701.
- Moffitt, T.E., Caspi, A., Harrington, H., & Milne, B.J. (2002). Males on the Life-Course Persistent and Adolescent-Limited Anti-Social Pathways: Follow up at Age 26 Years. *Development and Psychopathology*, 14, 179–207.
- Moffitt, T.E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R.J., Harrington, H., Houts, R., Poulton, R., Roberts, B.W., Ross, S., Sears, M.R., Thompson, W.M., & Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences (PNAS)*, 108 (7), 2693-2698.
- Moll, R., Pieschl, S., & Bromme, R. (2015). Blessed oblivion? Knowledge and metacognitive accuracy in Online Social Networks. *International Journal of Developmental Science*, 9(2), 57-60. DOI: 10.3233/DEV-14155
- Morrow-Howell, N., McCray S., Lee Y., & McBride A. (2011). *Experience Corps: Pathway to further engagement (CSD Research Report)*. St. Louis, MO: Centre for Social Development, Washington University.
- Moss, S. (2016). *Fit indices for structural equation modelling* [online]. Available from: [http:// www.sicotests.com/psyarticle.asp?id=277](http://www.sicotests.com/psyarticle.asp?id=277) [Accessed 09 August 2017]
- Mullin, S., & Simpson, J. (2007). Does executive functioning predict improvement in offender behaviour following enhanced thinking skills training? An exploratory study with implications for rehabilitation. *Legal and Criminological Psychology*, 12, 117-131. DOI: 10.1348/13553250591560.
- Murphy, G., & Medin, D. (1985). The role of theories in conceptual coherence. *Psychological Review*, 92, 289-316.

- Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus User's Guide: Statistical Analysis with Latent Variables (7th Ed.)*. Los Angeles, CA: Muthén & Muthén.
- Nagin, D.S., & Paternoster, R. (1994). Personal Capital and Social Control: The Deterrence Implications of Individual Differences in Criminal Offending. *Criminology*, 2,581-606.
- Nagin, D.S. & Snodgrass, G.M. (2013). The Effect of Incarceration on Re- Offending: Evidence from a Natural Experiment in Pennsylvania. *Journal of Quantitative Criminology*, 29(4), 601-642.
- Nahapiet, J. & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review*, 23 (2), 242-66.
- Narvaez, D. (2010). The embodied dynamism of moral becoming. *Perspectives on Psychological Science*, 5(2), 185-186.
- Nettle, D. and B. Liddle (2008). Agreeableness is related to social-cognitive, but not social-perceptual, theory of mind. *European Journal of Personality*, 22, 323-35.
- Nicholson, J.S., Deboeck, P.R., Farris, J.R., Boker, S.M., & Borkowski, J.G. (2011). Maternal depressive symptomatology and child behaviour: Transactional relationship with simultaneous bidirectional coupling. *Developmental Psychology*, 47, 1312–1323. DOI: 10.1037/a0023912.
- Nigg, J.T. & Huang-Pollock, C.L. (2003). *An early-onset model of the role of executive functions and intelligence in conduct disorder/delinquency*. In: Lahey, B.B., Moffitt, T.E., Caspi, A., (Eds.). *The causes of conduct disorder and serious juvenile delinquency*. New York: Guilford Press, 227–253.

- Nisan, M., & Kohlberg, L. (1982). Universality and variation in moral judgment: A longitudinal and cross-sectional study in Turkey. *Child Development*, 53, 865–876.
- Nummenmaa, L., Glerean, E., Viinikainen, M., Jääskeläinen, I.P., Hari, R., & Sams, M. (2012). Emotions promote social interaction by synchronizing brain activity across individuals. *Neuroscience, Psychological and Cognitive Sciences*, 109(24), 9599–9604.
- Ogilvie, J. M., Stewart, A. L., Chan, R. C. K., & Shum D. H. K. (2011). Neuropsychological measures of executive function and antisocial behaviour: a meta-analysis. *Criminology*, 49, 1063–1107. DOI 10.1111/j.1745-9125.2011.00252. x.
- Padilla-Walker, L. M., & Carlo, G. (Eds.), (2014). *Prosocial development: A multidimensional approach*. New York, NY: Oxford University Press.
- Pakes, F. & Winstone, J. (2010). A site visit survey of 101 mental health liaison and diversion schemes in England. *The Journal of Forensic Psychiatry & Psychology*, 21(6): 873–886.
- Palmer, E. J. (2003). An overview of the relationship between moral reasoning and offending. *Australian Psychologist*, 38, 165-174.
- Palmer, E. (2013). *Offending Behaviour*. Routledge. ISBN 1135995311, 9781135995317
- Palmer, E.J., & Begun, A. (2006). The relationship between moral reasoning, provictim attitude and interpersonal aggression among imprisoned young offenders. *International journal of offending theory and comparative criminology*, 50(4), 446 - 457.

- Pardini, D. A., Loeber, R., & Stouthamer-Loeber, M. (2005). Developmental shifts in parent and peer influences on boys' beliefs about delinquent behavior. *Journal of Research on Adolescence*, 15(3), 299-323.
- Park, H. W. (2010). Mapping the e-science landscape in South Korea using the webometrics method. *Journal of Computer-Mediated Communication*, 15(2), 211–229.
- Penner, L.A., Dovidio, J., Piliavin, J.A., & Schroeder, D.A. (2005). Prosocial Behavior: Multilevel Perspectives. *Annual Review of Psychology*, 56, 356-392
- Perner, J. (1991). *Understanding the Representational Mind*. Cambridge, MA: MIT Press.
- Perry, B. L., Pescosolido, B.A., Bucholz, K., Edenberg, H., Kramer, J., Kuperma, S., Schuckit, M. A., & Nurnberger, J. I. (2015), Gender-Specific Gene–Environment Interaction in Alcohol Dependence: The Impact of Daily Life Events and GABRA2. *Behavioural Genetics*, 43(5), 402–414. DOI: 10.1007/s10519-013-9607-9.
- Petersen, A.C., Joseph, J., & Feit, M. (2014). *New Directions in Child Abuse and Neglect Research*. Washington (DC): National Academies Press (US).
- Petersen, M. B., Roepstorff, A. & Serritzlew, S. (2009). *Social capital in the brain?* In G. T. Svendsen & L. H. Gunnar (Eds.), *Handbook of Social Capital* (p. 75 -92). Northampton MA: Edward Elgar Publishing.
- Piaget, J. (1932). *The Moral Judgement of the Child*. New York: The Free Press.
- Pih, K.H., de Rosa, M., Rugh, D., & Mao, K. (2008). Different strokes for different gangs? An analysis of capital among Latino and Asian gang members. *Sociological*

*Perspectives*, 51,473–494.

- Pinker, S. (2011). *The better angels of our nature: Why violence has declined*. New York: Viking.
- Piquero, A. R., Jennings, W., & Farrington, D. P. (2010). On the malleability of self-control: Theoretical and policy implications regarding a general theory of crime. *Justice Quarterly*, 27, 803-834
- Ponsioen, A.J.G.B. (2001). *Cognitive skills of mildly mentally disabled Children and young people*. Amsterdam. Unpublished academic thesis.
- Popper, M. (2013). Leaders perceived as distant and close. Some implications for psychological theory on leadership. *The Leadership Quarterly*, 24 (1), 1-8.
- Posner, M. I., & Rothbart, M. K. (2007). Research on attention networks as a model for the integration of psychological science. *Annual Review of Psychology*, 58. 1-23
- Prencipe, A., Kesek, A., Cohen, J., Lamm, C., Lewis, M.D., & Zelazo, P.D. (2011) Development of hot and cool executive function during the transition to adolescence. *Journal of Experimental Child Psychology*, 108, 621–637
- Premack, D. & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioural and Brain Sciences*, 1, 515-526.
- Prinz, J.J. (2007). *The Emotional Construction of Morals*. Oxford: Oxford University Press.
- Prior, D. & Paris, A. (2005). *Preventing Children's Involvement in Crime and Antisocial Behaviour: A literature Review*. A paper produced for the National Evaluation of the Children's Fund Institute of Applied Social Studies University of Birmingham

- Prison Reform Trust (2006). *Bromley Briefings Prison Fact File*. London.
- Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*.  
New York: Simon and Schuster.
- Puntscher, S., Hauser, C., Pichler, K. & Tappeiner, G. (2014). Social Capital and  
Collective Memory: A Complex Relationship. *Kyklos*, 67, 116-132.
- Raine, A., Park, S., & Lencz, T. (2001). Reduced right hemisphere activation in severely  
abused violent offenders during a working memory task: An fMRI study.  
*Aggressive Behavior*, 27, 111–129.
- Raine, A. & Yang, Y. (2006). Neural foundations to moral reasoning and antisocial  
behaviour. *Social, Cognitive and Affective Neuroscience*, 1, 203–213.
- Raskin, R., & Terry, H. (1988). A principal-components analysis of the Narcissistic  
Personality Inventory and further evidence of its construct validity. *Journal of  
Personality and Social Psychology*, 54, 890–902.
- Raviv, A., Bar-Tal, D., & Lewis-Levin, T. (1980). Motivations for donation behavior  
by boys of three different ages. *Child Development*, 51, 610-613
- Raykov, T. (2000). On the large-sample bias, variance, and mean squared error of the  
conventional noncentrality parameter estimator of covariance structure models.  
*Structural Equation Modelling*, 7, 431-441. .
- Rest, J. 1986). *Moral development: Advances in research and theory*. New  
York: Praeger.
- Rest, J., Narvaez, D., Bebeau, M. & Thoma, S. (1999). A Neo-Kohlbergian Approach: The  
DIT and Schema Theory. *Educational Psychology Review*, 11 (4), 291 - 324.
- Rice, G. E., & Ganer, P. (1962). Altruism in the albino rat. *Journal of Comparative &  
Physiological Psychology*, 55, 123-125.

