

**THE RELATIONSHIP BETWEEN PSYCHOPATHY AND  
INDIRECT AGGRESSION IN A COMMUNITY SAMPLE**

Gemma Carolyn Warren

Thesis submitted for the qualification of

Doctor of Philosophy (PhD)

University of York

Department of Psychology

September 2009

## ACKNOWLEDGEMENTS

Firstly I would like to thank my supervisor, Dr Jane Clarbour for her constant support and guidance. I would also like to thank all the members of my Research Committee, Prof. Andy Young, Prof. Cynthia McDougall and Dr Marcel Zentner for their guidance throughout my PhD. I would also like to thank the various members of the Department of Psychology, both faculty and support staff, at the University of York for their help and support. There are too many of you to name individually, but this PhD would not have been possible without the support received from the department. I am also grateful to both the department and the University of York for awarding me a teaching studentship without which this work would not have been possible. I would especially like to thank Paul Summers and Dr Jo Clarke as a constant source of moral support and advice (not to mention a supply of caffeine). I would also like to thank the various message boards, internet forums, mailing lists and websites which allowed me to advertise my research and recruit a wide range of online participants.

Last but certainly not least I would like to thank my family for all their constant support and encouragement, especially my mother who always taught me that I could achieve whatever I put my mind to. Special thanks go to my housemate for putting up with me during the three long years of my thesis. I know I must not have been the easiest person to live with when I get stressed. Big thank you to all my friends for always being there to offer support when I needed it, you all know who you are.

## DECLARATION

The literature review, data collection, analyses and the conclusions drawn are the result of my own work. In cases where data may have been collected in conjunction with others all analysis and conclusions drawn are my own. All tests used in the current study remain the copyright of their respective authors and proprietors.

Sections of this thesis have been presented in the following conference presentations and peer-review paper:

Warren, G., & Clarbour, J. (2008, July). *The effect of psychopathic traits on the use of direct and indirect forms of aggression*. Paper presented at the ISRA XVIII. World Meeting, Budapest, Hungary.

Warren, G., & Clarbour, J. (2008, July). *Gender moderation of the relationship between psychopathy and the use of direct and indirect aggression*. Paper presented at the 18th Conference of the European Association of Psychology and Law, Maastricht, Netherlands.

Warren, G., & Clarbour, J. (2008, June). *Psychopathy and indirect aggression: the mediating effect of empathy*. Paper presented at the The British Psychological Society: Division of Forensic Psychology Conference, Heriot-Watt University, Edinburgh, UK.

Warren, G., & Clarbour, J. (2009). *The role of social skills in the relationship between psychopathy and indirect aggression*. Paper presented at the European Association of Psychology and Law.

Warren, G., & Clarbour, J. (2009). Relationship between psychopathy and indirect aggression use in a noncriminal population. *Aggressive Behavior*, 35, 408 - 421.

Parts of the thesis are also under revision following submission to the Journal of Personality Disorders. Sections of this thesis were also submitted for consideration in relation to the Junior Award from the Division of Forensic Psychology (2008).

## **ABSTRACT**

This thesis sought to investigate the relationship between psychopathy and indirect aggression use. Psychopathy has been strongly linked with increased levels of aggressive behaviour and in particular violence (Porter & Woodworth, 2006). However, thus far research has predominantly focused on direct forms of aggression with minimal research considering indirect forms of aggression. On the basis of previous research, it was hypothesised that not only would psychopathy be significantly related to indirect aggression use, but that this relationship would remain after controlling for the shared variance with direct aggression. It was also hypothesised that this relationship would be mediated by deficits in affective empathy and moderated by both gender and levels of social skills.

A series of quasi-experimental studies were conducted to test this hypothesis using regression analysis and structural equation modelling. Study 1 sought to test the basic relationship between psychopathy and indirect aggression using the Psychopathic Personality Inventory - Revised and the Indirect Aggression Scale respectively on a sample of 103 university students. Study 2 & 3 then expanded this and sought to investigate both the role of empathy, using the Empathy Quotient (Study 2), and gender (Study 3) using a sample of 201 university students, 83 males and 118 females. Study 4 used the Social Skills Inventory in a sample of 107 students to test the hypothesised social skill moderation of this relationship. Finally Study 5 and 6 sought to redress issues of both the limited samples and use of self-report measures in the previous studies by replicating these findings in a general community population of 204 (Study 5) and using behavioural measures of empathy on a sample of 117 (Study 6). The results indicate that psychopathy is significantly related to the use of indirect aggression, even after controlling for direct aggression, and that this was driven predominantly by the impulsive antisociality and coldheartedness factors. This relationship was found to be significantly mediated by affective, but not cognitive, empathy deficits although only for males, not for females, which may arguably point towards differences in the function of indirect aggression for male compared to female psychopaths. Non-verbal social skills were found to significantly moderate this relationship among students, however this finding could not be replicated.

These findings would appear to imply that psychopathy is related to a general increase in aggression, rather than a specific increase in violence. This supports the theorisation of non-criminal psychopathy as a moderated behavioural manifestation of the underlying personality traits rather than a sub-clinical version of the disorder. The sex differences in the relationship would seem to imply that the different types of aggression use may have different underlying meanings for males and females high on psychopathic traits.

<b>ACKNOWLEDGEMENTS.....</b>	<b>1</b>
<b>DECLARATION.....</b>	<b>3</b>
<b>ABSTRACT .....</b>	<b>4</b>
<b>LIST OF TABLES .....</b>	<b>14</b>
<b>LIST OF FIGURES .....</b>	<b>16</b>
<b>LIST OF APPENDICES .....</b>	<b>18</b>
<b>CHAPTER 1 .....</b>	<b>19</b>
<b>1. INTRODUCTION AND PSYCHOPATHY LITERATURE REVIEW .....</b>	<b>19</b>
<b>1.1. Overview of thesis .....</b>	<b>19</b>
<b>1.2. Psychopathy conceptualisations.....</b>	<b>20</b>
1.2.1. Early conceptualisations and Cleckley’s psychopath.....	20
1.2.2. Hare’s PCL-R.....	22
1.2.2.1. Validity and reliability of the PCL-R conceptualisation of psychopathy	24
1.2.3. PCL-R structure.....	28
1.2.3.1. The 2-factor model .....	29
1.2.3.2. The role of antisocial behaviour – three versus four factor model .....	30
1.2.3.3. Criticisms of the PCL-R .....	34
1.2.3.4. Dimension vs. taxonomy .....	36
1.2.4. Psychopathy conceptualisation: conclusions .....	37
<b>1.3. Psychopathy and empathy.....</b>	<b>37</b>
<b>1.4. Female psychopathy.....</b>	<b>44</b>
1.4.1. Prevalence and assessment issues .....	45
1.4.2. Differential behavioural manifestations? .....	48
1.4.3. Female psychopathy: Conclusions .....	49

<b>1.5. Non-criminal psychopathy .....</b>	<b>50</b>
1.5.1. Non-criminal psychopathy as sub-clinical version of the disorder .....	51
1.5.2. Noncriminal psychopathy as a moderated expression of the disorder .....	52
1.5.3. Neurological deficits in non-criminal psychopathy: A dual-deficit perspective .....	54
1.5.4. Non-criminal psychopathy: Conclusions .....	56
<b>1.6. Psychopathy: Conclusions .....</b>	<b>56</b>
 <b>CHAPTER 2 .....</b>	 <b>58</b>
 <b>2. AGGRESSION LITERATURE REVIEW .....</b>	 <b>58</b>
<b>2.1. Introduction .....</b>	<b>58</b>
<b>2.2. Defining aggression .....</b>	<b>58</b>
<b>2.3. The proactive- reactive distinction .....</b>	<b>59</b>
<b>2.4. The direct-indirect distinction .....</b>	<b>63</b>
<b>2.5. Gender differences in aggression .....</b>	<b>66</b>
2.5.1. Theories of the gender differences in aggression .....	68
2.5.2. Gender differences: Conclusions .....	72
<b>2.6. Aggression and psychopathy .....</b>	<b>72</b>
2.6.1. Male psychopathy and direct aggression .....	72
2.6.2. Female psychopathy and direct aggression .....	76
2.6.3. Psychopathy and indirect aggression .....	77
2.6.3.1. Psychopathy and indirect aggression in adolescents .....	79
2.6.3.2. Psychopathy and indirect aggression in adults .....	80
2.6.4. Psychopathy and aggression: Conclusions .....	83
<b>2.7. Hypotheses .....</b>	<b>84</b>
 <b>CHAPTER 3 .....</b>	 <b>87</b>

<b>3. ASSESSMENT OF PSYCHOPATHY AND AGGRESSION.....</b>	<b>87</b>
<b>3.1. Psychopathy assessment: Self-report scales .....</b>	<b>87</b>
3.1.1. Levenson’s self-report psychopathy scale (LSRP; Levenson et al., 1995)..	89
3.1.2. Hare’s self-report psychopathy scale (SRP-II; Hare, 1985).....	90
3.1.3. The psychopathic personality inventory-revised (PPI-R; Lilienfeld & Widows, 2005).....	91
<b>3.2. Indirect aggression assessment tools .....</b>	<b>96</b>
3.2.1. Use of self-report.....	96
3.2.2. Richardson conflict response questionnaire (RCRQ; Richardson & Green, 2003) .....	98
3.2.3. Indirect aggression scale (IAS; Forrest et al., 2005) .....	99
3.2.4. Conclusion.....	100
 <b>CHAPTER 4 .....</b>	 <b>101</b>
 <b>4. STUDY 1: AN INVESTIGATION OF THE RELATIONSHIP OF PSYCHOPATHY WITH INDIRECT AGGRESSION .....</b>	 <b>101</b>
<b>4.1. Introduction .....</b>	<b>101</b>
<b>4.2. Method .....</b>	<b>103</b>
4.2.1. Participants .....	103
4.2.2. Measures.....	103
4.2.2.1. Psychopathic Personality Inventory - revised (PPI-R; Lilienfeld & Widows, 2005).....	103
4.2.2.2. Indirect aggression scale (IAS) (Forrest et al., 2005):.....	105
4.2.3. Procedure.....	106
<b>4.3. Results .....</b>	<b>107</b>
4.3.1. IAS reliability .....	107
4.3.2. PPI-R reliability.....	108
4.3.3. Psychopathy and indirect aggression .....	109
<b>4.4. Discussion.....</b>	<b>110</b>