- Richardson, D.S. & Hammock, G.S. (2007). Social context of human aggression: Are we paying too much attention to gender? *Aggression and Violent Behavior*, 12, 417-426.
- Richell, R.A., Mitchell, D. G.V., Newman, C., Leonard, A., Baron- Cohen, S., & Blair, R.J.R. (2003). Theory of the mind and psychopathy: can psychopathic individuals read the 'language of the eyes'. *Neuropsychologia*, 41, 523-26.
- Rhee, S. H., & Waldman, I. D. (2002). Genetic and environmental influences on antisocial behaviour: A meta-analysis of twin and adoption studies. *Psychological Bulletin*, 128, 490-529.
- Roberts, W., Fillmore, M.T., & Milich, R. (2011). Linking Impulsivity and Inhibitory Control Using Manual and Oculomotor Response Inhibition Tasks. *Acta Psychologica (Amsterdam)*, 138(3): 419–428.  
DOI:10.1016/j.acTSPy.2011.09.002
- Robinson L., Spencer M. D., Thomson L. D., Sprengelmeyer R., Owens D. G., Stanfield A. C., et al. (2012). Facial emotion recognition in Scottish prisoners. *International Journal of Law and Psychiatry*, 35, 57–61. DOI: 10.1016/j.ijlp.2011.11.009
- Robinson, L., Zahn-Waxler, C., & Emde, R.N. (1994). Patterns of development in early empathic behavior: Environmental and child constitutional influences. *Social Development*, 3,125–145.
- Rogers, R.D., Moeller, F.G., Swann, A.C., & Clark, L. (2010). Recent research on impulsivity in individuals with drug use and mental health disorders: implications for alcoholism. *Alcohol Clin Exp Res*, 34, 1319–1333.
- Rose, D. R. & Clear, T. R. (1998). Incarceration, Social Capital and Crime: Implications for Social Disorganization Theory. *Criminology*, 36:441-79.

- Ross, S. R., Krukowski, R. A., Putnam, S. H., & Adams, K. M. (2003). The Memory Assessment Scales in the Detection of Incomplete Effort in Mild Head Injury. *Clinical Neuropsychologist*, 17(4), 581-591.
- Rothbart, M. K. (2007). Parenting: The First Three Years A group-based positive parenting program. *Permanente Journal*.
- Rothbart, M. K., Ahadi, S. A., Hershey, K., & Fisher, P. (2001). Investigations of temperament at three to seven years: The Children's Behavior Questionnaire. *Child Development*, 72(5), 1394-1408.
- Rothbart, M.K. & Posner, M.I. (2015). The developing brain in a multitasking world. *Developmental Review*, 1 (35), 42-63.
- Roux, F., & Uhlhaas, P. J. (2014). Working memory and neural oscillations: alpha-gamma versus theta-gamma codes for distinct WM information? *Trends in Cognitive Science*, 18, 16–25. DOI: 10.1016/j.tics.2013.10.010.
- Rueckert, L., Branch, B., & Doan, T. (2011). Are gender differences in empathy due to differences in emotional reactivity? *Psychology*, 2(6), 574-578.
- Rushton, J.P. (2004). *Genetic and environmental contributions to pro-social attitudes: a twin study of social responsibility*. Proceedings of the Royal Society London, 271, 2583-5.
- Russell, T. A., Tchanturia, K., Rahman, Q., & Schmidt, U. (2007). Sex differences in Theory of Mind: A male advantage on Happe's "cartoon" task. *Cognition and Emotion*, 21(7), 1554-1564. DOI: 10.1080/02699930601117096
- Sabatini, F. (2009). Social Capital as Social Networks: a New Framework for Measurement and an empirical analysis of its determinants and consequence. *Journal of Socio-Economics*, 38 (3), 429-442.

- Sabbagh, M. A., Xu, F., Carlson, S. M., Moses, L. J., & Lee, K. (2006). The Development of Executive Functioning and Theory of Mind. A Comparison of Chinese and U.S. Pre- schoolers. *Psychological Science*, 17(1): 74–81.  
DOI: 10.1111/j.1467- 9280.2005.01667.x
- Sadlier, G. (2010). *Evaluation of the Impact of the HM Prison Service Enhanced Thinking Skills Programme on Reoffending Outcomes of the Surveying Prisoner Crime Reduction (SPCR) Sample*. Ministry of Justice Research Series 19/10.
- Sagrilo, M.C. P., & Ferreira, T.L. (2012). Difference between auditory and visual span in genders: Pilot study. *Revista CEFAC*, 15, 552-560.
- Salvatore, C. & Taniguchi, T.A. (2012). Do social bonds matter for emerging adults? *Deviant behavior*, 33(9), 738-756.
- Sampson, R.J. (1993). Linking time and place: Dynamic contextualism and the future of criminological inquiry. *Journal of Research in Crime and Delinquency*, 30, 426-444. DOI: 10.1177/0022427893030004005.
- Sampson, R.J., & Laub, J.H. (2005). When prediction fails: From crime-prone boys to heterogeneity in adulthood. *Annals of the American Academy of Political and Social Science*, 602, 73-79. DOI: 10.1177/0002716205280575
- Sampson, R.J., Laub, J.H., & Wimmer, C. (2006). Does marriage reduce crime? A counterfactual approach to within-individual causal effects. *Criminology*, 44, 465-508.  
DOI: 10.1111/j.1745-9125.2006.00055.x
- Sampson, R.J., Raudenbush, S.W., & Earls, F. (1997). Neighbourhoods and violent crime: a multilevel study of collective efficacy. *Science*, 277, 918-24. DOI: 10.1126/science.277.5328.918.

- Sanfey, A.G., Riling, J.K., Aronson, J.A., Nystrom, L.E., & Cohen, J.D. (2003). The Neural Basis of Economic Decision-Making in the Ultimatum Game.. *Science*, 300 (5626), 1755-1758. DOI: 10.1126/science.1082976.
- Sanstock, J.W. A. (2014). *Topical Life-Span Development (7th Ed.)*. New York: McGraw-Hill.
- Saxe, R. & Baron-Cohen, S. (2006). The neuroscience of theory of mind. *Social Neuroscience*. 1. DOI: 10.1080/17470910601117463
- Saxe, R, Schulz, L.E., & Jiang, Y.V. (2006). Reading minds versus following rules: dissociating theory of mind and executive control in the brain. *Social Neuroscience*, 1, 284-98. DOI: 10.1080/17470910601000446
- Sanghera, B., Ablezova, M. & Botoeva, A. (2011). Everyday morality in families and a critique of social capital: an investigation into moral judgements, responsibilities, and sentiments in Kyrgyzstani households. *Theory and Society*, 40 (2), 167-190.
- Sayre, S. (2001). *Qualitative Methods for Marketplace Research*. London: Sage.
- Schäpke, N., & Rauschmayer, F., 2014. Going beyond efficiency: including altruistic motives in behavioural models for sustainability transitions to address sufficiency. *Sustainability: Science, Practice, and Policy*, 10 (1), 29–44.
- Schmidt K. L. & Cohn, J.F. (2001). Human facial expressions as adaptations: Evolutionary questions in facial expression. *Yearbook of Physical Anthropology*, 44, 3–24.
- Schurz, M., Kronbichler, M., Weissengruber, S., Surtees, A., Samson, D., & Perner, J. (2015). Clarifying the role of theory of mind areas during visual perspective taking: Issues of spontaneity and domain-specificity. *NeuroImage*.

DOI: 10.1016/j.neuroimage.2015.04.031.

- Scholl, B. J., & Leslie, A. M. (2001). Minds, modules, and meta-analysis. *Child Development*, 72, 696–701.
- Searle, J.R. (2001). *Rationality in action*. Cambridge, MA: MIT Press
- Siegel, M.G. (1987). *Psychological Testing from Early Childhood through Adolescence: A Developmental and Psychodynamic Approach*. Connecticut International Universities Press.
- Semel, E. & Rosner, S.R. (2003). *Understanding Williams's syndrome: Behavioural patterns and interventions*. Lawrence Erlbaum Associates: Mahwah, New Jersey.
- Shamay-Tsoory, S.G. (2011). The neural bases for empathy. *The Neuroscientist*, 17 (1), 18-24.
- Shamay-Tsoory, S.G. & Aharon-Peretz J. (2007). Dissociable prefrontal networks for cognitive and affective theory of mind: A lesion study. *Neuropsychologia*, 45(13), 3054-67.
- Shamay-Tsoory, S. G. & Aharon-Peretz, J. & Perry, D. (2009). Two systems for empathy: a double dissociation between emotional and cognitive empathy in inferior frontal gyrus versus ventromedial prefrontal lesions. *Brain*, 132 (3), 617-627
- Shamay-Tsoory, S.G., Harari, H., Aharon-Peretz, J., & Levkovitz, Y. (2010). The role of the orbitofrontal cortex in affective theory of mind deficits in criminal offenders with psychopathic tendencies. *Cortex*, 46 (5), 668-677.
- Shamay-Tsoory, S.G., Tomer, R., Aharon-Peretz, J. (2005). The neuroanatomical basis of understanding sarcasm and its relationship to social cognition. *Neuropsychology*, 19(3), 288-300

- Shamay-Tsoory, S.G., Tomer, R., Goldsher, D., Berger, B.D. & Aharon-Peretz, J. (2004). Impairment in cognitive and affective empathy in patients with brain lesions: anatomical and cognitive correlates. *Journal of clinical and experimental neuropsychology*, 26 (8), 1113-1127..
- Sharma, N., Prakash, O., Sengar, K. S., Chaudhury, S., & Singh, A.R. (2015). The relation between emotional intelligence and criminal behaviour: A study among convicted criminals. *Industrial Psychiatry Journal*, 24(1), 54–58.  
DOI: 10.4103/0972-6748.160934
- Sharp, C. (2008). Theory of mind and conduct problems in children: deficits in reading the ‘emotions of the eyes’. *Cognition and Emotion*, 22(6), 1149- 1158.
- Sharp, C., Croudace, T.J, & Goodyer, I.M. (2007). Biased mentalising in children aged 7-11: Latent class confirmation of response styles to social scenarios and associations with psychopathology. *Social Development*, 16(1), 181-202.
- Schulte-Rüther, M., Greimel, E., Markowitsch, H. J., Kamp-Becker, I., Remschmidt, H., Fink, G.R., Piefke, M. (2011). Dysfunctions in brain networks supporting empathy: an fMRI study in adults with autism spectrum disorders. *Social Neuroscience*, 6, 1–21.
- Schulte-Rüther, M., Markowitsch, H. J., Fink, G. R., & Piefke, M. (2007). Mirror neuron and theory of mind mechanisms involved in face-to-face interactions: A functional magnetic resonance imaging approach to empathy. *Journal of Cognitive Neuroscience*, 19, 1354–1372.
- Scheff, T. J. (1988). ‘Shame and Conformity: The Deference-Emotion System’. *American Sociological Review*. 53 (3): 395-406.
- Simpson, B., & Van Vugt, M. (2009). Sex differences in cooperation:

- Integrating the evolutionary and social psychological perspectives. *Advances in Group Processes*, 26, 81–103. DOI: 10.1108/S0882-6145(2009)0000026007
- Simpson, J. A., & Beckes, L. (2010). *Evolutionary perspectives on prosocial behaviour: The better angels of our nature*. In M. Mikulincer, & P. R. Shaver (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (p. 35-53). Washington, D.C.: American Psychological Association.
- Simonoff, E., Elander, J., Holmshaw, J., Pickles, A., Murray, R., & Rutter, M. (2004). Predictors of antisocial personality: Continuities from childhood to adult life. *British Journal of Psychiatry*, 184,118–127.
- Singer, T. & Klimecki, O. (2014). Empathy and compassion. *Current Biology*, 22 - 24 (18). DOI: 10.1016/j.cub.2014.06.054.
- Smart, D. (2004). *Patterns of anti-social behavior from early to late adolescence. Trends of issues in crime and criminal justice no. 290*. Canberra: Australian Institute of Criminology.
- Smith, A. (1790). *Theory of Moral Sentiments, or An Essay towards An Analysis of the Principles by which Men naturally judge concerning the Conduct and Character, first of their Neighbours, and afterwards of themselves, to which is added a Dissertation on the Origin of Languages. II (Sixth Ed.)*
- Smith, P. K., Cowie, H. & Blades, M. (2003). *Understanding children's development (4th Ed.)*. Oxford: Blackwell.
- Smith, J. L., Mattick, R. P., Jamadar, S. D., & Iredale, J. M. (2014). Deficits in behavioural inhibition in substance abuse and addiction: a meta-analysis. *Drug and Alcohol Dependency*. 145, 1–33. DOI: 0.1016/j.drugalcddep.2014.08.009.
- Snarey, J. (1995). *In a communitarian voice: The sociological expansion of*

- Kohlbergian theory, research, and practice*. In W. Kurtines & J. Gewirtz (Eds.), *Moral development: An introduction*. Boston, MA: Allyn & Bacon.
- Sober, E. & Wilson, D.S. (1998). *Unto Others: The Evolution and Psychology of Unselfish Behavior*. Cambridge: Harvard University Press.
- Solomon, J. A. (2007). Contrast discrimination: Second responses reveal the relationship between the mean and variance of visual signals. *Vision Research*, 47, 3247-3258.
- Spenser, K. A., Betts, L. R., & Das Gupta, M. (2015). Deficits in Prosocial Skills: A comparison between young-adult offenders and non-offenders. *Psychology, Crime and Law*.
- Spinrad, T.L. & Van Schyndel, M.A. (2015). *Socio-Cognitive Correlates of Prosocial Behaviour in Young Children*. In Knafo-Noam, A. (Ed.), *Prosocial Behaviour*. Encyclopaedia on early childhood development.
- Squires, P. (ed.) (2008). *ASBO Nation: The Criminalisation of Nuisance*. Bristol: The Policy Press.
- Stams, G. J. J. M., Brugman, D., Deković, M., Van Rosmalen, L., Van der Laan, P. H., & Gibbs, J. C. (2006). The moral judgment of juvenile delinquents: A meta-analysis. *Journal of Abnormal Child Psychology*, 34, 697–713.
- Sullivan, S. & Ruffman, T. (2004). Emotion recognition deficits in the elderly. *International Journal of Neuroscience*, 114,403-432.
- Suminar, D.R. & Hastjarjo, T. D. (2016). A Theoretical Model of Theory of Mind and pretend Play. *International Journal of Applied Psychology*, 6(4): 85-93  
DOI:10.5923/j.ijap.20160604.02.
- Svendsen, G., & Sørensen, J. (2006). The socioeconomic power of social capital. *International Journal of Sociology and Social Policy*, 26(9–10), 411–439.

- Svetlova, M., Nichols, S.R., & Brownell, C.A. (2010). Toddlers' prosocial behaviour: From instrumental to empathic to altruistic helping. *Child Development*, 81:1814–1827.
- Sykes, G. & Matza, D. (1957). Techniques of neutralization: a theory of delinquency. *American Sociological Review*, 22, 664--670.
- Sze, J. A., Gyurak, A., Goodkind, M. S., & Levenson, R. W. (2011). Greater Emotional Empathy and Prosocial Behaviour in Late Life. *American Psychological Association*, 1129-1140.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics, 6th ed.* Boston: Pearson.
- Tabibnia, G., Satpute, A. B., & Lieberman, M. D. (2008). The sunny side of fairness: preference for fairness activates reward circuitry (and disregarding unfairness activates self-control circuitry). *Psychological Science*, 19(4), 339-347.
- Tager-Flusberg, H., & Joseph, R. M. (2003). Identifying neurocognitive phenotypes in autism. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 358,303–314.
- Tager-Flusberg, H., Paul, R., & Lord, C. E. (2005). *Language and communication in autism*. In F. Volkmar, R. Paul, A. Klin, & D.J. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders: Vol. 1. Diagnosis, development neurobiology, and behaviour* (3rd ed., p. 335–364). New York: Wiley.
- Thompson, E. (2011). Empathy and Consciousness. *Journal of Consciousness Studies*, 8 (5-7), 1-32.
- Tilly, C. (2004). *Social Movements, 1768-2004*. London: Paradigm Publishers.
- Tirapu-Ustárrroz, J., Pérez-Sayes, G., Erekatxo-Bilbao, M. & Pelegrín-Valero, C.

- (2007). What is the theory of the mind? *Journal of Neurology*, 44, 479-489
- Titchener, E. (1924). *A textbook of psychology*. New York: Mac-Millan.
- Tong, L.S.J., & Farrington, D.P. (2006). How effective is the 'Reasoning and Rehabilitation' program in reducing reoffending? A metanalysis of evaluations in four countries. *Psychology, Crime and Law*, 12, 3-24
- Torche, F. and Valenzuela, E. (2011) Trust and Reciprocity: A Theoretical Distinction of the Sources of Social Capital. *European Journal of Social Theory*, 14, 181-198. DOI: 10.1177/1368431011403461.
- Towl, G.J. & Crighton, D.A. (2010). *Forensic Psychology*. Wiley-Blackwell. ISBN: 978-1-4443-1930-9.
- The Thinking Skills Programme, Submission Document (February, 2010)
- T2A. (2012). *Transition to Adulthood Alliance. Pathways from Crime: effective approaches for young adults throughout the criminal justice process*. London: T2A.
- Ullman, J.B. (1996). Structural equation modelling. In: B.G. Tabachnick and L.S. Fidell, Eds.). *Using Multivariate Statistics, Third Edition* (pp. 709-819). Harper Collins College Publishers: New York, NY.
- Uslaner, E. M. (2001). *Volunteering and social capital: How trust and religion shape civic participation in the United States*. In P. Dekker & E. M. Uslaner (Eds.), *Social capital and participation in everyday life* (pp. 104-117). London: Routledge.
- Van der Helm, G. H. P., Stams, G. J. J. M., van der Stel, J. C., Van Langen, M. A. M., & Van Der Laan, P. H. (2012). Group climate and empathy in a sample of incarcerated boys. *International Journal of Offender Therapy and*

- Comparative Criminology*, 56, 1149–1160. DOI: 10.1177/0306624X11421649
- Valle, A., Massaroa, D., Castelli, I., & Marchetti, A. (2015). Theory of Mind Development in Adolescence and Early Adulthood: The Growing Complexity of Recursive Thinking Ability. *Europe's Journal of Psychology*, 11 (1).
- Veenstra, R. (2006). *The development of Dr. Jekyll and Mr. Hyde: Prosocial and antisocial behavior in adolescence*. In D. Fetchenhauer, A. Flache, A. Buunk, & S. Lindenberg (Eds.), *Solidarity and prosocial behavior: An integration of sociological and psychological perspectives* (pp. 93–105). New York, NY: Springer
- Venkatanathan, J., E. Karapanos, V. Kostakos, & J. Goncalves. (2013). A Network Science Approach to Modelling and Predicting Empathy. *Proc. International Conference on Advances in Social Network Analysis and Mining (ASONAM)*, 1395-1400.
- Vessels, G., & Huitt, W. (2005). *Moral and character development*. Paper presented at the National Youth at Risk Conference, Savannah, GA, June 8-10.
- Vlahovic, T, Roberts, S., & Dubar, R. (2012). Effects of Duration and Laughter on Subjective Happiness within Different Modes. *Journal of Computer- Mediated Communication*, 17 (4), 436–450. DOI: 10.1111/j.1083-6101.2012.01584.x
- Vonk, J., Zeigler-Hill, V., Mayhew, P., & Mercer, S. (2013). Mirror, mirror on the wall, which form of narcissist knows self and others best of all? *Personality and Individual Differences*, 54, 396-401. doi:10.1016/j.paid.2012.10.010
- Von Hippel, W., & Gonsalkorale, K. (2005). “That is bloody revolting!” Inhibitory control of thoughts better left unsaid. *Psychological Science*, 16, 497-500.

- von Weltzien Hoivik, H. (2004). The concept of moral imagination: an inspiration for writing and using case histories in business ethics? *Journal of Business Ethics Education*, 1(1): 29-42.
- Wai, M., & Tiliopoulos, N. (2012). The affective and cognitive empathic nature of the Dark Triad of personality. *Personality and Individual Differences*, 52, 794–799. DOI: 10.1016/j.paid.2012.01.008.
- Wakabayashi, A., Baron-Cohen, S., Wheelwright, S., Goldenfeld, N., Delany, J., Fine, D., Smith, R., & Weil, L. (2006). Development of short forms of the empathy quotient (EQ-short) and the systemising quotient (SQ – short). *Personality and Individual Differences*, 41, 929-940.
- Ward, T., & Nee, C. (2009). Surfaces and depths: Evaluating the theoretical assumptions of the cognitive skills programmes. *Psychology, Crime & Law*, 15, 165-182.
- Warneken, E., & Tomasello, M. (2009). The roots of human altruism. *British Journal of Psychology*, 100, 455-471.
- Watt, M. C., Frausin, S., Dixon, J., & Nimmo, S. (2000). Moral intelligence in a sample of incarcerated females. *Criminal Justice and Behavior*, 27, 330-355.
- Walderhaug, E., Herman, A. I., Magnusson, A., Morgan, M. J., Landro, N. I. (2010). The short (S) allele of the serotonin transporter polymorphism and acute tryptophan depletion both increase impulsivity in men. *Neuroscience Letters*, 473, 3, 208-211.
- Walker, S.F. (1984). *Learning Theory and Behaviour Modification*. (p. 184). London, Methuen, New Essential Psychology Series,
- Walker S. (2005). Gender differences in the relationship between young children's peer-related social competence and individual differences in theory of mind. *Journal of Genetic Psychology*, 166, 297–312. DOI:10.3200/GNTP.166.3.297-312