<b>CHAPTER 5 .....</b>	<b>115</b>
<b>5. STUDY 2: AN INVESTIGATION OF THE EFFECTS OF EMPATHY AND GENDER ON THE RELATIONSHIP BETWEEN PSYCHOPATHY AND INDIRECT AGGRESSION .....</b>	<b>115</b>
<b>5.1. Introduction .....</b>	<b>115</b>
<b>5.2. Method .....</b>	<b>117</b>
5.2.1. Participants .....	117
5.2.2. Measures.....	117
5.2.2.1. Psychopathic Personality Inventory - Revised (PPI-R; Lilienfeld & Widows, 2005).....	117
5.2.2.2. Indirect aggression scale (IAS; Forrest et al., 2005) .....	117
5.2.2.3. The empathy quotient (EQ; Baron-Cohen & Wheelwright, 2004) .....	118
5.2.2.4. Buss-Perry aggression questionnaire (AQ; Buss & Perry, 1992).....	119
5.2.2.5. Balanced inventory of desirable responding (BIDR; Paulhus, 1984) .	120
5.2.3. Procedure.....	120
5.2.4. Missing data .....	121
5.2.5. Data analysis .....	121
<b>5.3. Results .....</b>	<b>121</b>
5.3.1. Descriptive statistics.....	121
5.3.2. Scale validity .....	122
5.3.3. Socially desirable responding.....	124
5.3.4. Empathy .....	126
5.3.5. Psychopathy and aggression.....	127
5.3.6. Regression analysis .....	129
5.3.7. Role of empathy .....	133
<b>5.4. Discussion.....</b>	<b>137</b>
5.4.1. Indirect aggression and psychopathy .....	137
5.4.2. Empathy effects.....	139
5.4.3. Limitations and future directions .....	141

<b>CHAPTER 6 .....</b>	<b>144</b>
<b>6. STUDY 3: GENDER DIFFERENCES IN THE RELATIONSHIP BETWEEN PSYCHOPATHY AND INDIRECT AGGRESSION.....</b>	<b>144</b>
<b>6.1. Introduction.....</b>	<b>144</b>
<b>6.2. Method .....</b>	<b>145</b>
6.2.1. Participants .....	146
6.2.2. Data analysis .....	146
<b>6.3. Results .....</b>	<b>146</b>
6.3.1. Gender differences in aggression and psychopathy .....	146
6.3.2. Gender differences in the relationship between psychopathy and indirect aggression.....	148
6.3.3. Regression analysis .....	150
6.3.4. Gender analysis of empathy effects .....	151
6.3.5. Structural equation model replication .....	153
<b>6.4. Discussion.....</b>	<b>157</b>
6.4.1. Gender differences in psychopathy and aggression scores .....	157
6.4.2. Gender differences in the relationship between psychopathy and indirect aggression.....	158
6.4.3. Gender differences in the empathy mediator analysis.....	160
6.4.4. Conclusions and future directions .....	163
<b>CHAPTER 7 .....</b>	<b>165</b>
<b>7. STUDY 4: MODERATION OF EFFECTS OF SOCIAL SKILLS ON THE RELATIONSHIP BETWEEN PSYCHOPATHY AND INDIRECT AGGRESSION .....</b>	<b>165</b>
<b>7.1. Introduction.....</b>	<b>165</b>
<b>7.2. Method .....</b>	<b>167</b>
7.2.1. Participants .....	167

7.2.2. Measures.....	167
7.2.2.1. Social Skills Inventory.....	167
7.2.3. Procedure.....	169
7.2.4. Missing data .....	169
7.2.5. Data analysis .....	169
<b>7.3. Results .....</b>	<b>170</b>
7.3.1. Moderator analysis .....	172
<b>7.4. Discussion.....</b>	<b>175</b>
 <b>CHAPTER 8 .....</b>	 <b>181</b>
 <b>8. STUDY 5: THE RELATIONSHIP OF PSYCHOPATHY AND INDIRECT AGGRESSION WITHIN A WIDER COMMUNITY SAMPLE .....</b>	 <b>181</b>
 <b>8.1. Introduction .....</b>	 <b>181</b>
 <b>8.2. Method .....</b>	 <b>184</b>
8.2.1. Participants .....	184
8.2.2. Materials.....	184
8.2.3. Procedure.....	185
8.2.4. Missing Data .....	186
8.2.5. Data Analysis .....	187
 <b>8.3. Results .....</b>	 <b>188</b>
8.3.1. Correlational analysis.....	191
8.3.2. Psychopathy and indirect aggression .....	193
8.3.3. Gender differences .....	194
8.3.4. Social skills moderation .....	201
 <b>8.4. Discussion.....</b>	 <b>202</b>
8.4.1. Relationship between psychopathy and indirect aggression .....	205
8.4.2. Social skills .....	208
8.4.3. Limitations .....	210
8.4.4. Conclusions .....	212

<b>CHAPTER 9 .....</b>	<b>213</b>
<b>9. EXPERIMENTAL VERIFICATION OF RELATION OF EMPATHY DEFICITS AND INDIRECT AGGRESSION IN PSYCHOPATHY .....</b>	<b>213</b>
<b>9.1. Introduction.....</b>	<b>213</b>
<b>9.2. Method .....</b>	<b>216</b>
9.2.1. Participants .....	216
9.2.2. Measures.....	216
9.2.2.1. Self-report measures .....	216
9.2.2.2. Computerised task 1: Reading the Mind in the Eyes test – revised (Baron-Cohen et al., 2001).....	216
9.2.2.3. Computerised task 2: Gernsbacher task (Gernsbacher et al., 1992)....	217
9.2.2.4. Computerised task 3: Emotional face perception .....	217
9.2.3. Procedure.....	218
9.2.4. Missing Data and Data Analysis .....	219
<b>9.3. Results .....</b>	<b>219</b>
9.3.1. Computerised task validity.....	220
9.3.2. Psychopathy and indirect aggression .....	223
9.3.3. Empathy mediation model .....	224
<b>9.4. Discussion.....</b>	<b>228</b>
<b>CHAPTER 10 .....</b>	<b>232</b>
<b>10. DISCUSSION AND FUTURE DIRECTIONS.....</b>	<b>232</b>
<b>10.1. Results and theoretical implications.....</b>	<b>232</b>
<b>10.2. Wider implications .....</b>	<b>239</b>
10.2.1. Psychopathy .....	239
10.2.2. Indirect aggression .....	242
10.2.3. Bullying.....	245

<b>10.3. Limitations</b> .....	<b>247</b>
10.3.1. PPI-R factor structure .....	247
10.3.2. Self-report scales .....	249
<b>10.4. Sample issues</b> .....	<b>250</b>
<b>10.5. Future Directions</b> .....	<b>252</b>
<b>10.6. Conclusions</b> .....	<b>256</b>
<b>REFERENCES</b> .....	<b>257</b>
<b>APPENDIXES</b> .....	<b>284</b>

## LIST OF TABLES

Table 4.1	Scale means, standard deviations and Cronbach alphas for the indirect aggression scale and sub-scales	107
Table 4.2	Scale means, standard deviations and Cronbach alphas for the psychopathy scale and sub-scales	108
Table 4.3	Correlation coefficients between psychopathy total, factor and subscale scores and indirect aggression scores	109
Table 5.1	Means and standard deviations for psychopathy, direct aggression, indirect aggression and socially desirable responding	122
Table 5.2	Factor loadings for the revised indirect aggression scale	123
Table 5.3	Correlations of indirect aggression, direct aggression, psychopathy and empathy with socially desirable responding	125
Table 5.4	Correlations of psychopathy and indirect aggression with empathy	127
Table 5.5	Correlations between psychopathy and aggression	128
Table 6.1	Gender differences in levels of aggression, psychopathy and empathy	147
Table 6.2	Correlations between indirect aggression and psychopathy for male and female participants	149
Table 7.1	Correlations between social skills, psychopathy and indirect aggression scores	170
Table 7.2	Correlations between social skills and psychopathy	171
Table 8.1	Means and standard deviations for total group, male and female samples	189
Table 8.2	Means (and standard deviations) for psychopathy total and factor scores by occupational category	190
Table 8.3	Partial correlations between indirect aggression and non-verbal social skills controlling for the shared variance with total empathy	192
Table 8.4	Regression analysis of the relationship between the psychopathy factors and indirect aggression controlling for the effects of direct aggression	193
Table 8.5	Correlations between psychopathy and indirect aggression for male and female participants	198

Table 9.1	Demographics for psychopathy, indirect aggression and empathy	220
Table 9.2	Correlations between the empathy quotient and scores on behavioural measures	222
Table 9.3	Correlations between indirect aggression, psychopathy and empathy	223

## LIST OF FIGURES

Figure 5.1	Model of the relationship between the psychopathy factors and both direct and indirect aggression	131
Figure 5.2	Model of the relationship between psychopathy and indirect aggression with empathy as a mediator	134
Figure 5.3	Model of the relationship between psychopathy and indirect aggression with emotional reactivity as a mediator	134
Figure 5.4	Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression	136
Figure 6.1	Model of relationship between psychopathy and indirect aggression with emotional reactivity as a mediator for male and female participants	152
Figure 6.2	Model of relationship between psychopathy and indirect aggression with cognitive empathy as a mediator for male and female participants	153
Figure 6.3	Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression for male participants	155
Figure 6.4	Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression for female participants	156
Figure 7.1	Moderator effect of total social skills on the relationship between psychopathy and indirect aggression	173
Figure 7.2	Moderator effect of non-verbal social skills on the relationship between psychopathy and indirect aggression	174
Figure 7.3	Moderator effect of emotional control on the relationship between psychopathy and indirect aggression	175
Figure 8.1	Structural equation model of the relationship between indirect aggression, direct aggression and empathy	197
Figure 8.2	Model of the relationship between psychopathy, aggression and empathy for male participants	199
Figure 8.3	Model of the relationship between psychopathy, aggression and empathy in female participants	200
Figure 8.4	Moderation of the relationship between psychopathy and indirect	202



	aggression by the emotion sub-scale	
Figure 9.1	Difference in reading times between congruent and incongruent sentences for low, medium and high psychopathy scorers	221
Figure 9.2	Mediation model of the relationship between psychopathy and indirect aggression by affective and cognitive empathy	226
Figure 9.3	Model of the relationship between the psychopathy factors, empathy, fear expression recognition and indirect aggression	227

## LIST OF APPENDICES

Appendix 4.1	Indirect Aggression Scale original version	284
Appendix 5.1	Indirect Aggression Scale revised version	286
Appendix 5.2	The Empathy Quotient scale	288
Appendix 5.3	The Aggression Questionnaire	293
Appendix 5.4	The Balanced Inventory of Desirable Responding version 6	295
Appendix 8.1	Factor analysis of the Proactive and Reactive Indirect Aggression Scales from Study 5	297
Appendix 8.2	Table of correlations between psychopathy, indirect aggression, direct aggression and empathy from Study 5	300
Appendix 9.1	Example item from the Reading the Mind in the Eyes Test	302
Appendix 9.2	Modified Gernsbacher emotional stories.	303

## CHAPTER 1

### 1. Introduction and Psychopathy Literature Review

#### 1.1. Overview of thesis

Psychopathy has long been associated with increased aggression use and this association has been considered to be one of the most consistent and central features of the disorder (Porter & Woodworth, 2006). However, research into this area has thus far concentrated predominantly on only direct forms of aggression, thus capturing only a small part of the overall aggression concept. Nonetheless, it has been theorised that indirect forms of aggression may explain inconsistent findings in the use of aggression with female psychopaths (Cale & Lilienfeld, 2002b), with research in the general population consistently finding a preference towards this form of aggression among female samples, at least within child and adolescent populations. It has also been hypothesised that non-criminal psychopaths may similarly use alternative forms of aggression to physical violence (Woodworth & Porter, 2002), such as indirect aggression. There has, however, been minimal research thus far explicitly considering the link between indirect aggression and psychopathy. Nonetheless, such research would help develop further understanding of the behavioural consequences of psychopathy, both generally and more particularly in female and non-criminal samples. Furthermore, this could potentially inform psychopathy treatment should potential moderators leading to a preferential use of indirect over direct aggression be identified.