- Walker, I., & Smith, H.J. (Eds.), (2002). *Relative deprivation: Specification, development, and integration*. Cambridge, UK: Cambridge University Press.
- Ward, T., Keenan, T., & Hudson, S.M. (1999). Understanding cognitive, affective, and intimacy deficits in sexual offenders: A developmental perspective. *Aggression and Violent Behaviour, 5*, 41-62.
- Weaver, B. & McNeill, F. (2010). *Travelling hopefully: Desistance research and probation practice*. In J. Brayford, F. Cowe, & J. Deering (Eds.), *What else works? Creative work with offenders*, Willan: Cullompton.
- Webster-Stratton, C. H., Reid, J. M., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child and Adolescent Psychology, 40*(2), 191-203. DOI: 10.1080/15374416.2011.546044
- Wechsler D. (1999). *Wechsler Abbreviated Scale of Intelligence (WASI)*. San Antonio, TX: Psychological Corporation.
- Wellman, H.M., & Liu, D. (2004). Scaling of theory of mind tasks. *Child Development, 75*, 523–541.
- Welsh, K., Butters, N., Hughes, J., Mohs, R., & Heyman, A. (1991). Detection of abnormal memory decline in mild cases of Alzheimer’s disease using CERAD neuropsychological measures. *Archives of Neurology, 48*, 278–281
- Wentzel, K. R. (2014). *Prosocial behavior towards peers and friends*. In L. Walker-Padillo & G. Carlo (Eds.), *The Complexities of Raising Prosocial Children: An Examination of the Multidimensionality of Prosocial Behavior* (pp. 178-200). New York, NY: Oxford Press.
- Whitton, A. E., Henry, J.D., Rendell, P. G. & Grisham, J.R. (2014). Disgust, but not anger provocation, enhances levator labii superioris activity during exposure to moral

- transgressions. *Biological Psychology*, 96, 48-56.
- Willem, A. & Scarbrough, H. (2006) Social capital and political bias in knowledge sharing: An exploratory study. *Human Relations*, 59(10), 1343–1370.
- Williams, A., O’Driscoll, K., & Moore, C. (2014). The influence of empathic concern on prosocial behaviour in children. *Frontiers in Psychology*, 5, 425.
- Wilson, E.O. (1975). *Sociobiology, the New Synthesis*. Harvard University Press. Cambridge: Mass.
- Wimmer, H. & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13(1), 103–128. DOI: 10.1016/0010-0277(83)90004-5.
- White, M. J., & White, K. G. (1977). Citation analysis of psychology journals. *American Psychologist*, 32, 301-305.
- Yabar, Y., Johnston, L., Miles, L., & Peace, V. (2006). Implicit behavioural mimicry: investigating the impact of group membership. *Journal of Nonverbal Behaviour*, 30, 97. DOI: 11310.1007/s10919-006-0010-6
- Yadav, P. & Iqbal, N. (2009). Impact of life skill training on Self-esteem, Adjustment and empathy among adolescents. *Journal of the Indian Academy of Applied Psychology*, 35, 61-70.
- Yamada, M. & Decety, J. (2009). Unconscious affective processing and empathy: an investigation of subliminal priming on the detection of painful facial expressions. *Pain*, 143(1-2), 71-5.
- Zagefka, H., Binder, J., Brown, R., & Hancock, L. (2013). Who Is To Blame? The Relationship between Ingroup Identification and Relative Deprivation Is Moderated by Ingroup Attributions, *Social Psychology*, 44(6), 398–407.

DOI: 10.1027/1864-9335/a000153

- Zahn-Waxler, C, Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology*, 28,126-136.
- Zaki, J. (2014). Empathy: A motivated account. *Psychological Bulletin*, 140(6), 1608-1647.
- Zaki, J., and Mitchell, J. P. (2013). Intuitive prosociality. *Current Directions in Psychological Science*, 22, 466–470. DOI: 10.1177/0963721413492764.
- Zarrett, N. & Eccels, J. S. (2006). *The passage to adulthood: Challenges of late adolescence*. In S. Piha & G. Hall (Eds.). *New directions for youth development* (pp. 13-28). Hoboken, NJ: Wiley.
- Zelazo, P. D., & Frye, D. (1998). Cognitive complexity and control: II. The development of executive function in childhood. *Current Directions in Psychological Science*, 7, 121–126.
- Zelazo, P.D. & Muller, U. (2002). *Executive function in typical and atypical development*. In U. Goswami (Ed.), *Handbook of childhood cognitive development* (p. 445 – 469). Malden, MA: Blackwell.
- Zeldin, S. (2004). Youth as agents of adult and community development: Mapping the processes and outcomes of youth engaged in organizational governance. *Applied Developmental Science*, 8(2), 75-90.
- Zhou, Q., Valiente, C., & Eisenberg, N. (2003). *Empathy and its measurement*. In S. J. Lopez & C. R. Snyder (Eds.), *Positive Psychological Assessment: the Handbook of Models and Measures* (pp.269-284), Washington, DC: American Psychological Association.

## Appendices

- NTU Ethical Approval
- Approved in Principle - NOMS Research Ref: 172-12
- Approved in Principle – NOMS Research Ref: 2013-149
- Volunteers Wanted Poster
- Briefing Document – Prison Staff
- Information Sheet
- Consent Form
- Debrief Document

## **NTU ETHICAL APPROVAL**

Dear Karin

Thank you for your recent submission (No. 2012/32) to the College Research Ethics Committee (CREC) on 29 May 2012 requesting ethical clearance for the project entitled: Pro-social skills as contributory factors to offending and anti-social behaviour in young people. I am pleased to inform you that the CREC was happy to confirm that in its judgement there were no outstanding ethical concerns that required further discussion or exploration prior to data collection. The committee would like to pass on their congratulations on your application and would like to wish you well in the completion of your project.

Yours sincerely

Kay Wheat

Chair CREC

Sent on behalf of Kay Wheat by:

Sandra Odell

College Research Support Team Co-ordinator

College Research Support Team

Business, Law & Social Sciences

Nottingham Trent University

Nottingham

NG1 4BU.

Direct Tel: +44 (0)115 848 8117

Location: Chaucer Room 4704

Mrs Karin Spenser  
Student Nottingham  
Nottingham Trent University  
Work Address (c/o Dr Lucy Betts) Division of  
Psychology  
Burton Street  
Nottingham  
Post Code NG1 4BU  
Work Email  
[N0414565@ntu.ac.uk](mailto:N0414565@ntu.ac.uk)  
[karinspenser@gmail.com](mailto:karinspenser@gmail.com)

**National Offender Management Service**  
National Research Committee  
Planning and Analysis Group  
BCG Building  
HMP Full Sutton  
York, YO41 1PS  
  
Telephone: 01759 475099  
Fax: 01759 475 073  
Email: [National.Research@noms.gsi.gov.uk](mailto:National.Research@noms.gsi.gov.uk)

4 September 2012

### **APPROVED IN PRINCIPLE – NOMS RESEARCH**

Dear Mrs Spenser

**Research:** Prosocial Skills as Contributory Factors to Antisocial and Offending Behaviour in Young People  
**Ref:** 172-12

Further to your research application to the NOMS National Research Committee (NRC), the Committee is pleased to grant approval in principle for your research. The Committee has requested the following modifications/information:

#### **Scope of the study**

- Liaison with Dr Ruth Mann ([ruth.mann@noms.gsi.gov.uk](mailto:ruth.mann@noms.gsi.gov.uk)/ 07968 907070) is required in order to refine the proposal so that the benefits for NOMS are maximized.
- Can the study be expanded to explore the links between underdeveloped ToM/ empathy and offending behaviour?
- Which other socio-economic factors will be considered? (Please see <http://webarchive.nationalarchives.gov.uk/20110201125714/http://www.justice.gov.uk/publications/compendium-research-analysis-offender-mgt-system.htm> and <http://webarchive.nationalarchives.gov.uk/20110201125714/http://www.justice.gov.uk/publications/offender-assessment-system.htm> for findings from the Offender Assessment System.) How strong is the justification for including specific questions on 'gang affiliation'?

#### **Sampling and data collection**

- Will the samples be representative of the target groups? Are the sample sizes likely to be sufficient to detect significant differences between the groups?

- Postcode information should not be collected as the rationale for collecting this information does not appear to be sufficiently strong and there are potential data protection issues regarding participant anonymity.

#### **Offender consent form and information sheet**

- The consent form should include a summary of the information sheet, so that the participants have a full understanding of what they are consenting to.
- The right to withdraw from the research needs to be included in the consent form as well as the debrief sheet. The latter currently states that participants can only withdraw their participation up to 14 days after the study. Setting this timeframe seems overly restrictive, particularly given that the data collection period for this phase takes up to three months. The Committee has requested that the withdrawal period is extended.
- The consent form should be signed by the participant as well as a witness.
- The application states that it is not believed that parental consent is required for young people in custody. The correct position would be that consent can be given by young people aged 16-18 with sufficient understanding independently of their parents and guardians. Children under 16 can give their full consent providing they have been counselled and do not wish to involve their parents, and they have sufficient maturity to understand the nature, purpose and likely outcome of the proposed research.
- Contact details for the researcher's supervisor should not be included in the debrief sheet. All complaints should be routed through the establishment.

Before the research can commence you must agree formally by email to the NRC ([National.research@noms.gsi.gov.uk](mailto:National.research@noms.gsi.gov.uk)), confirming that you will comply with the terms and conditions outlined below and the expectations set out in the NOMS Research Instruction (<http://www.justice.gov.uk/downloads/offenders/psipso/psi-2012/psi-13-2012-research-applications.doc>)

Once the research is completed, and received by the NRC Co-ordinator, it will be lodged at the Prison Service College Library.

Yours sincerely

National Research Committee

Cc Ruth Mann

**APPROVED IN PRINCIPLE – NOMS RESEARCH**

**Ref:** 2013-149

**Title:** Pro-social skills as contributory factors to offending in females

Mrs Karin Spenser  
Nottingham Trent University  
Burton Street  
Nottingham  
Nottinghamshire  
NG1 4BU  
[N0414565@ntu.ac.uk](mailto:N0414565@ntu.ac.uk)  
[karinspenser@gmail.com](mailto:karinspenser@gmail.com)

**National Offender Management Service**  
*National Research Committee*  
Email: [National.Research@noms.gsi.gov.uk](mailto:National.Research@noms.gsi.gov.uk)

29 July 2013

Dear Mrs Spenser,

Further to your application to undertake research across NOMS, the National Research Committee (NRC) is pleased to grant approval in principle for stage 2 of your research. The points set out in the approval letter for stage 1 (NRC ref 177-12), including liaison with Dr Ruth Mann ([ruth.mann@noms.gsi.gov.uk](mailto:ruth.mann@noms.gsi.gov.uk)/ 07968 907070), continue to apply.

Please could you also clarify your approach for identifying and selecting the matched group of non-offenders.

Before the research can commence you must agree formally by email to the NRC ([National.Research@noms.gsi.gov.uk](mailto:National.Research@noms.gsi.gov.uk)), confirming that will comply with the terms and conditions outlined below and the expectations set out in the NOMS Research Instruction (<http://www.justice.gov.uk/downloads/offenders/psipso/psi-2012/psi-13-2012-research-applications.doc>).