This thesis will seek to investigate the relationship between psychopathy and indirect aggression, particularly looking at the individual influence of the individual psychopathy factors. Furthermore, the hypothesised mediating role of empathy deficits will be considered as well as the moderating role of gender and social skills. This research will be conducted predominantly using a student population, as this would appear to be particularly relevant given its focus on non-criminal forms of aggression. The thesis will start with a review of the psychopathy literature, focusing on conceptualisations of psychopathy, aetiological explanations and its application to female and non-criminal sub-populations. This will then be followed by a review of the general aggression literature (see Chapter 2), looking particularly at the direct-indirect aggression distinction, gender

differences in aggression and then the relationship between aggression and psychopathy generally and indirect aggression and psychopathy in particular. The thesis will then go on, in Chapter 3, to look at the different self-report assessment tools and will consider which are most applicable to the current sample group. The research reported in this thesis will first look at the basic relationship between psychopathy and indirect aggression (see Chapter 4), whilst also controlling for direct aggression (see Chapter 5). Then they will consider the mediating effects of empathy in Chapter 5, and the effect of gender in Chapter 6, including how this interacts with empathy mediation, and in Chapter 7 the moderation effect of social skills. Finally, these findings will be replicated from an undergraduate population to a wider community sample to test the generalisability of the results outside of a student population (see Chapter 8) and using behavioural measures of empathy (see Chapter 9). These results will be discussed and conclusions will be drawn as to the theoretical implications for these findings in terms of our further understanding of psychopathy, in particular psychopathy in female and non-criminal populations (Chapter 10).

## **1.2. Psychopathy conceptualisations**

The construct of psychopathy has been conceptualised in a variety of ways over the years, and even now there remains debate as to its exact definition and structure. The current section will consider the conceptualisations of the psychopathy disorder, from first conceptualisations and Cleckley's seminal work to Hare's conceptualisation, with discussion of the underlying factor structure of the PCL-R and the centrality of criminal traits.

### **1.2.1. Early conceptualisations and Cleckley's psychopath**

The concept of psychopathy has existed within the medical literature for some considerable time, although the terminology and precise definitions used have changed. Descriptions of individuals bearing psychopathic traits exist throughout history and as early as the 19<sup>th</sup> century theorists talked of disorders bearing considerable similarity to psychopathy, termed *manie sans delire* (Pinel, 1801, as cited in Millon, Simonsen, & Birket-Smith, 2003) or *moral insanity* (Prichard, 1835, *ibid*). Even the term psychopathy dates to the end of the

19<sup>th</sup> century (Koch, 1898, *ibid*), although its use at the time referred to a far broader category of personality pathologies than what is understood by the term now.

Nonetheless, despite this history, it was not until the publication of Cleckley's seminal work *The Mask of Sanity* in the 1940s that the conceptualisation of psychopathy took on the recognisable form in use today (Cleckley, 1944, 1988). Based on extensive clinical work with psychopathic individuals it listed the 16 criteria believed to be central to the construct. These criteria represent a mix of personality and behavioural maladjustment combined with aspects of positive psychological adjustments. It has been argued that these criteria can be effectively classified into three distinct categories: positive adjustment, chronic behavioural deviance and emotional-interpersonal deficits (Patrick, 2006).

Following from early concepts of *manie sans delire* (mania without delirium) psychopathy was emphasised to be independent of any form of irrationality or delusions. Indeed, psychopaths were described as being highly, and genuinely charming, of seemingly good intelligence and lacking in anxiety. Cleckley (1988) also emphasised that psychopathy was distinct from criminality, and indeed that most psychopaths were unlikely to commit major crimes. However, psychopaths were described as engaging in a level of anti-social behaviour but that this was often poorly motivated, subjecting themselves to great risks for little or even no apparent reward (Cleckley, 1988). As such, this behaviour was considered to be qualitatively different to that of 'ordinary' criminals and seemingly lacking in any real forethought, planning or even malice. Similarly, poor judgement and a failure to learn from experience combined with intact theoretical reasoning skills were also considered principle characteristics. Related to these aspects of behavioural deviance, Cleckley (1988) also described psychopaths as being highly unreliable and lacking realistic life plans, failing to present or fulfil any long-term goals.

In addition to these behavioural deviance aspects are the affective-interpersonal criteria. Largely, these were described as deficits in general affective reactions (Cleckley, 1988) with experienced emotions being shallow and primitive, lacking any real complexity or depth. Similarly, psychopaths were described as being pathologically egocentric and with an incapacity for any real feelings of attachment or love. Although they may present with fondness or casual affection, this rarely goes much deeper and they appear to display

complete disregard for the others' well-being, be it physical, emotional or otherwise. This carried through to their sexual relations, with psychopaths displaying high levels of sexual promiscuity with little evidence of emotion or passion in these relations. Related to their generalised lack of complex affect, Cleckley described psychopaths as lacking shame or guilt over their actions irrespective of the consequences or harm these may have caused. Indeed, they are described as having a complete lack of insight and being entirely unable to appreciate the effect of their actions on others or even to understand the subjective experience of complex or major affective reactions. They were described as being able to give fluent rational analysis to their actions and its effects however but they do not appear to appreciate what this subjectively means to others. Significantly, like more recent aetiological theories, Cleckley (1988) hypothesised that it is these affective deficits that are central to the disorder and that these were as much a causal factor for the psychopath's deviant behaviour as their interpersonal and personality traits.

Despite a large body of research since the first publication of these criteria, Cleckley's work still has a profound effect on modern conceptualisations of psychopathy (Hare, 1999, 2003; Lilienfeld & Widows, 2005), and many of the criteria identified by Cleckley have now been validated by recent neurological and experimental work (Blair, Mitchell, Peschardt, Colledge, Leonard, Shine et al., 2004; Newman & Schmitt, 1998).

### **1.2.2. Hare's PCL-R**

Critical to modern conceptualisations of psychopathy are the items of Hare's Psychopathy Checklist (PCL-R; Hare, 1991; Hare, 2003). Based on Cleckley's clinical descriptions of psychopathy, the PCL, and its successor the PCL-R, were designed to provide a valid and reliable tool for assessing this disorder among forensic populations. The scale consists of 20 items, originally divided into two factors: interpersonal/affective and impulsive/anti-social lifestyle on the basis of early factor analysis (Harpur, Hare, & Hakstian, 1989), though more recent factor analyses are indicative that a three or four factor model may be more appropriate (Cooke & Michie, 2001; Skeem, Mulvey, & Grisso, 2003; see 1.2.3). The PCL-R has been well validated as a measure of psychopathy, correlating strongly with clinical assessments of Cleckley's concept of psychopathy (Harpur et al., 1989), as well as with theoretically consistent behavioural outcomes (Edens, Poythress, & Lilienfeld, 1999),

personality traits (Harpur, Hart, & Hare, 2002), and neurological deficits (Blair, Mitchell, Peschardt, Colledge, Leonard, Shine et al., 2004; Newman & Schmitt, 1998; Patrick, Bradley, & Lang, 1993). Arguably the PCL-R, for better or worse, has moved beyond simply being an assessment instrument and has become the de facto definition of psychopathy. As such, the proceeding section will look to explore the PCL-R and consider its impact on the psychopathy conceptualisation and the relevance of this to the current research.

Factor 1 of the PCL-R measures the interpersonal and affective deficits associated with the disorder and, as of the most recent revision (Hare, 2003), is divided into two facets, one dealing with the psychopath's interpersonal style and the other covering the disorder's affective deficits. The interpersonal facet consists of items assessing a glib and superficial charm, grandiose sense of self-worth, pathological lying and a conning and manipulative nature (Hare, 2003). The second facet of factor 1 details the psychopaths' affective deficits, and is characterised by shallow affect, a lack of guilt or remorse, callous behaviour and lack of empathy and a failure to accept responsibility. The description of these traits is similar to that of Cleckley (1988), with an emphasis that, although psychopaths do feel emotions, these are shallow, short-lived and largely cognitive in nature, lacking any sort of complexity or depth. They are also described as displaying a remarkable ability to rationalise their behaviour and assign the blame to others, circumstances or even just luck, generally dismissing or minimising the consequences to others. Indeed, they will often, quite sincerely, paint a picture of themselves as the victims (Hare, 1991; Hare, 1999, 2003).

Factor 2 items focus on the psychopaths' social deviance and impulsive lifestyle and are similarly conceptualised in the latest edition as belonging to two facets: a lifestyle facet and an antisocial behaviour facet (Hare, 1991; Hare, 1999, 2003). The lifestyle facet contains the criteria proneness to boredom, impulsivity, irresponsibility, lack of realistic long-term goals, and a parasitic lifestyle. Specifically, as with Cleckley's description, psychopaths are described as highly impulsive and irresponsible, often acting on a whim to fulfil immediate needs with little thought to the consequences of their actions (Hare, 1991; Hare, 1999, 2003). The final facet relates to socially deviant behaviours and comprises items reflecting poor behaviour controls, early behaviour problems, juvenile delinquency,

revocation of conditional release and criminal versatility (Hare, 1991; Hare, 1999, 2003). This facet marks the PCL-R's primary break from Cleckley's description, expanding considerably on the anti-social behaviour item Cleckley puts forward. In particular, psychopaths are described as having poor inhibitory controls over their behaviour with very little provocation required for them to become physically violent. However, these outbursts are particularly characterised by their extreme but short-lived nature with the psychopath often quickly returning to behave as if nothing had happened. The other items relate to a history of persistent anti-social behaviour starting in early childhood. Hare does note, however, that such anti-social behaviour does not necessarily need to be overtly criminal in nature (Hare, 1991; Hare, 1999, 2003) and that it may include covert criminality or technically legal, yet often unethical, activities. It is clear, however, that given that several items included in the scale relate specifically to aspects of the criminal justice system the primary focus is nonetheless on overt criminality.