Please note that the decision to grant access to prison establishments or probation trusts (and the offenders and practitioners within these establishments/trusts) ultimately lies with the Governing Governor or Contract Manager of the establishment/trust concerned. If establishments/trusts are to be approached as part of the research, a copy of this letter must be attached to the request to prove that the NRC has approved the study in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,  
National Research Committee

## National Research Committee - Terms and Conditions

### All research

- **Changes to study** - Informing and updating the NRC promptly of any changes made to the planned methodology.
- **Dissemination of research** The researcher should prepare a research summary for NOMS (approximately three pages; maximum of five pages) which (i) summaries the research aims and approach, (ii) highlights the key findings, and (iii) sets out the implications for NOMS decision-makers. It should be submitted to the [NRC](#) alongside the NRC project review form (which covers lessons learnt and asks for ratings on key questions). Provision of the research summary and project review form is essential if the research is to be of real use to NOMS. The report should use language that an educated, but not research-trained person, would understand. It should be concise, well organised and self-contained. The conclusions should be impartial and adequately supported by the research findings. Further guidance on the format of the report is available on request.
- **Publications** - The NRC ([National.Research@noms.gsi.gov.uk](mailto:National.Research@noms.gsi.gov.uk)) receiving an electronic copy of any papers submitted for publication based on this research at the time of submission and at least one month in advance of the publication.
- **Data protection** - Compliance with the requirements of the Data Protection Act 1998 and the Offender Management Act 2007-
  - <http://www.legislation.gov.uk/ukpga/1998/29/contents>
  - <http://www.legislation.gov.uk/ukpga/2007/21/contents>

Researchers should store all data securely and ensure that information is coded in a way that maintains the confidentiality and anonymity of research participants. The researchers should abide by any data sharing conditions stipulated by the relevant data controllers.

- **Research participants** - Consent must be given freely. It will be made clear to participants verbally and in writing that they may withdraw from the research at any point and that this will not have adverse impact on them. If research is undertaken with vulnerable people – such as young offenders, offenders with learning difficulties or those who are vulnerable due to psychological, mental disorder or medical circumstances - then researchers should put special precautions in place to ensure that the participants understand the scope of their research and the role that they are being asked to undertake. Consent will usually be required from a parent or other responsible adult for children to take part in the research.
- **Termination** - NOMS reserves the right to halt research at any time. It will not always be possible to provide an explanation, but NOMS will undertake where possible to provide the research institution/sponsor with a covering statement to clarify that the decision to stop the research does not reflect on their capability or behaviour.

### **Research requiring access to prison establishments and/or probation trusts**

- **Access** - Approval from the Governor of each establishment / Chief Executive of the probation trust you wish to research in. (Please note that NRC approval does not guarantee access to establishments/trusts; access is at the discretion of the Governor/Chief Executive and subject to local operational factors and pressures). This is subject to clearance of vetting procedures for each establishment/trust.
- **Security** - Compliance with all security requirements.
- **Disclosure** - Researchers are under a duty to disclose certain information to prison establishments/probation trusts. This includes behaviour that is against prison rules and can be adjudicated against, undisclosed illegal acts, and behaviour that is potentially harmful to the research participant (e.g. intention to self-harm or complete suicide) or others. Researchers should make research participants aware of this requirement. The Prison Rules can be accessed here and should be reviewed: [http://www.justice.gov.uk/downloads/offenders/psipso/ps0/PSO\\_0100\\_the\\_prison\\_rules\\_1999.doc](http://www.justice.gov.uk/downloads/offenders/psipso/ps0/PSO_0100_the_prison_rules_1999.doc)

# Volunteers Wanted

Do you know when someone  
is annoyed?



Do you  
know when  
someone  
is happy?



Do you

Are you over 18 years of age?

Can you speak and understand English?

Are you willing to spend some time answering  
a few very simple questions?

Yes?

Then I would like your help?

I work at Nottingham Trent University and I am  
doing research into

understanding other people thoughts and feelings

If you are willing to answer a few simple questions  
then please contact:

## **Briefing Document – Prison Staff**

The support I have requested would be very similar to that of 2011. I intend to assess a similar number of offenders; 50 between the ages of 18 and 24 years and 50 over the age of 25 years. A battery of 6 measures will be used in the study. It is anticipated that the time required with each offender will be in the region of 1 hour.

For your information, in addition to HMP Nottingham, the study has the support of the Crime Safety Partnership (Nottingham), Nottingham City Council (Vanguard Plus), The Youth Justice Board (Nottingham) and the Youth Offending Team (Nottingham).

### **Working Title**

Pro-Social Skills as Contributory Factors to Offending and Anti-social Behaviour in Young People

### **Research Rationale and Aims Overview**

Modern society is naturally concerned with punishing offending behaviour but this alone does not appear to be enough to dissuade the majority of offenders from reoffending. In 2004, 78% of those serving a custodial sentence in the UK reoffended within 12 months of their release (Whiting & Cuppleditch, 2006). The implementation of ‘rehabilitating’ interventions such as the TSP may assist in the reduction of re-offending. However, TSP is not offered to all offenders and where offered its success has been questioned as a wide range of issues are covered at a general level through only nineteen sessions (Tong & Farrington, 2006).

Nevertheless, researchers continue to assume that one of the factors contributing to offending behaviour in young people is a lack of learned pro-social skills (Richell et al., 2003). These pro social skills include Theory of mind (ToM), empathy and moral

reasoning. ToM is the ability to ascribe thoughts, intentions, beliefs and feelings to others, usually by recognising verbal or visual cues (Sharp, 2008). Empathy is the ability to not only recognise these cues but also share in the *emotional states* of others within context (Shamay-Tsoory et al., 2005) and Moral Reasoning is the thinking process by which individuals determine whether an idea is right or wrong (Blair, 1995).

Whilst the research with offenders has readily identified deficiencies in Empathy and Moral Reasoning, it has had mixed results when considering ToM. Richell et al., (2003), for example failed to provide empirical evidence for a deficit in ToM in offenders and suggested that this was because over time, some areas of the brain may have the ability to compensate for the reduced functioning of other areas. However, this implies that ToM is a singular function. Blair and Cipolotti (2000) drew a distinction between two aspects of ToM: *cognitive* and *affective*. *Cognitive* ToM requires the observer to recognise the thoughts, intentions and beliefs of others, whereas *affective* ToM also requires the observer not only to recognise but also to understand the emotions generated by these states. Following on from this empathy requires the observer recognise and understand the mental state of another and also to be able to share the emotions. Moral reasoning is the final skill in this continuum.

My theory is based on the fact that past research has omitted a stage in this continuum; that is that affective ToM or the ability to understand as well as recognise the thoughts intentions belief etc. of another person, has not been previously considered. My past research HMP Nottingham in 2011 research provided empirical evidence to suggest that deficits in ToM **could** be detected in young adult offenders (18 – 24 years) when the measures used considered not only *cognitive* ToM but also *affective* ToM.

As it is known that the acquisition of these skills begins in early childhood (Grusec et al., 2002), it is not unreasonable to assume that similar deficiencies may be detectable in younger offenders and those who have not yet offended but are considered at risk of future offending. As government figures suggest that gun, knife and gang crime in children and young adolescents has increased in recent years by 22% (Warburton & Hough, 2009); this will be an area of focus for the research. The research will consider individuals aged from 10-24 years. Furthermore, three specific Nottingham locations (identified as high risk areas by Vanguard Plus) will be considered: St Ann's, the Meadows and Aspley. Lastly, consideration will be given to the antecedents of gang affiliation including details of the socio-demographic background of the individuals taking part in the research. The research will expand on previous research by examining ToM, Empathic Understanding and Moral Reasoning in younger offenders and those identified by Vanguard Plus as at risk of becoming involved in offending.

### **Participants**

*Offenders serving a custodial sentence* will be selected according to the selection criteria - (males, 18-24 years and > 25 years, English speaking)

### **Significance**

Researchers have emphasised the importance of understanding and explaining social functioning in terms of human cognition and suggested that deficient understanding of another's *mental state*, might lead to antisocial behaviour (Richell et al., 2003). The proposed research will draw and expand upon my past research (Spenser, 2011) and examine deficits in ToM, Empathic Understanding and Moral Reasoning in young offenders across broader age groups and both genders. The earlier identification of deficits

in these skills and the subsequent ability to deliver more specific interventions, in addition to the traditional socio-structural interventions, would arguably have more success in reducing offending and reoffending rates in the UK.

### **Ethics**

Guidelines will be adhered to and ethical approval will be sought from the following bodies:

- The BPS Code of Ethics and Conduct (2009).
- The National Offender Management Services and prison services
- NTU

The boundaries of informed consent, confidentiality and my own professional conduct and competency will be thoroughly considered and reviewed throughout the research.

## **Information Sheet**

### *Understanding the Thoughts and Feelings of Other People*

Thank you for taking the time to read this Information

#### Who is doing the Research?

My Name is Karin. I work at Nottingham Trent University and as part of my job I also do some research here at xxxx

#### What is the research?

I am interested in how you think when you try to understand other people's behaviour.

For example, do you...

- Put yourself in their shoes?
- Do you recognise if they are happy or angry?
- Can you see both sides of an argument?

#### How have the participants been chosen?

The group I would like to interview are men under the age of 25 who can speak English.

You will all be volunteers who have said that you are interested in taking part in my research. The research was advertised on xxxx

#### What sort of questions will be asked?

The research is made up of 6 sets of questions.

1. Understanding feelings (1). I will read out loud 22 sentences. For example I may read

*'I find it easy to put myself in somebody else's shoes'.* After each sentence I will ask you if you agree or disagree with what I have read. There is no right or wrong answers. It is just your opinion.

2. Understanding feelings (2). I will read out loud 10 short sentences. I will ask you if you agree or disagree with what I have read. I will then ask you to think of something that you have done which demonstrates this. There is no right or wrong answers. It is just your opinion.

3. Recognising Emotions. I will show you 18 photographs and I will ask you what the person was feeling. For example I may ask *'Is this person feeling happy, surprised, confused or playful'*. There is no right or wrong answers. It is just your opinion.

4. Recognising Rudeness. I will read out loud 10 stories. For example I may read *'Christine had an interview for a new job. She decided to buy a new dress to wear to the interview and thought it would also do for her 50<sup>th</sup> birthday party. When she finally got on the bus to go home she had her hands full, so the bus conductor told her not to worry about showing him her OAP bus pass'*. I will then ask you after each story if anyone said something that could have offended another person. Again, there is no right or wrong answer. It is just your opinion.

5. The Right Thing to Do. This consists of 10 statements. I will read each one out loud. For example I may read *'How important is it for people to keep their promises to friends?'* I will then ask you if you think it is very important, important or not very important. There is no right or wrong answers. It is just your opinion.