Derivatives of the PCL-R have been developed, specifically the Psychopathy Checklist: Screening Version (PCL:SV; Forth, Brown, Hart, & Hare, 1996) and the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Hart, & Hare, 1990), designed to measure psychopathy within non-forensic and adolescent populations respectively. Though the specific items used have been modified to better capture psychopathy within their target populations, both these measures have been found to be conceptually and psychometrically related to the PCL-R (Forth & Mailloux, 2000; Guy & Douglas, 2006). As such they will not be specifically discussed here, since they add little unique information to the PCL-R conceptualisation of the psychopathy construct.

#### **1.2.2.1. Validity and reliability of the PCL-R conceptualisation of psychopathy**

The adoption of the PCL-R as the de facto definition of psychopathy is due in a large part to its high reliability and validity. As the validity of the Hare conceptualisation of psychopathy is inextricably linked to the validity of the scale itself, this section shall briefly consider the research supporting the validity and reliability of the PCL-R scale. Research has indicated that the scale consistently identifies a group of individuals displaying persistently antisocial, aggressive and impulsive behaviour (see below). Furthermore, a number of neurological deficits consistent with theoretical explanations of psychopathy have also been found.



Unlike the clinical diagnosis of psychopathy that preceded it, the PCL-R has been found to display excellent reliability, with an internal consistency of .87 for total scores (Hare, 1991), indicative that the scale assesses a single underlying construct. It has, however, been argued that the scale may in fact capture a number of highly inter-related constructs. It has also been found to display a test-retest reliability of .94 over one month (Cacciola, Rutherford, & Alterman, 1990), and an intra-class correlation of .83 (Hare, 1991). The scale also displays significant correlations with a seven-point global rating scale based upon Cleckley's concept of psychopathy (Hare, 1980), supporting its measurement of a Cleckley based psychopathy construct. Although correlations with global ratings were significantly stronger for factor 1 scores (Harpur et al., 1989), a number of the Cleckley criteria dealing with the behavioural facets of psychopathy were nonetheless found to correlate predominantly with factor 2 (Harpur et al., 1989).

The PCL-R appears to display both convergent and divergent validity with strong positive correlations found between psychopathy scores and antisocial personality disorder (ASPD), histrionic personality disorder (HPD) and narcissistic personality disorder (NPD; Hart & Hare, 1989). The behavioural elements appear to be those most strongly correlated with measures of ASPD whereas NPD appears to be most strongly correlated with the interpersonal and affective factor (Harpur et al., 1989). This is to be expected given that factor 2 contains a number of items similar or identical to the diagnosis criteria of ASPD. Similarly, strong convergence was found on the antisocial, aggressive-sadistic, thought disorder and delusional disorder scales of the MCMI-II (Hart, Forth & Hare, 1991) and with the hypomania and psychopathic deviate scales of the MMPI (Harpur et al., 1989). Although these latter two relationships were theoretically expected given the similarities between the clinical descriptions of the disorder and the symptom covered by these scales, correlations with thought disorder and delusional disorder scales do raise some questions with regards to the PCL-R's relation with Axis I disorders, given the independence of psychopathy from overt insanity emphasised in prior clinical descriptions (Cleckley, 1988). Strong negative correlations have been also observed with self-report measures of empathy (Zagon & Jackson, 1994). This finding is supported by significant deficits in physiological responses to distress images and fearful facial expression (Blair et al., 2004).

Significant negative correlations have also been found for measures of anxiety (Harpur et al., 1989), and risk of suicide (Verona, Patrick, & Joiner, 2001), although only in relation to factor 1. Total psychopathy scores and factor 2 scores conversely have been found to be either unrelated or in some cases significantly positively correlated with these variables (Sullivan, Abramowitz, Lopez, & Kosson, 2006). Positive correlations have also been found with measures of impulsiveness and sensation seeking, particularly with factor 2 (Harpur et al., 1989), as well as measures of machiavellianism and narcissism, which are predominantly correlated with factor 1 (Harpur et al., 1989; Paulhus & Williams, 2002). These results would appear to indicate that the PCL-R is identifying a distinct group of individuals displaying callous, machiavellian, and narcissistic personality traits combined with anti-social attitudes and behaviour, which is consistent with clinical descriptions of the disorder (Cleckley, 1988). Although some inconsistencies, particularly in relation to anxiety and factor 2, do raise some validity related questions.

High PCL-R scorers appear to display a distinct personality profile, with significant positive correlations with Multidimensional Personality Questionnaire (MPQ) measures of social potency and negative correlations with constraint (Verona, Patrick et al., 2001). This is, however, dependant on specific factors, with factor 1 found to be independently positively correlated with social potency and achievement but negatively with stress reaction. Factor 2, conversely, was found to be uniquely negatively correlated with well-being, achievement and constraint but positively correlated with negative emotionality and all its sub-scales (Verona, Patrick et al., 2001). These results are consistent with what would be theoretically expected based on the psychopathy traits assessed by these factors, although the correlation observed between factor 2 and negative emotionality would appear to imply that this factor is associated with some level of anxiety, which is counter to the traditional conceptualisation of psychopathy (see 1.2.3.3 for further discussion of this issue).

The five factor model of personality seeks to describe personality on the basis the underlying dimensions of conscientiousness, agreeableness, extroversion, neuroticism and openness to experience (e.g., Digman, 1990; Costa & McCrae, 1985). PCL-R psychopathy has been found to be significantly correlated with low agreeableness and conscientiousness. Although again, these scores vary somewhat when factor scores are

considered with factor 1 also displaying a small, but significant positive correlation with extraversion and even conscientiousness, in addition to a negative correlation with agreeableness. In contrast factor 2 displayed a unique positive correlation with neuroticism as well as strong negative correlations with agreeableness and conscientiousness (Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005). This is notable as, based on Cleckley's criteria, negative correlations would be expected between psychopathy and measures of anxiety and neuroticism. This would appear to indicate that factor 2 of the PCL-R may not adequately capture the underlying psychopathy construct.

One of the principle factors in the clinical utility of the PCL-R is its strong predictive validity and correlations with a number of behavioural measures. Specifically, PCL-R defined psychopathy is significantly correlated with increased levels of anti-social behaviour (Harpur et al., 1989) including increased general delinquency (Harpur et al., 1989), substance abuse (Forth et al., 1996), aggression and violent offending (Edens, Buffington-Vollum, Colwell, Johnson, & Johnson, 2002; Vitacco, Neumann, & Jackson, 2005). PCL-R psychopathy has also been found to be one of the best predictors of both general and violent recidivism even after accounting for prior anti-social behaviour (Hemphill, Hare, & Wong, 1998). Psychopathic offenders were found not only to be more likely to reoffend after prison but also to do so sooner and to display greater versatility in the type of crimes committed (Hemphill et al., 1998). There also appears to be a qualitative, as well as quantitative, difference in psychopathic behaviour with PCL-R defined psychopaths more likely to utilise instrumental aggression and commit instrumentally motivated homicides (Cornell et al., 1996; see 2.6).

Overall the PCL-R appears to identify a distinct group of individuals who display a consistent personality and behavioural profile that distinguishes them from non-psychopaths and particularly non-psychopathic offenders. However, arguably, the traits assessed by the PCL-R may be expected to predict these behaviours without these necessarily identifying a distinct syndrome. Specifically, the best predictor for future behaviour is previously observed behaviour. As factor 2 psychopathy contains a number of items explicitly measuring anti-social behaviour, it is unsurprising that this serves as a good predictor of future anti-social behaviour.

More recent research, however, does offer support for the PCL-R conceptualisation of psychopathy as a distinct disorder on the basis of neurological deficits. Specifically, compared to non-psychopathic controls, PCL-R psychopaths have been found to display deficits in response modulation (Hare & Jutai, 1983), including reduced passive avoidance learning (Newman & Kosson, 1986) and reduced processing of peripheral cues (Newman et al., 1997; Hiatt, Schmitt, & Newman, 2004). These deficits have been linked with the psychopaths' poor fear conditioning, impulsivity and failure to learn from experience (Newman, 1998). Psychopaths have also been found to display deficits in the processing of emotion; specifically, they show reduced emotional facilitation in word recognition (Williamson, Harpur & Hare, 1991), reduced sensitivity to fearful facial expressions (Blair et al., 2004), deficits in physiological fear responses (Patrick, Bradley, & Lang, 1993), and reduced physiological reactivity to distressing images (Blair et al., 2004).

This evidence would appear to indicate that the PCL-R is a reliable measure identifying a distinct, albeit somewhat heterogeneous, group of individuals displaying a specific behavioural pattern and personality profile. Questions have, however, been raised in regards to the factor structure of the PCL-R, including the debatable centrality of criminality and overt anti-social behaviour within the PCL-R model, which will be discussed next.

### **1.2.3. PCL-R structure**

There has been considerable debate over the years as to the factor structure of the PCL-R and, by extension the psychopathy construct. Though originally conceptualised as a single, unitary disorder, research evidence appears to indicate that psychopathy may in fact consist of a number of distinct factors with two (Hare, Harpur, Hakstian, Forth, & Hart, 1990; Harpur et al., 1989), three (Cooke & Michie, 2001) and four (Hare, 2003) factor models being advanced. These differing structures have fundamental implications for the underlying conceptualisation of psychopathy and in particular the centrality of antisocial behaviour and criminality. As such, this section will review the evidence in relation to the previously dominant two-factor model before moving on to consider the ongoing debate between the three and four factor models. This section will also cover the issue of

dimensionality, looking at the evidence for and against an underlying taxonomy of psychopathy.

#### **1.2.3.1. The 2-factor model**

The two-factor model divides the PCL-R items into two distinct but correlated factors (Hare et al., 1990), specifically factor 1, consisting of the eight personality items relating to interpersonal and affective deficits of psychopathy and factor 2, consisting of nine personality and behavioural items relating to a ‘chronically unstable and antisocial lifestyle’ (Harpur et al., 1989). Although the original factor analysis was carried out on the PCL (Harpur et al., 1989), it has been effectively replicated on the revised version using exploratory factor analysis (Hare et al., 1990). Both factors have been found to show good internal consistency with alpha values of .84 and .79 for factors 1 and 2 respectively (Hare et al., 1990). Furthermore the two factors were found to display a correlation of .48, indicating that there appears to be a unifying underlying construct of psychopathy. This two factor structure appears to have been replicated using self-report measures of psychopathy, such as the Psychopathic Personality Inventory (PPI; Benning, Patrick, Hicks, Blonigen, & Krueger, 2003) despite the PPI’s distinct lack of antisocial behavioural items. Although in the manual for PPI revised version, use of a three-factor model is also advocated (Lilienfeld & Widows, 2005).

As indicated in the previous section, there appears to be differential correlations between the different psychopathy factors and a variety of external variables (see 1.2.2.1). These findings would seem to support the validity of the distinction between the two factors of psychopathy and indeed appear to indicate the necessity of distinguishing between them when researching psychopathy. This is particularly relevant when studying neurological deficits related to psychopathy where separation of the individual factors is vital in disentangling the varied, and frequently conflicting, research findings (Benning, Patrick, & Iacono, 2005; Sellbom & Verona, 2007).