6. Verbal /Non-Verbal Aptitudes Measure. This is a set of four tests. Some are word based. For example I might say a word and ask you what it means or I might give you a few shapes and ask you to arrange them in a certain way. This test is done with people from 4 to 84 years of age and is really quite fun!

Where will the research be done?

The research will be done in an interview room in xxxxx.

(A member of the prison staff will be outside the interview room door at all times)

How long will the questions take?

The questions will take no more than 1 hour and 10 minutes but if you need a short break during the session that will be ok.

Are there any benefits for participants?

It is your choice whether or not you would like to take part in my research.

It will take up a little of your time but there are no other disadvantages to taking part.

However there aren't any special rewards either. Taking part will have no effect on your sentence plan or anything else that happens to you in HMP xxx.

How will the information be used?

There are no right or wrong answers; I only want your opinion. However each answer you give me will be given a score. I will use these scores to compare your answers to the answers other people have given me. I can then work out the different thinking processes that are being used by different people when they try to understanding the behaviour or beliefs of others. The results of the research should help the prison service think about the way it works with people. I will write a report on the findings for my university and a

summary for prison staff. I might also talk about them at a conference. There will be nothing to identify you in any of these reports.

*Will the information be kept confidential?*

Your answers are private and confidential. They will only be used in this research. I will not be given your name. I will only know you by your prison number. The only people who will have access to this information are me and my supervisors at Nottingham Trent University. However, there are some types of information, which if given to me, I would have to disclose. For example:

- If you told me that you intended to harm yourself or someone else
- If you knew about something that threatened the security of the prison.
- If you (or someone known to you) had broken prison rules.
- If you gave me information about a crime you (or someone known to you) had committed but for which you (or they) had not been not charged).

*How will the information be stored?*

During the research the information you give me will be stored on a password protected computer. Hard copies of the information (during and after the research is over) will be kept in a secure storage place at Nottingham Trent University along with other confidential documents. The information will be kept for five years following the publication of the research findings and then it will be destroyed.

*What will happen to the information after that?*

We will destroy it by cross shredding.

*Can participants change their mind?*

Your involvement in my research is voluntary. If you decide you don't want to do it, you can stop at any time during the interview without giving me a reason. If you decide you do not want your information to be included in my research when the interview is over, you have 14 days to tell me and I will remove it. You will need to quote your prison number to me as I won't have any other details about you. You can do this by contacting: *(name to be provided)*.

Why is the information needed?

This study will help me understand how you think when you try to understand other people behaviour. It will tell me if you recognise and understand other people's thoughts, emotions and behaviours and whether you are able to put yourself in their shoes.

*(The information will help the prison service to develop courses which will help to improve offender's abilities in these areas. This might then help offenders from re-offending\* Delete for non-offenders)*

Complaints

If you were unhappy with any part of my research you can contact my supervisor at Nottingham Trent University. Her details will be given to you after the interview on a debrief form.

## **Consent Form**

### *Understanding the Thoughts and Feelings of Other People*

Thank you for agreeing to take part in my research project. This is a summary of the information sheet which you have already read.

My name is Karin and I work at Nottingham Trent University.

I am looking at the different ways of thinking used by people when they try to understand the behaviour or beliefs of others people. For example, do you...

- Put yourself in their shoes?
- Do you recognise what they are feeling ...if they are happy or angry for example?
- Can you see both sides of an argument?

All of my participants are men under between the ages of 18 and 24 years or over 25 years.

All are volunteers who have who have said that they are interested in taking part in my research.

The research consists of eight sets of questions. The questions are about Understanding Feelings, Social Stories and Thinking about Social Situations. I will read some statements or stories to you and then I will ask you some questions. There are no right or wrong answers. I am only asking for your opinion. It will take no more than 1 hour 10 minutes. Your answers are private and confidential. They will only be used in this research. I will not be given your name. I will only know you by your prison number. The only people

who will have access to this information are me and my supervisor at Nottingham Trent University.

However, there are some types of information, which if given to me, I would have to disclose. For example:

- If you told me that you intended to harm yourself or someone else
- If you knew about something that threatened the security of the prison.
- If you (or someone known to you) had broken prison rules.
- If you gave me information about a crime you (or someone known to you) had committed but for which you (or they) had not been not charged.

### Consent

By completing this form you are confirming that you have read and understood all of the information provided on the information sheet and that you are happy to take part in my research.

Unique Number

Date

-----

-----

Witness

Date

-----

-----

## **Debrief Document**

### *Understanding the Thoughts and Feelings of Other People*

Thank you for taking part in my research project

#### *The Research*

My study is about the different ways of thinking which are used by people when they try to understand the behaviour or beliefs of others.

For example, do you...

- Put yourself in their shoes?
- Do you recognise what they are feeling ...if they are happy or angry for example?
- Can you see both sides of an argument?

I want to understand what those ways of thinking are and how different people use them.

My study looks at men between the ages of 18 and 24 years or over 25 years from two different places: xxxx

#### *If you change your mind? Your right to withdraw.*

Your involvement in my research is voluntary. If you decide you don't want your information to be included in my research when the interview is over, you have 14 days to tell me and I will remove it. You will need to quote your prison number to me as I won't have any other details about you. You can do this by contacting wing psychologist.

### More Information

Should you want more information about the project or wish to see the results of the research you can do this by contacting:

### Support

If today's interview has raised any questions or issues for which you would like support, this can be obtained by contacting xxxx

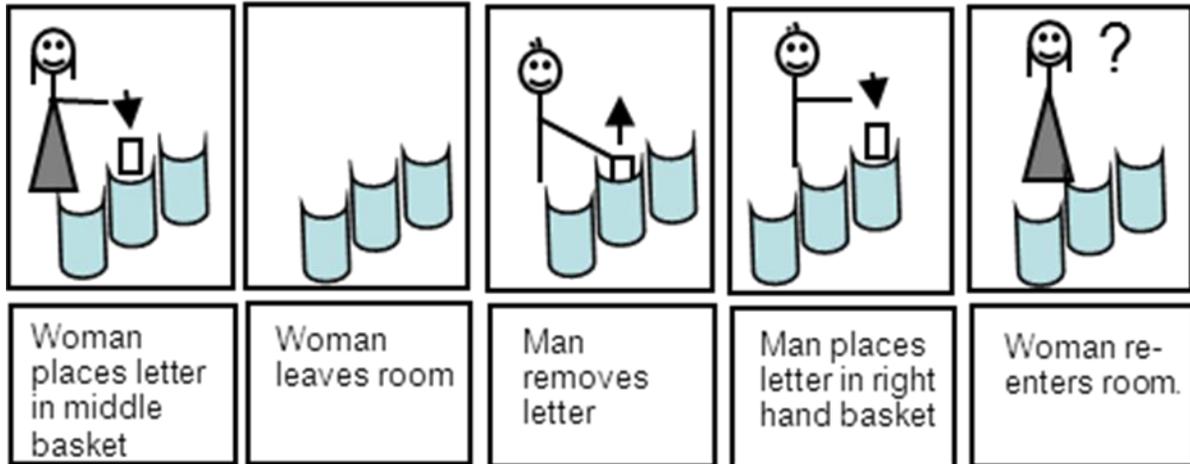
(your personal officer, a member of staff from the offender management unit, the psychology department within the prison or a listener\* Delete for non-offenders).

### Complaints

In the unlikely event that you are unhappy with any part of the research project you can contact my supervisor at Nottingham Trent University. Her details are as follows:

## Task 1: Basic Theory on Mind Task

### The 'False Belief' or Letter Task (Samson, 2005)



### The 'False Belief' or Letter Task – Response Sheet

#### Letter Task

Participant Number .....

#### Instructions

Please look at the following pictures and note where you think the woman will look for her ball.

In the left-hand basket

In the middle basket

In the right-hand basket

## **Task 2: Theory of Mind – Verbal Test**

### **Social Stories Questionnaire (S.S.Q)**

**ALL INFORMATION REMAINS STRICTLY CONFIDENTIAL**

Unique Participant Reference Number .....

#### **Instructions**

This questionnaire contains 10 short stories that involve people saying things that could upset other people.

Please read each of the stories and then answer the questions that appear below each section.

When the question asks for a yes or no answer, please do not tick only one box.

When marking the line that shows the thing that could have upset someone, please colour in the red dot at the beginning of the line.

Please try and imagine how an average person would feel when answering the questions.

Please don't spend too long on each question.

**Story 1**

A) Christine had seen the advertisement. 'Shop assistant wanted for weekends and some evenings. Full training provided'. So, the following morning she went to town looking for a new dress to wear at the interview. Even though it was quite expensive she chose the blue one. She thought she would be able to wear to her own 50<sup>th</sup> birthday party later in the year.

- o The assistant said, 'It seems to match your eyes'.
- o 'Do you think so', said Christine.
- o 'Oh yes,' said the assistant, 'It highlights them beautifully.'

Christine paid for the dress and went to catch her bus home. As she sat down the young conductor walked past,

- o 'Don't bother to show me your bus pass', he said, 'I can see you've got your hands full'.

Q. Was anything said that in that section that could have  
offended someone?

Yes – Indicate which line it was on

No – move on to next section

- B) o 'A single to Nottingham,' said Christine.
- o 'Is it busy in town', said the conductor.
  - o 'It wasn't too bad earlier', said Christine, 'but it's getting busy now'.

The next morning Christine went to the shop where the job had been advertised. She walked up to man who looked like he was about 30. She asked him if she could see Mrs Ross the manager. After a few minutes a tall woman in her twenties came from the office at the side of the shop.

- o 'Hello I'm Gail Ross', she said, 'You wanted to see me?'
- o 'Yes', said 'Christine, it's about the job you advertised, is it still available?'

Q. Was anything said that in that section that could have  
offended someone?

Yes – Indicate which line it was on

No – move on to next section

- C) o 'Yes', said Mrs Ross, 'are you asking for yourself, or someone else?'
- o 'For me', said Christine.
  - o 'Have you had any experience', said Mrs Ross.
  - o 'No', said Christine, 'but I'm willing to be fully trained'.
  - o 'Oh', said Mrs Ross, 'Well you're not what we are looking for. We want someone with experience'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 2

A) Amy was looking forward to fancy dress party all week. She had put a lot of effort into her costume and she was very pleased with it.

- o ‘Are you sure my hair looks ok?’ asked Amy looking in the mirror.
- o ‘It looks great’ replied Fred putting on his mask and cape, ‘come on the taxi is waiting’.

Fred gave the babysitter his mobile number in case of emergencies.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

B) As the taxi arrived at the party, Amy was very excited.

- o ‘It’s here on the left’, she said to the driver.
- o ‘No problem’, replied the driver.
- o ‘Right here we go’, said Amy to Fred, ‘I hope they appreciate my hard work’.
- o ‘I’m sure they will’, said Fred from behind his mask.

When Amy got out of the taxi she was so excited she bumped into a woman on the street.

- o ‘I’m sorry’, said Amy.
- o ‘Look where you are going, you stupid cow!’ replied the woman.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- C) o ‘I said I was sorry’, said Amy, but the woman just kept on walking.
- o ‘Three fifty’, said the taxi driver.

After ringing the door bell, Toby opened the door.

- o ‘I love your costumes’, he said, ‘my goodness Amy are you pregnant?’

- o 'Sorry we're late', said Fred.
- o 'Don't worry', said Toby, 'lots of people haven't arrived yet'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 3

A) Billy moved into his new flat at the weekend. It was more expensive than his last one but he could just about afford it because he had an evening job. The next week he bought some new curtains, a coffee table and a rug. The following weekend his friend, Keith came to have a look at it.

- o 'So this is your new place?' said Keith, 'Very nice, you must be on good money these days'.
- o 'I wish', said Billy. 'I can only afford it because I work nights as a bouncer at the nightclub'.
- o 'Oh just think about all the fresh air you'll get, standing outside', said Keith.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

B) o 'Oh, would you look at that rug', said Keith, 'It looks like you spilt something on it. Did you really pay good money for that?'

- o 'Yes, so do you want to go to the pub or shall we get a take away?' said Billy.
- o 'You decide, I'm easy', said Keith.
- o 'Well', said Billy, 'I fancy a curry.'
- o 'OK', said Keith, 'Eat in or shall we go out'.
- o 'It's Saturday night', said Billy, 'Let's go out'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

C) Ten minutes later Billy had changed and was ready to go out. He had on his favourite jeans and a new T-shirt. He thought he looked good.

- o 'Are you ready', asked Billy.
- o 'I've been ready for ages!' said Keith.

Keith and Billy left the flat and walked towards the high street. They bumped into an old man.

- o 'Sorry', said the old man, 'I was miles away'.
- o 'It's OK', said Keith.
- o 'Fancy a pint, first', said Billy.
- o 'Yes', said Keith.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

#### Story 4

A) Brian Johnson was not impressed with his new radio. Two of the knobs had fallen off and the display panel was cracked. He had bought it two weeks earlier; just before he went on holiday. He decided to take it back to the shop. He had to go into town anyway to get some new shoes. He'd just been in the third shop and could find anything he liked, when he heard an assistant call out to him.

- o 'Excuse me sir, are you Mr Johnson?'
- o 'Yes', said Brian.
- o 'It's Amy, sir, I used to be in your form at school' said the assistant.
- o 'Oh, I remember you', said Brian, 'managed to get a job then?'
- o 'Yes', said Amy, 'I've been here about a year now'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

B) Amy told Brian all about her interview and how she felt when they offered her the job.

- o 'Are you still enjoying it?' asked Brian.
- o 'It's not too bad', said Amy, 'and I get a day off in the week'.
- o 'A day off in the week?' asked Brian, 'You've landed on your feet!'
- o 'Can I help you with anything?' asked Amy.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- C) o 'No', said Brian, 'I was just looking, I'm fine. I better get going. Look after yourself Amy'.

Brian left the shop and walked down the street until he came to the electrical shop where he'd bought the radio. He walked in and saw a young man behind the counter.

- o 'Hello', said Brian, 'I have a bit of a problem, can I speak to the manager, only it's a bit complicated'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 5

- A. Julie and Tom hadn't been away on holiday since last May. So when a weekend came up where they had nothing to do, they decided to get in the car and drive to the coast. They needed to fill up with petrol. Tom had just got the car and he didn't know how much petrol it would take to fill the tank. The numbers kept spinning round and he got worried. When it got to £35 he decided to stop. He went inside to pay the woman behind the counter. He was looking at the road maps.

- o 'Do you have any more road maps', he asked the woman.  
o 'That's all we've got', she said.  
o 'Only I wanted one with more detail on it', Tom said.  
o 'That's all we've got.... sorry', replied the woman.  
o 'Never mind', said Tom, 'Pump number 1 please'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- B. o '£35 please. Do you want a receipt?' droned the woman.  
o 'No thanks', said Tom handing the woman the money, 'Isn't petrol expensive these days?'

Tom got back in the car and they continued on their journey. After 40 minutes they noticed a farmhouse with a B&B sign.

- o 'This looks Ok', said Julie, 'Let's go and see how much it is'.

They rang the bell and a woman in a blue dress came to the door.

- o 'Can I help you?' she said.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- C. o 'Do you have any vacancies?' asked Julie.
- o 'Yes we do', replied the woman, 'I've got a nice double overlooking the meadow, its £50 a night. But the room at the side might be more in your price range'.
- o 'Oh', said Julie. 'Is it Ok if we have a look at it?'
- o 'Yes', said the woman, 'Come on in'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 6

- A. Samantha was clearing a table in the cafe at the seaside where she worked. It seemed like the millionth time that day. She piled the dirty dishes on her tray and noticed that a couple on the next table were about to leave. She decided to clear their cups away too.
- o 'Do you mind if I take these?' asked Samantha.
- o 'No that's fine', said the woman, 'Do you live here?'
- o 'Yes, I grew up here. I've been away. I've just come back to work the summer season, this is my second day,' she replied.
- o 'Good,' said the woman, 'You might be able to tell me where we can find a bit of life after 10 o'clock at night', said the woman.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- B. o 'Oh, if it's a bit of life you want you've come to the wrong place', said Samantha, 'the town is pretty but that's as far as it goes'.
- The couple looked disappointed.
- o 'You could always try Tourmouth, it's a couple of miles that way', added Samantha.
- o 'Thanks', said the woman.
- A bit later Samantha went for her break. As she walked down the high street she realised how much she had missed the place. She then bumped into the woman who owned the corner shop.
- o 'Hello, Mrs Jones', said Samantha.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- C. o 'Hello Samantha', said Mrs Jones, 'Are you home for good now?'
- o 'Just here for the summer season', said Samantha. I'm working at the cafe on the sea front. How is Mr Jones? Does he still get grumpy with kids coming into the shop?'
- o 'He died last winter', said Mrs Jones.
- o 'I'm sorry to hear that', said Samantha.
- o 'That's OK', said Mrs Jones, 'Stop by the shop some time for a chat'.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 7

- A. Linda was nervous. She was about to introduce her new boyfriend, James, to her friends, Faye and Alex. She was nervous because they had really like her last boyfriend, Keith. She was also nervous because she had just spoken to her old best friend Kate. Kate and Linda had been best friends at school but when they left Kate had got a job in another town and they had lost touch. That was five years ago. Bt Kate was back and wanted to meet up tonight.
- At 7pm the door bell rang and Linda opened the door to see Kate standing there.
- o 'Hello stranger', said Linda, 'Come on in'.
- o 'Crikey, there's a few more lines on that face than I remembered', said Kate.
- o 'Well it's been a few years. What brings you back?'

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- B. o 'Just came back to see my mum', replied Kate.
- o 'Oh,' said Linda, 'Do you want a drink?'
- The others arrived shortly afterwards and to Linda's relief everyone was getting on really well.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

- a. Linda had cooked a meal of roast beef. Just after she had dished it out she realised she'd forgotten to ask James if he was vegetarian.

o 'Great meal, Linda', said James to Linda's relief.

Later when she was making coffee with Faye and Alex she realised she was out of milk. Faye carried the black coffee into the living room.

o 'Sorry Keith, you don't mind it black do you?'

o 'No', he replied.

Q. Was anything said that in that section that could have  
offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 8

A. Valerie had moved to England from America. She had a new job, a new flat and a new car. She wanted to look around the place that she had moved to. She got a guide book and decided to visit a castle that it said was 'stunning'. When she got there Valerie was disappointed. It didn't look stunning to her.

o 'How much is it to get in?' she asked the man at the kiosk.

o '£4 for adults and £2.50 for children', he replied even though it was obvious she didn't have a child with her.

o 'Is there anything else to see as well as the castle?', asked Valerie.

o 'Well', he answered, 'There's some brass rubbings and arrow heads'.

Q. Was anything said that in that section that could have  
offended someone?

Yes – Indicate which line it was on

No – move on to next section

B. o 'It's not much of a castle', said Valerie, 'Are there any turrets or anything?'

o 'This is the site of a very old fortress, madam', the man replied.

o 'Oh, I see', said Valerie, 'One adult then please.'

Valerie looked round for an hour. Then she felt thirsty and decided to visit the cafe. Ahead of her in the queue were two old ladies.

o 'Have you been here before?' one old lady asked the other.

Q. Was anything said that in that section that could have  
offended someone?

Yes – Indicate which line it was on

No – move on to next section

C. o 'I've been to the ruins', answered the second old lady, 'but not to the cafe'.

o 'Is that a terrace I can see?' replied the first old lady, 'shall we go out?'

o 'Oh, yes', said the first old lady, 'we'll get a great view of the castle. That is if there is any space, it's usually full of Americans!'

o 'Lets go and look', said the second old lady.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

### Story 9

A. Bob worked a tyre fitting company. He didn't like going to the parties organised by the company he worked for. He went this time because the people he worked with had gone on and on at him. He was trying to talk to George, Richard and Steve. It was really difficult because there was a really noisy woman in a purple dress behind them.

o 'My god', said Bob, 'That woman's got a loud voice'.

o 'Yes', said George.

Bob decided to go the bar to get some more drinks. When he got there he saw a tall man with black hair.

o 'Bob isn't it', said the tall man.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

B. o 'Yes', said Bob, 'You're than guy who was transferred to a different site aren't you?'

o 'Yes', said the man, 'My names Sean'.

o 'I worked there for a bit last year', said Bob, 'I really liked it'.

o 'Why don't you ask to be transferred?' said Sean.

o 'I might', said Bob

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

C. o 'So do you like it?' asked Bob

o 'Yeah', said Sean, ' the people are great'.

Bob collected his drinks and was about to walk away when he heard two of the girls from accounts talking.

o 'You remember that dress I told you about', said Liz, ' It's the one that Georges wife is wearing'.

o 'You mean the purple one you wanted?' said Jo

o 'Yeah', said Liz.

Q. Was anything said that in that section that could have offended some

Yes – Indicate which line it was on

No – move on to next section

### Story 10

A. Ryan had a doctor's appointment so he took the morning off work. He got to where his doctors were a bit early so he decided to go shopping. He wanted some new lights for his bike. The assistant explained that people usually went for one of two makes. She explained the difference but there didn't seem to be much in it.

o 'The bulbs on these ones cost twice as much as those one', she said, 'but they last longer'.

o 'They are still very popular and we've had no problems with them'. She added.

o 'OK', said Ryan 'I'll take them'.

o 'OK', said the assistant, 'Do you want us to fit them?'

o 'I assume there's an extra charge for that?' asked Ryan

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

B. o 'Yes £2' said the assistant.

o 'No don't worry', said Ryan, 'I'll do it myself'.