There has, however, been considerable debate over the centrality of the differing psychopathy factors and whether these even measure a single coherent underlying disorder (Blackburn, 2005). Evidence from item response theory analysis (IRT), which analyses item behaviour in relation to underlying latent variables, indicates that although the PCL-R

does appear to be measuring an underlying super-ordinate construct (Cooke, Kosson, & Michie, 2001), there are nonetheless distinct differences in the amount of information being provided by the individual factors. Specifically, factor 1 was found to provide more information with regards to the latent trait and be more discriminating at higher levels of psychopathy whereas factor 2 was found to predominantly provide information with regards to lower levels of the trait (Cooke & Michie, 1997). These findings would appear to indicate that factor 1 items may be more central to the core psychopathy construct and thus be more capable of discriminating between psychopaths and non-psychopaths. It is important to note, however, that these analyses were carried out on prison samples who present generally high levels of antisocial behaviour. As such, it has been argued that, although central to the psychopathy construct, factor 2 deficits may only serve to discriminate psychopaths from non-psychopaths in non-criminal populations (Hare & Neumann, 2006).

More direct criticisms have been levelled at the 2-factor structure itself and its applicability to the PCL-R data. Exploratory factor analyses have failed to replicate the two factor structure in a number of populations, including substance abusers (McDermott et al., 2000), students (Forth et al., 1996) and female offenders (Salekin, Rogers, & Sewell, 1997; Vitale, Smith, Brinkley, & Newman, 2002). Furthermore, more recent analyses of the factor structure using Confirmatory Factor Analysis (CFA) have consistently found two-factor models of psychopathy to display a poor fit to the data in both offender (Cooke & Michie, 2001), non-offender (Cooke & Michie, 2001; Guy & Douglas, 2006; Skeem, Mulvey, & Grisso, 2003) and youth (Jones, Cauffman, Miller, & Mulvey, 2006) populations. As a result of this in the publication of the revised PCL-R manual, Hare (2003) proposed several alternative models including hierarchical and correlational four-factor models and a two-factor, four-facet model. However, researchers such as Cooke and Michie have argued for the application of a 13-item three-factor model, which would result in the removal of those items relating to overt antisocial behaviour (Cooke & Michie, 2001).

#### **1.2.3.2. The role of antisocial behaviour – three versus four factor model**

The three-factor model was first developed by Cooke and Michie (2001) in response to the conflicting findings and poor CFA fit of the 2-factor model. The model was developed

using a combination of theoretical modelling, exploratory and confirmatory factor analysis. The model is strictly hierarchical with a single psychopathy dimension underlying three distinct, but moderately correlated, psychopathy factors; an affective factor, an interpersonal factor and an impulsive factor. It is important to note that this model includes only 13 of the 20 items as the remaining seven items, all related to antisocial behaviour, displayed poor factor loadings and poor discriminability on the basis of IRT analysis (Cooke & Michie, 2001). The elimination of the antisocial behaviour items remains the main point of contention between the three and four factor models, and relates directly to issues surrounding the underlying psychopathy conceptualisation and the role of criminal behaviour within this.

There exists considerable statistical support for the validity of the three-factor model. Confirmatory factor analyses have indicated that the three-factor model represents a good fit for the data within a variety of populations including male and female offenders (Cooke et al., 2001; Cooke, Michie, & Skeem, 2007; Jackson, Rogers, Neumann, & Lambert, 2002; Skeem, Mulvey, & Grisso, 2003), psychiatric patients (Cooke & Michie, 2001; Hill, Neumann, & Rogers, 2004; Skeem, Mulvey, & Grisso, 2003; Vitacco et al., 2005) and young offenders (Jones et al., 2006; Salekin, Brannen, Zalot, Leistico, & Neumann, 2006). However, there has been considerable debate over the validity of removing seven of the 20 PCL-R items from this model. Hare (2003) has argued that a number of these items were discarded despite displaying similar statistical properties to items retained within the three-factor model. In order to address this, Hare (2003) proposed a four-factor model, replicating the three factors observed within the Cooke and Michie (2001) model, but with the addition of a fourth 'antisocial' factor comprising poor behavioural controls, early behavioural problems, juvenile delinquency, revocation of conditional release and criminal versatility.

Jones and colleagues tested a hierarchical two-factor, four facet model on male and female adolescent offenders and found that though the model presented a borderline moderate fit to the data, this did not present a significant improvement over the two-factor model and the fit of the model to the data was nonetheless considerably worse than that presented by the three-factor model (Jones et al., 2006). Similarly Cooke and colleagues directly examined a four-factor hierarchical model, with a single super-ordinate psychopathy factor

underpinned by the four factors and have consistently found the model to present an inadequate fit to the data (Cooke, Michie, Hart, & Clark, 2004; Cooke et al., 2007). Indeed, in a comparison of the various PCL-R models on a large sample of British offenders, Cooke and colleagues found that, unlike the three-factor models, none of the four-factor models achieve acceptable fit. The four-factor hierarchical model was found to achieve the worst fit whereas the two-factor, four-facet model and the correlational model were found to achieve similar fit levels (Cooke et al., 2007).

Other studies have found the four-factor correlational model to display an adequate fit to the data not only in adult offenders (Hare & Neumann, 2006) but also psychiatric patients (Hill, Neumann, & Rogers, 2004) and youths (Salekin et al., 2006) although the fit statistics presented were of similar or worse fit to those of the three-factor model (Salekin et al., 2006). There has however been some debate over the validity of a correlational model and the theoretical implications this may present. Cooke contends that correlational models do not adequately test the presence of an underlying super-ordinate factor merely indicating that the factors within the model co-occur (Cooke et al., 2007). As such, to effectively test the presence of an underlying common cause, direct comparisons must be carried out between correlational and hierarchical models of the data. Though neither represented an adequate fit in this latter study, the lower fit indices displayed by the hierarchical model draws into question the validity of the correlational model as a representation of a unitary disorder underpinned by a single super-ordinate psychopathy factor (Cooke et al., 2007).

The fundamental core of the debate between the three and four factor models lies with whether antisocial behavioural items should be perceived as down-stream consequences of the core personality deficits of psychopathy (Cooke, Michie, & Hart, 2006; Cooke, Michie et al., 2004) or if these behaviours are central to the symptomology of psychopathy (Hare, 2003). One of the predominant arguments against the removal of the anti-social items is that this is liable to reduce the scale's predictive power in relation to offending behaviour. Research does certainly indicate that this is the case (Skeem et al., 2003), as would be expected given that one of the principle predictors of future offending is past antisocial behaviour. However, the anti-social factor does not exclusively account for the relationship between psychopathy and criminality, with the affective factor significantly correlated to



increases in violent offending (Skeem et al., 2003). Similarly, the impulsive and irresponsible lifestyle factor has been found to correlate uniquely and significantly with non-violent offending behaviour (Hall, Benning, & Patrick, 2004). Furthermore, the primary purpose of the scale remains as the identification of the psychopathy disorder and not criminal risk assessment (Skeem & Cooke, in press). As such, the inclusion of psychopathy items should consider their relation to the psychopathy construct and not uniquely their prediction of anti-social behaviour.

It has also been argued that, on the basis IRT analysis, a number of the antisocial items do nonetheless display considerable discriminatory power, certainly at low-levels of the trait. However, these analyses also indicate that this is only for certain groups, specifically male offenders, with the antisocial factor providing considerably less information for female offenders (Bolt, Hare, Vitale, & Newman, 2004). This is consistent with these items representing a downstream behavioural consequence of psychopathy, which may vary between groups dependant on moderating factors such as gender. Structural equation modelling has furthermore indicated a good fit for a model whereby the removed items are included as consequences of the interpersonal factor, for the 'sexual promiscuity' and 'short-term marital relationships' items, and the impulsive and irresponsible lifestyle factor, for items relating to more general criminality (Cooke, Michie et al., 2004). However, effective longitudinal study is required to systematically prove or disprove this assertion.

Furthermore, it has been argued that the anti-social behavioural criteria lack specificity, with a multitude of avenues leading to its manifestation, of which psychopathy represents but one path (Cooke, Michie et al., 2004). As such, the inclusion of these criteria within the PCL-R may result in considerable diagnostic confusion. Finally, from a theoretical standpoint, it has frequently been asserted by theorists, including Cleckley and, indeed, Hare himself (Hare, 1991; Hare, 1999), that overt criminality is not a necessary condition of the psychopathy construct. Many psychopaths may exist within the population who display many of the underlying psychopathy personality traits without necessarily committing socially deviant acts. Indeed, this claim has been supported by recent research into psychopaths within the corporate workplace (Babiak, 2000; Babiak & Hare, 2006; see

section 1.4). However, these would be poorly identified by items assessing overly anti-social and criminal behaviours.

There would, as such, appear to be considerably more theoretical and statistical support for the three factor model in comparison to the four factor model, and it is arguable that the continued focus on psychopathy within an offender population has resulted in considerable construct drift that the three-factor model appears to redress.

### **1.2.3.3. Criticisms of the PCL-R**

A number of criticisms have been put forward, both in relation to the PCL-R and the Hare psychopathy construct as a whole. Primarily it has been argued that, although the PCL-R may represent an excellent clinical tool for the identification and prediction of risk among forensic populations (Hemphill et al., 1998), it is nonetheless an imperfect measurement instrument for the underlying construct. As such, its use as the de facto definition of psychopathy has resulted in a distinct conceptual drift within the literature (Blackburn, 2005; Lynam & Widiger, 2007). There are a number of predominant criticisms have been raised against the PCL-R conceptualisation of psychopathy including the centrality of antisocial behaviour and criminality within the definition (as discussed in the preceding section), the omission of an anxiety criteria (e.g., Lynam & Widiger, 2007) and its questionable applicability across gender and culture (Cooke, 1997; Forouzan & Cooke, 2005; Verona, Joiner, & Patrick, 2001). Issues regarding antisocial behaviour within the PCL-R have been discussed in depth in the previous section, whereas gender differences will be discussed at length further on in this text (see section 1.4). As such, this section will focus on arguments relating to anxiety and its questionable cross-culture generalization.

It has been argued that though the PCL-R claims to assess a psychopathy construct based on Cleckley's criteria, it does not capture this construct adequately. Indeed Rogers (1995) claimed that of Cleckley's 16 criteria, only seven were adequately represented within the PCL-R. Though arguably some of these are questionable in their use as diagnostic criteria (e.g., 'suicide rarely carried out'), and others may nonetheless be captured obliquely by the PCL-R items (e.g., 'unreliability' and 'failure to learn from experience'), the distinct omission of any criteria relating to a lack of anxiety is more questionable. Indeed, although the interpersonal and affective factors of the PCL-R have generally been found to display a

small but significant negative correlation with measures of anxiety (Hall et al., 2004), PCL-R total scores and specifically those relating to antisociality have generally been found to be independent from, if not positively correlated with, anxiety (Hall et al., 2004). Lack of anxiety has nonetheless been consistently identified as central to the psychopathy construct both in clinical descriptions (Cleckley, 1988; Lykken, 2006), expert prototype ratings (e.g., Lynam & Widiger, 2007) and in the development of self-report of the Psychopathic Personality Inventory self-report measure (PPI; Lilienfeld & Andrews, 1996). The presence of anxiety has also been found to affect results of laboratory studies of psychopathy deficits with deficits in both response modulation (Newman & Schmitt, 1998) and affective reactions (Sutton, Vitale, & Newman, 2002) found only in low-anxious but not high-anxious psychopaths. However, it has been argued that the anxiety observed within PCL-R psychopaths may be a result of chronic exposure to stressors resulting from the consequences of their behaviour (Lilienfeld, 1994). Anxiety within PCL-R psychopaths does appear to be related predominantly to the antisocial behaviour items (Harpur et al., 1989; Verona, Patrick et al., 2001), which would support this hypothesis. Nonetheless, the evidence of laboratory studies would appear to indicate that some measure of anxiety disposition or lack thereof, is important to the psychopathy construct. Thus raising questions as to the validity of the PCL-R.

There has been some argument that the PCL-R assessment of psychopathy may not be valid outside of the North American male population on which it was developed. For example, cross-cultural comparisons between PCL-R scores in American compared to European populations have indicated that European prisoners consistently score lower on the PCL-R (Cooke, 1997). IRT analysis has indicated that this may be due to certain items, specifically those relating to interpersonal style, functioning differently between European and American samples with the same latent trait level resulting in lower PCL-R scores on these traits within UK samples (Cooke, Michie, Hart, & Clark, 2005a). It has been argued that these differences may be the product of rater effects, with European raters displaying a tendency to score individuals lower on these items. However, a comparison of PCL-R ratings using both Canadian and Scottish raters on offenders taken from both these countries would appear to indicate this is not the case (Cooke, Hart, & Michie, 2004). These findings would appear to indicate that the operationalisation of certain traits within

the PCL-R fails to adequately capture the behavioural manifestation of psychopathy across cultures.

#### **1.2.3.4. Dimension vs. taxonomy**

Related to the issues surrounding the PCL-R validity, and in particular the use of the cut-off score, the existence of an underlying psychopathy taxon has long been a source of debate. The PCL-R traditionally treats the concept as if it was taxonomical, assigning a cut-off score to differentiate those who are 'psychopaths' from those who are not. However, it is important to note that this cut-off score is entirely arbitrary and the research evidence would appear to primarily support the conceptualisation of psychopathy as a dimension.

Harris and colleagues (1994) were the first to study the taxonomical nature of psychopathy, conducting a taxonometric analysis of the PCL-R data from 600 forensic psychiatric patients. Although they came to the conclusion that the data did support an underlying taxonomy, the validity of this conclusion is questionable for a number of reasons. Firstly, a taxon was only supported for items relating to antisocial lifestyle and childhood behavioural problems not those relating to the interpersonal and affective deficits of psychopathy. These findings are consistent with research supporting a taxon underlying ASPD which shares many of the same antisocial behaviour criteria (Skilling, Harris, Rice, & Quinsey, 2002). As such, it is arguable that the taxon detected may be one relating to general criminality and antisocial behaviour rather than psychopathy per se. Secondly, a number of methodological issues arose from this study, primarily the use of only file data to score the PCL-R, which has been found to result in a poor representation of the scale's interpersonal, and affective items, which may have distorted results. The use of psychiatric patients, many of whom were found 'not guilty by reason of insanity' is also liable to have distorted the data. Indeed, it has been argued that the taxon detected may have in fact been that underlying schizotypy (Edens, Lilienfeld, Marcus, & Poythress, 2006). Finally, the PCL-R items were scored on a dichotomous, as opposed to 3-point, scale. All these issues are liable to have distorted the data and render the conclusions drawn questionable at best.

More recently, Edens and colleagues performed a further taxonometric analysis of the PCL-R using data from over 800 offenders, assessed on the PLC-R using both file and interview data (Edens et al., 2006). The data was found to support a dimensional as

opposed to taxonomic model of psychopathy, even when the analysis used by Harris et al (1994) was replicated exactly. These findings were further supported by Marcus and colleagues, who used the PPI on a large community sample and similarly found no evidence of an underlying taxon, with all the data appearing consistent with a dimensional model (Marcus, John, & Edens, 2004). Although these analyses were all performed on exclusively, or almost exclusively, male samples, it is however doubtful that a disorder would be dimensional for one gender but categorical for the other, although it is clear that these findings should be replicated using a female sample.

This research would appear to support the assumption made by the personality model, that psychopathy is a dimensional construct. Relevant to the current thesis, the dimensional nature of psychopathy supports the validity of conducting research into psychopathy within a normal population. Indeed, this would render questionable the practice within much research of dividing participants into high and low psychopathy groups, since this is liable to result in both a loss of information and statistical power (Lilienfeld, 1994).

#### **1.2.4. Psychopathy conceptualisation: conclusions**

The evidence would appear to support a conceptualisation of psychopathy as a dimensional disorder of personality, best represented by Cooke and Michie's three factor model of psychopathy (Cooke & Michie, 2001). This model comprises interpersonal, affective and impulsivity deficits, underpinned by a super-ordinate psychopathy factor which will often, but not exclusively, manifest itself behaviourally in criminal and anti-social behaviour. As such, this factor model will be used as the basis for the current research.

#### **1.3. Psychopathy and empathy**

Psychopathy has long been conceptually linked to the presence of affective and in particular empathy deficits. Empathy has been defined as a construct consisting of two over-lapping components; an affective component consisting of "feeling an appropriate emotion triggered by seeing or learning of another's emotion" and a cognitive component defined as "understanding and/or predicting what someone else might think, feel or do" (Baron-Cohen & Wheelwright, 2004). As detailed earlier (see 1.2.1), low levels of empathy form a central part of the clinical description of psychopathy put forward by

Cleckley (1988) and the definition of psychopathy delineated by Hare's PCL-R (Hare, 1991; Hare, 2003).

Blair has theorised that such affective deficits may be central to the psychopathy disorder itself, forming the underlying aetiology underpinning the psychopathic personality traits (Blair, Mitchell, & Blair, 2005). Central to this theory of psychopathy is that social animals such as humans find the distress of others aversive and thus will seek to act in a way that will help alleviate it, thus empathy acts as a violence inhibition system (Blair et al., 2005). However, due the empathic deficits present in psychopathy, psychopaths do not experience this reaction to others distress and pain and, as such, will not show the normal aversive reaction to moral and in particular violent, transgressions (Blair et al., 2005). This will arguably result in high levels of aggressive behaviour as such behaviour may be viewed as the most expedient means of achieving their goals.

Certainly, research has consistently found there to be negative associations found between psychopathy and self-report measures of affective empathy (Flight & Forth, 2007; Hall et al., 2004; Sandoval, Hancock, Poythress, Edens, & Lilienfeld, 2000). In addition, psychopaths, and children with psychopathic-traits, do not appear capable of distinguishing between moral transgressions, those seen as morally wrong due to the harm they cause to others, and conventional transgressions, which are wrong only in such that society decrees them to be so (Blair, Jones, Clark, & Smith, 1995), further supporting a possible empathy deficit. Indeed, psychopaths have been found to display a significant association with proactive, goal-directed forms of aggressive behaviour (Cornell et al., 1996; Miller & Lynam, 2003) and this would particularly appear to be due to their low-levels of affective responding (Flight & Forth, 2007). This would further support that psychopaths lack of empathy leads to an increase in aggression, and in particular aggression used instrumentally, as a means to an end. However, this only explains psychopaths increased levels of proactive aggression not their increased use of reactive aggression. Indeed, generally the deficits accounted for by the integrated emotion systems theory have been predominantly related to factor 1 of the PCL-R (Benning, Patrick, Salekin, & Leistico, 2005; Gordon, Baird, & End, 2004).

It is arguable, however, that the use of self-report measures of empathy may lack validity, certainly given that low-levels of empathy is one of the items used in to assess psychopathy itself. There is nonetheless also considerable behavioural evidence of empathy deficits among psychopaths. Specifically, psychopaths have been found to display deficits in recognising fearful facial expressions (Besel, 2007; Blair et al., 2004) and vocal affect (Blair et al., 2002). Although it is notable that such deficits have been difficult to replicate among non-criminal psychopathy samples (Gordon et al., 2004), unless very short presentation times are used (Besel, 2007). This may possibly indicate some level of compensatory processes among non-criminal psychopaths, a hypothesis that neuroimaging work with non-criminal psychopaths would appear to support (Gordon et al., 2004). Furthermore, deficits in skin conductance responses to distress images have also been observed, in particular reduced response in adults and children to observed distressed facial expressions (Blair, 1999; Blair, Jones, Clark, & Smith, 1997) and to observing confederates receiving electrical shocks (Aniskiewicz, 1979). This further supports that the deficit in empathic responding among psychopaths is related to affective responses to others' distress rather than merely issues with emotional identification.

These findings also highlight the distinction in deficits between cognitive forms of empathy (the ability to read others' emotions on an intellectual level) and affective empathy (understanding and identifying with others affect on an emotional level). It has been argued that although psychopaths display significant deficits in affective empathic responding with, for example, reduced responsiveness to distress images (e.g., Blair, 1999; Blair et al., 1997), they have unimpaired cognitive empathic processes. Certainly, it has been found that psychopaths do not differ from controls on tests of theory of mind or cognitive empathy (Richell et al., 2003), which would appear to support this distinction. However, this does then raise questions as to the observed deficits in psychopaths with regards to facial expression identification, specifically fearful facial expression identification (Blair, Colledge, Murray, & Mitchell, 2001; Blair et al., 2004). It has however been argued that emotional facial expression identification may operate a fast affective identification route, linked in with the subcortical affective system particularly the amygdala, as well as a more cognitive route (Blair, 2008). Indeed, recent research has indicated that the observed identification deficits disappear should psychopaths be instructed to concentrate on the target's eyes (Dadds et al., 2006). Given that identification

of emotions via the eyes has been strongly associated with cognitive empathy (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), this would offer further support that it is only the affective, not the cognitive path, which is impaired. Indeed, as noted above, for non-criminal psychopaths not only were these deficits only observable at very short presentation intervals (Besel, 2007), approximately 50 ms, but fMRI scans indicated that high psychopathy scorers use only a cognitive identification path rather than the emotional identification path used by controls (Gordon et al., 2004). This would as such appear to support the contention that psychopaths do not display cognitive empathy deficits, and indeed may even use cognitive empathy processes in a compensatory fashion. Certainly this would fit in with clinical descriptions of psychopaths who appear to understand emotions on a cognitive but not affective level (Cleckley, 1988).