Ryan gave her the money and put his lights in his rucksack and left the shop. Later Ryan was sitting in the doctor's waiting room reading a paper.

o 'Ryan Jones' called Dr Hughs voice into the otherwise silent waiting room.

Ryan got up feeling really self-conscious and went into the doctor's office.

o 'So what wrong with you today? Said Dr Hughs.

Q. Was anything said that in that section that could have offended someone?

Yes – Indicate which line it was on

No – move on to next section

C. Ryan told her about that over the last three months he'd had problems at work and that because of all the bickering at home he couldn't sleep.

- o ‘I don’t know what to suggest’, said the doctor, ‘maybe you need a holiday, or improve things at home and the other problems might go away’.
- o ‘I’d like to but I can’t. There are already two people off at work at the minute and it’s really busy’, said Ryan.
- o ‘I’m only telling you what I think would be good for you and your health’, said the doctor
- o ‘Yes, I know’, said Ryan

Q. Was anything said that in that section that could have offended someone

Yes – Indicate which line it wa

No – move on to next section

**Task 3: Theory of Mind – Visual Test**

**Practice**

jealous

panicked



arrogant

hateful

playful

comforting



irritated

bored

terrified

upset

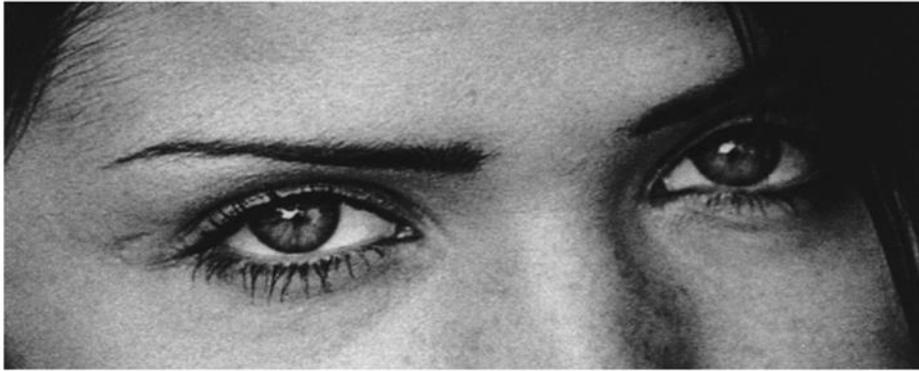


arrogant

annoyed

joking

flustered



desire

convinced

joking

insisting



amused

relaxed

irritated

sarcastic



worried

friendly

aghast

fantasizing



impatient

alarmed

apologetic

friendly



uneasy

dispirited

despondent

relieved



shy

excited

annoyed

hostile



horrified

preoccupied

cautious

insisting



bored

aghast

terrified

amused

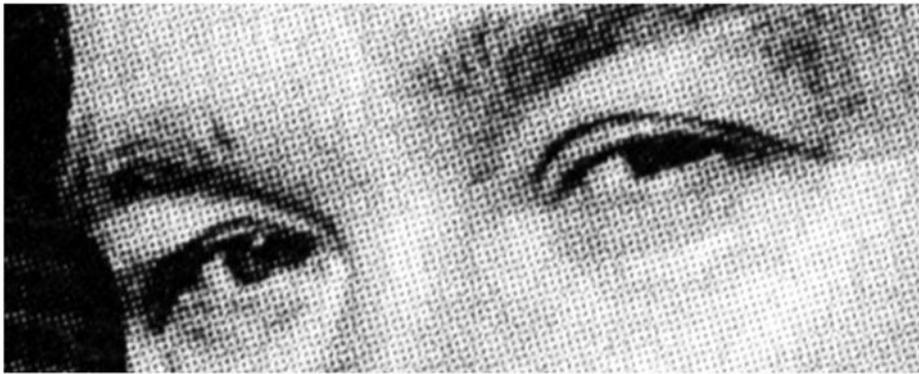


regretful

flirtatious

indifferent

embarrassed

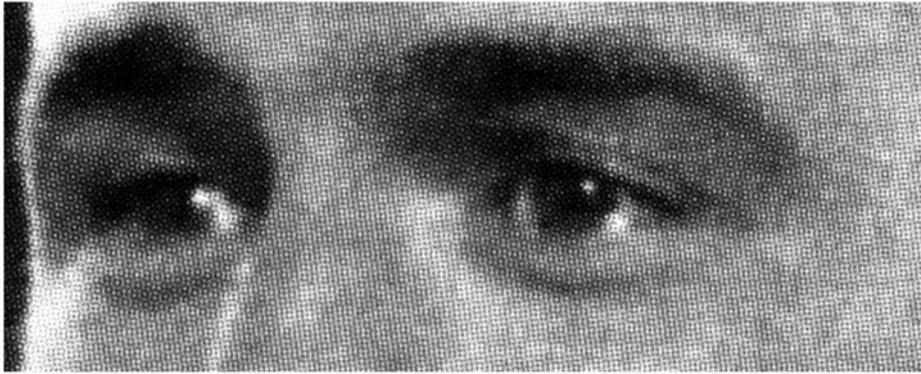


sceptical

dispirited

Decisive

anticipating



threatening

shy

irritated

disappointed



depressed

accusing

contemplative

flustered



encouraging

amused

irritated

thoughtful



encouraging

sympathetic

doubtful

affectionate



playful

aghast

decisive

amused



aghast

bored

arrogant

grateful



sarcastic

tentative

dominant

friendly



guilty

horrified

embarrassed

fantasizing



confused

panicked

preoccupied

grateful



insisting

imploring

contented

apologetic



defiant

curious

pensive

irritated

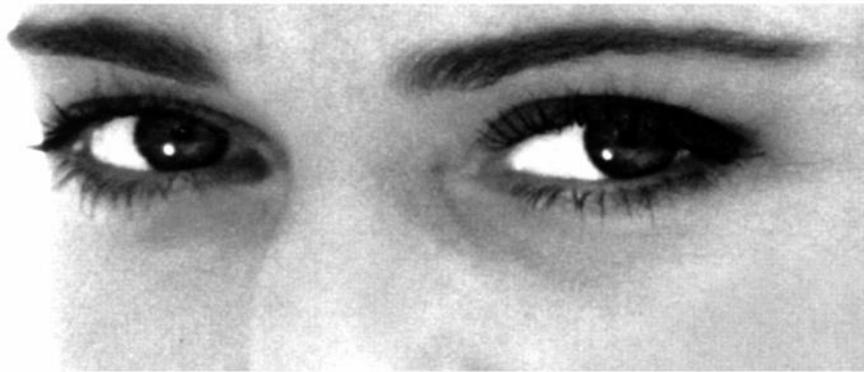


excited

hostile

panicked

incredulous



despondent

interested

alarmed

shy



hostile

anxious

joking

cautious



arrogant

reassuring

interested

joking



affectionate

contented

impatient

aghast



irritated

reflective

grateful

flirtatious



hostile

disappointed

ashamed

confident



joking

dispirited

serious

ashamed



bewildered

alarmed

embarrassed

guilty



fantasizing

concerned

aghast

baffled



distrustful

terrified

puzzled

nervous



insisting

contemplative

ashamed

nervous



suspicious

indecisive

## Task 4: Empathic Understanding - Self Report

**ALL INFORMATION REMAINS STRICTLY CONFIDENTIAL**

Unique Participant Reference Number .....

- |   |                |                |                   |                   |
|---|----------------|----------------|-------------------|-------------------|
| 1. I can easily tell if someone else wants to enter a conversation.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 2. I really enjoy caring for other people.  | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 3. I find it hard to know what to do in a social situation.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 4. I often find it difficult to judge if something is rude or polite.                                       | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 5. In a conversation, I tend to focus on my own thoughts rather than on what my listener might be thinking. | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 6. I can pick up quickly if someone says one thing but means another.                                       | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 7. It is hard for me to see why some things upset people so much.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 8. I find it easy to put myself in somebody else's shoes.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 9. I am good at predicting how someone will feel.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 10. I am quick to spot when someone in a group is feeling awkward or uncomfortable.                         | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 11. I can't always see why someone should have felt offended by a remark.                                   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 12. I don't tend to find social situations confusing.   | strongly agree | slightly agree | slightly disagree | strongly disagree |
| 13. Other people tell me I am good at understanding how   | strongly agree | slightly agree | slightly disagree | strongly disagree |

they are feeling and what they are thinking.	agree	agree	disagree	disagree
14. I can easily tell if someone else is interested or bored with what I am saying.	strongly agree	slightly agree	slightly disagree	strongly disagree
15. Friends usually talk to me about their problems as they say that I am very understanding.	strongly agree	slightly agree	slightly disagree	strongly disagree
16. I can sense if I am intruding, even if the other person doesn't tell me.	strongly agree	slightly agree	slightly disagree	strongly disagree
17. Other people often say that I am insensitive, though I don't always see why.	strongly agree	slightly agree	slightly disagree	strongly disagree
18. I can tune into how someone else feels rapidly and intuitively.	strongly agree	slightly agree	slightly disagree	strongly disagree
19. I can easily work out what another person might want to talk about.	strongly agree	slightly agree	slightly disagree	strongly disagree
20. I can tell if someone is masking their true emotion.	strongly agree	slightly agree	slightly disagree	strongly disagree
21. I am good at predicting what someone will do.	strongly agree	slightly agree	slightly disagree	strongly disagree
22. I tend to get emotionally involved with a friend's problems.	strongly agree	slightly agree	slightly disagree	Strongly disagree

**Task 5: Performance-based measured in booklet.**

## 6: Moral Reasoning Test

### Social Reflection Questionnaire

Unique Participant Reference Number .....

1. How important is it for people to keep their promises to friends?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

2. How important is it to keep promises to anybody, even if they are strangers?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

3. How important is it for parents to keep their promises to their children?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

4. Do you think that the truth should be told at all times?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

5. How important is it for children to help their parents?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

6. Let's say you are the only one who can help a friend and without your help they may die. How important is it for a person (without losing their own lives) to save the life of a friend?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

7. How important is it for a person (without losing their own life) to save the life of a stranger?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

8. How important is it for a person to live even if they don't want to?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

9. How important is it for people not to take things that belong to other people?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

10. How important is it for people to obey the law?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

11. How important is it for judges to send people who break the law to jail?

VERY IMPORTANT                      IMPORTANT                      NOT IMPORTANT

Why?.....

**Task 7: In booklet.**