### **1.3.1. Aetiological Theories**

#### **1.3.1.1. Newman's response modulation hypothesis**

Newman (Newman & Lorenz, 2003) theorised that the observed empathic deficits in psychopathy may be underpinned by an attentional deficit. Newman's response modulation hypothesis theorises that classic psychopathic traits, including a poverty of affective responses but also impulsivity and anti-social behaviour, result from an inability to integrate peripheral cues when engaged in goal-directed behaviour (Newman, 1998). The specific error is theorised to lie with *response modulation*, the automatic shift of attention from the current goal to the integration of relevant peripheral information. This normally enables the evaluation and possible modification of the ongoing activity (Newman, Brinkley, Lorenz, Hiatt, & MacCoon, 2007). This accounts for their increased levels of impulsivity and antisocial behaviour since affective information will often be peripheral to their primary goal (Newman & Lorenz, 2003).

There has been some support for this theory based on differences in passive avoidance learning, i.e., the inhibition of responding to the presentation of stimuli resulting in punishment (e.g., Lykken, 1957; Newman & Kosson, 1986), in particular in relation to how peripheral the punishment cues are (Arnett, Smith, & Newman, 1997; Newman, Wallace, Schmitt, & Arnett, 1997b). Further support has been argued based on reduced facilitation effects on lexical decision tasks observed based on not only emotional



peripheral cues (Lorenz & Newman, 2002; Williamson, Harpur, & Hare, 1991) and priming (Blair et al., 2006) but also other ‘secondary’ linguistic features of words (Kiehl et al., 1999). However, research has consistently failed to find differences in semantic priming within psychopathic offenders (Blair et al., 2006; Brinkley, Schmitt, & Newman, 2005). As such, the linguistic evidence for general attentional deficits in psychopathy is mixed at best, although there is strong evidence of deficits in the processing of affective linguistic information.

There have also been a number of studies directly evaluating the presence of attentional deficits among psychopathic offenders. These have resulted in mixed results, some supporting a deficit in attention shifting, at least in low-anxious psychopaths (Hiatt, Schmitt, & Newman, 2004; Newman, Schmitt, & Voss, 1997), others failed to find any difference in performance from normal controls (Brinkley, Schmitt, & Newman, 2005) or only under very specific circumstances (Hiatt et al., 2004). These findings raise questions about the consistency and specificity of the deficit and as such it’s applicability as the primary explanation for observed psychopathic traits. Blair (2005) has furthermore criticised the model on the basis that it has questionable compatibility with modern theories of attention. There appears to be too many inconsistencies regarding psychopath’s attentional processes under different conditions that cannot be sufficiently construed within the framework of current, well-supported, theories of attention.

### **1.3.1.2. Integrated Systems Model**

Blair has argued that empathy deficits, along with other psychopathy related affective deficits such as fear responding, have a neurological basis, specifically resulting from deficits in the amygdala. Indeed, it has been hypothesised that these genetically determined amygdala deficits may be the central underlying neurological basis of psychopathy (Blair et al., 2005; Blair, 2001; Blair, 2006). Certainly with respect to empathic responding, research in non-psychopathic populations has supported the role of the amygdala in empathic responding to distress stimuli with increased amygdala activation in response to both sad (Blair, Morris, Frith, Perrett, & Dolan, 1999) and fearful (Whalen et al., 1998) facial expressions. Similarly, community-based psychopaths have been found to display significantly less activation of the amygdala during the recognition of emotional facial expressions (Gordon et al., 2004). Interestingly, however, high scoring non-criminal

psychopaths in this latter study were found to display increased activation in brain areas dealing with perception and cognitive processing. Given the amygdala's role in affect relationships, this would appear to indicate that high psychopathy scorers process affective facial expressions on the basis of cognitive rather than affective associations, unlike low scoring participants.

Furthermore, recent twin studies using both adults and children have indicated a significant influence of genetic heritability on the development of psychopathic traits, supporting the genetic component of this theory. Studies using PPI scores for adults (Blonigen, Carlson, Krueger, & Patrick, 2003), and callous-unemotional traits for children (Viding, Blair, Moffitt, & Plomin, 2005) have both found that genetic factors display a significant influence on the development of psychopathic traits, accounting for over half the variance. However, the development of callous-unemotional traits was found to be only minimally influenced by environmental factors common to both siblings during childhood, such as parenting, home environment or socio-economic status (Viding et al., 2005). This would appear to indicate that the development of psychopathic traits, and in particular underlying empathic deficits is predominantly due to genetic rather than socio-environmental factors.

However, there is evidence that deficits in response inhibition have been found to be predominantly related to factor 2 (Sellbom & Verona, 2007), which is similarly more related to reactive aggression use. Blair has been theorised as such that the full psychopathy disorder, as assessed by the PCL-R, may be underpinned by a dual-deficit model. Specifically, a deficit in amygdala functioning underpins the 'core' affective and interpersonal features of factor 1 whereas a second deficit, arguably placed in the orbito-frontal cortex, relates to the impulsivity and antisocial behaviour underpinning factor 2 (Blair et al., 2005; Blair, 2006). It has been argued in particular that this deficit may emerge from the anti-social lifestyle engaged in by many psychopaths (Blair et al., 2005; Blair, 2006), if this was the case it would be expected to be less evidence within non-criminal psychopathic populations. Certainly, in contrast to amygdala deficits, this particular deficit has been less evident in children with psychopathic traits (Blair et al., 2005). However, Blair also put forward an alternative that such orbito-frontal deficits may emerge over time due to connections between amygdala and this section of the brain.

### **1.3.2. Socio-environmental causes – Attachment theory**

There have, over the years, been a number of theories linking the presence of psychopathic personality traits to socio-environmental stressors during childhood. In particular, these have been reported to be familial factors such as maternal deprivation, poor parental supervision, inconsistent and harsh discipline, and abusive or neglectful parenting styles (Bowlby, 1951; McCord & McCord, 1964; Robins, 1966).

Attachment theory has been linked to the development of psychopathic personality traits and in particular empathy deficits underpinning psychopathy. It has been theorised that as poor attachment in childhood results in difficulties forming attachments in adulthood, that it may also result in a more general failure to form empathic attachments with others (Saltaris, 2002), thus leading to the empathy deficits apparent within psychopathy. It is also theorised more specifically that secure attachments are necessary for the appropriate development of compassion towards others and thus forming an appropriate morality system (Saltaris, 2002). Thus the disrupted attachments in the childhood of psychopaths accounts for their lack of moral socialisation. Certainly, poor attachment to others forms a core feature of psychopathy {Hare, 1991 #407; Hare, 2003 #234}, which lends support to this hypothesis. However, there is strong evidence that other populations with underlying attachment deficits, such as autistic patients, do nonetheless display intact affective empathy responses {Blair, 2005 #74}, indicating that at least some aspects of empathy are developed separately from attachment. As a result, it is arguable that these attachment difficulties may be the result of underlying psychopathy deficits rather than a causal factor.

Indeed, evidence into the impact of socio-environmental factors on psychopathy has generally been rather mixed. In the only longitudinal study to look at the effect of childhood socio-environmental factors on psychopathy, Farrington found that a number of psycho-social factors were significantly related to increased PCL:SV scores at 45 years of age, including poor parenting, low socio-economic status and poor academic achievement (Farrington, 2006). However, these have been found to be predictors of chronic offending (Lipsey & Derzon, 1998), which forms a significant part of the PCL:SV factor 2. Therefore, it is arguable that this finding may be due to the relationship between these factors and more general criminality rather than specifically psychopathy per se.

Furthermore, research has indicated that the higher the total psychopathy score, the lower the impact of environmental factors on these scores (Marshall & Cooke, 1999). Given that the 'high' psychopathy group in this study scored relatively low compared to the official cut-off, these findings may predominantly reflect the impact of socio-environmental factors on use of anti-social behaviour and offending rather than on the core psychopathy deficits.

There appears to be more support for the impact of poor parenting practices, such as parental supervision and inconsistent/overly harsh discipline. A number of retrospective studies finding increased levels of these factors among psychopaths (Forth & Burke, 1998; Marshall & Cooke, 1999), however there is an issue of causation involved. Specifically it is questionable as to whether poor parenting may cause psychopathic traits or whether psychopathic children may elicit punitive reactions through frustration. The impact of parenting was however found to decrease with increased psychopathy scores (Marshall & Cooke, 1999). Indeed, research by Wootton and colleagues (1997) indicates that use of different socialization practices with high-callous/unemotional children was unrelated to their chance of developing anti-social behaviour. These findings would thus appear to indicate that though poor parenting may cause non-psychopathic children to develop some psychopathy like features, they have less impact on children with a biological pre-disposition towards psychopathy.

### **1.3.2.1. Conclusions**

Overall, the research would appear to support a significant deficit in empathy responding among psychopaths and this would appear to be underpinned by innate, and genetically determined, deficits in amygdala functioning. Furthermore, although psychopaths would appear to have significant deficits within affective empathic responding, their cognitive empathic processes appear to be intact, thus allowing them to identify what others are feeling on a cognitive level but not respond to this on an affective level.

## **1.4. Female psychopathy**

Until recently, most research into psychopathy has focused predominantly on male samples, and specifically male offenders. More recently, research has started to look into

the presence of psychopathy among females and despite a growing body of research evidence there remains considerable debate as to the prevalence and behavioural manifestation of psychopathy within this population. The current section will seek to briefly review the research into psychopathy within female samples, offering an overview of its prevalence, measurement issues, and external correlates including the possible differential behavioural manifestations of the disorder which may be present among females. As will be discussed later in the thesis (see 2.6), differences in the behavioural manifestation of psychopathy between genders may be of particular relevance to the relationship between psychopathy and indirect forms of aggression.

#### **1.4.1. Prevalence and assessment issues**

Research has generally found female offenders to display significantly lower prevalence levels of psychopathy compared to males when using the recommended PCL-R cut-off. Prevalence rates have been found to vary between 6% (Jackson et al., 2002) and 17% (Warren et al., 2003) for female offenders, dependant on the specific sample and assessment method used. In comparison, psychopaths have been found to make up between 25% and 30% of the male offender population (Hare, 1991; Hare, 2003). Studies directly comparing male and female prevalence rates have also consistently indicated significantly higher prevalence rates among male offenders (Grann, 2000; Strand & Belfrage, 2005). This would appear to suggest that within the prison population the prevalence of psychopathy among female offenders is approximately half that for males. Female offenders have also been shown to present with significantly lower total and factor scores on the PCL-R and PCL:SV (Forth et al., 1996; Grann, 2000; Vitaro & Brendgen, 2005). Arguably, this difference may, in part, be due to an over emphasis on anti-social behaviour on the PCL-R scales, as there is some evidence that female psychopathy may be less likely to manifest itself in overt anti-social behaviour (Forouzan & Cooke, 2005). However, similar gender differences have also been found using the PPI, which specifically measures only the personality, not behavioural, components of psychopathy (Uzieblo, Verschuere, & Crombez, 2007). This would appear to indicate that there is an underlying gender difference in the prevalence of psychopathic personality traits between males and females.

However, as most psychopathy measures were developed and validated on male samples, it has been argued that such measures may not be as valid in capturing the female form of the disorder, accounting for the lower prevalence rates observed among females. Nonetheless, both the PCL-R and PPI total scores have been found to display good inter-rater reliabilities (Vitale & Newman, 2001) and good internal consistency, respectively, among female samples (Berardino, Meloy, Sherman, & Jacobs, 2005; Vitale, Smith, Brinkley, & Newman, 2002). However, lower internal consistencies were observed for both PPI and PCL-R factor scores, in particularly PCL-R factor 2, which was found to only have an alpha of .57 with female offenders (Berardino et al., 2005).

Although the two-factor model appears to display a poor fit for female psychopathy (Jackson et al., 2002; Salekin, Rogers, & Sewell, 1997; Warren et al., 2003), this model has also been found to display a similarly poor fit in males, indicating that this is an issue with the underlying model rather than a gender difference in the structure of psychopathy itself (see section 1.2.3). Indeed, confirmatory factor analyses have indicated that the three-factor model displays a good fit for females as well as males (Jackson et al., 2002; Skeem et al., 2003; Warren et al., 2003). Indeed, the fit of this model to female psychopathy was not found to be significantly different to that found for males (Skeem et al., 2003). Results with the four-factor structure are somewhat more equivocal, with some studies indicating an acceptable fit for female data (Vitacco et al., 2005), whereas other studies have indicated that model fit is questionable at best (Warren et al., 2003). However, this appears to replicate findings observed with male samples (Cooke et al., 2007) and may represent underlying problems with the four-factor model rather than gender differences in the structure of the psychopathy construct.

Analyses of the PCL-R using advanced item response theory statistical techniques have indicated that female offenders display significantly different test functioning compared to males, particularly in relation to the antisocial facet (Bolt et al., 2004). This means that for the same level of underlying psychopathy, female offenders present different manifest scores on certain items, in particular lower scores on items related to direct antisocial behaviour (Bolt et al., 2004). Furthermore, these items were found to display reduced discrimination in female samples, indicating that they differentiated poorly between psychopaths and non-psychopaths. Similar findings were replicated using the PCL:SV,

with significant gender differences found in test functioning (Strand & Belfrage, 2005). These findings would appear to indicate that certain aspects of the PCL-R, in particular the antisocial items, fail to adequately assess the female manifestation of the psychopathy disorder. However, it is important to note that these findings do not fully account for the differences in prevalence between male and female psychopathy. Specifically, even when the cut-off score is reduced to allow for the differential item functioning, the prevalence of female psychopathy is still considerably lower than that observed for males (Jackson et al., 2002). Furthermore, female psychopaths do present with significantly lower scores on factor 1, despite this factor displaying no differential item functioning (Forth et al., 1996; Uzieblo et al., 2007).

The construct validity of psychopathy assessments, and in particular the PCL-R, has nonetheless been well validated on female offender and psychiatric samples. Strong correlations have been found between psychopathy and the Cluster B personality disorders (Salekin, Rogers, & Sewell, 1997; Warren et al., 2003). Although, unlike with male psychopathy (Hare, 1991), this relationship appears to be equal to borderline and histrionic as well as anti-social personality disorders (Salekin, Rogers, & Sewell, 1997). Correlations with personality variables similarly replicate those seen with males (Chapman, Gremore, & Farmer, 2003; Vitale et al., 2002). These findings support the validity of the psychopathy construct with female offenders, at least with regard to personality variables.

More mixed findings have, however, been found with behavioural correlates. In particular, female psychopathy has been found to correlate with non-violent recidivism (Warren et al., 2005), criminal versatility (Forth et al., 1996) and property offences (Vitale et al., 2002), similarly to males. However, the results with violent offending and recidivism are less consistent in their support (Vitale et al., 2002; Warren & South, 2006; Warren et al., 2005). Furthermore, recidivism among female psychopaths has only been found to correlate with factor 1 scores not factor 2, in contrast to male offenders (Salekin, Rogers, Ustad, & Sewell, 1998). It has been suggested that these results may, in part, be related to gender differentiated behavioural manifestations of psychopathy.

#### **1.4.2. Differential behavioural manifestations?**

It has been theorised that despite sharing similar underlying traits male and female psychopaths may display different behavioural manifestations of the disorder (Forouzan & Cooke, 2005). Certainly, both the conflicting findings in relation to violence and psychopathy and the existence of strong differential item functioning in the behavioural based psychopathy items would appear to support this. Forouzan conducted a qualitative study on female psychopaths and found a number of gender based differences in their manifestation of the disorder (Forouzan & Cooke, 2005). Specifically, female psychopaths were found to be more flirtatious in their manipulations and more liable to manifest impulsiveness as attention-seeking and self-destructive behaviour as opposed to violence and aggression (Forouzan & Cooke, 2005). This is consistent with the mixed findings regarding the relationship between female psychopathy and aggression and supports findings linking female psychopathy with Borderline Personality Disorder (Warren et al., 2003), which shares many of these traits. It is arguable that this may be due to observed gender specific manifestations of aggression, with females preferentially aggressing in an indirect fashion (see section 2.5). Forouzan also indicated that symptoms of glibness/superficial charm were found to be more muted among women. These traits have previously been found to be vulnerable to cultural differences (Cooke, Hart et al., 2004) and, as such, this difference may be the result of gender differences in socialisation.

Finally, it has been argued that certain traits may have different underlying psychological meanings dependant on gender despite displaying similar behavioural manifestations. Specifically, promiscuous sexual behaviour has been theorised to relate more to the female psychopath's manipulative and parasitic lifestyle as opposed to sensation seeking as for males (Quinsey, 2002). Indeed, this may serve to explain results from factor analyses which have indicated that promiscuity loads on to factor 2 for females, but neither factor for males (Vitale et al., 2002).

Related to this, it has also been theorised that gender differences in behavioural manifestation may also be evident in the relations between psychopathy and co-morbid personality disorders. Anti-social personality disorder (ASPD) may be the male manifestation of underlying psychopathic traits whereas disorders such as histrionic



personality disorder (HPD) may represent a more female manifestation of these traits (Cale & Lilienfeld, 2002a). HPD is a personality disorder characterised by attention seeking, seductiveness and over emotionality. Certainly, this disorder appears to show a number of overlapping traits with classical descriptions of psychopathy, such as impulsivity, superficiality, excitement seeking, recklessness, seductiveness and manipulateness (Cale & Lilienfeld, 2002a) as well as having a distinct female bias in diagnosis similar to the male bias for anti-social personality disorder. However, this disorder also contains a number of criteria directly contradictory to the psychopathy disorder such as over-emotionality and increased anxiety. Research using structural equation modelling techniques has identified that psychopathy does underpin both ASPD and HPD and that this relationship is moderated by gender (Hamburger, Lilienfeld, & Hogben, 1996). This may reflect to more general gender differences in anxiety levels, specifically that females have often been found to display higher levels of anxiety disorders than males (American Psychiatric Association, 2000). However, the antisocial behaviour aspects of psychopathy have also been associated with increased anxiety (Hall et al., 2004), thus this finding may simply reflect correlations between factor 2 psychopathy and anxiety rather than gendered manifestations of the disorder. More recent research has failed to replicate this finding (Cale & Lilienfeld, 2002a), although this study did use a somewhat unrepresentative sample consisting entirely of theatre actors. Interestingly, a high prevalence of histrionic personality disorder has also been associated with possible psychopathic traits among male business managers (Board & Fritzon, 2005). This may indicate that ‘successful’ male psychopaths share similar behavioural manifestations of the disorder to psychopathic females, in particular, as will be discussed below, a preference towards indirect over direct aggression use.

### **1.4.3. Female psychopathy: Conclusions**

In conclusion, the evidence would appear to indicate that the underlying construct of psychopathy is both a valid and reliable disorder among females. However, its prevalence and behavioural manifestations do appear to differ on the basis of gender. In particular, females are found to display significant lower levels of psychopathy than males, and are more liable to manifest the disorder in a manipulative and indirect manner than through overt anti-social behaviour.

### **1.5. Non-criminal psychopathy**

Theorists have long proclaimed the existence of ‘successful’ or sub-clinical psychopaths: individuals displaying the personality and affective characteristics of psychopathy but without manifesting criminal behaviour (Cleckley, 1988; Hare, 1999). Indeed, it has even been theorised that psychopathic personality traits may be adaptive in certain situations. In particular, it has been claimed that psychopaths may do particularly well in high-powered corporate settings where their skills as callous and ruthless manipulators may be highly sought-after (Babiak & Hare, 2006; Hare, 1999). However, up until recently, research has predominantly focused on forensic samples, although this has started to change. In part, this is due to the more recent focus on psychopathy as a dimensional construct which may manifest itself as a facet of normal personality (e.g., Edens et al., 2006; Miller, Lynam, Widiger, & Leukefeld, 2001; see section 1.2.3.4). Much of this work has concentrated on the development and validation of psychopathy assessment tools within a community sample as prior assessment methods had been developed exclusively for use with offender samples (Hare, 1991; Hare, 2003). Unfortunately, many of these instruments have been found to display a strong bias towards the anti-social behavioural elements of psychopathy (Forth et al., 1996; Levenson, Kiehl, & Fitzpatrick, 1995; Williams, Nathanson, & Paulhus, 2003), although others do display more promising results (Lilienfeld & Andrews, 1996; Reise & Wink, 1995; see section 3.1).

It has been put forward that the research into non-criminal psychopathy can be summarised into three basic themes (Hall & Benning, 2006). The first is that noncriminal psychopathy is a less severe manifestation of the disorder. As such, all differences between criminal and noncriminal psychopathy will be quantitative not qualitative in nature. The second view is that non-criminal psychopathy is a differential behavioural manifestation of the same underlying personality traits. This view focuses on how these psychopathic traits may be manifest and what moderating or compensatory factors may be involved. The third view is based on the dual-process theory of psychopathy and contends that non-criminal psychopathy emerges due to a differentiation between the underlying aetiological causes of the interpersonal/affective and anti-social aspects of psychopathy. The three views are not necessarily incompatible; however, they have resulted in different focuses and methodologies for research. The current section will briefly review research looking at

non-criminal psychopathy both as a sub-clinical and a differential behavioural manifestation of the disorder, before reviewing briefly the findings from neurological research and its relevance for the dual-process viewpoint.

### **1.5.1. Non-criminal psychopathy as sub-clinical version of the disorder**

The concept that non-criminal psychopathy should be considered as a sub-clinical manifestation of the disorder can be traced back to the work of Cleckley (1988). It is based on the principle that antisocial behavioural traits are an intrinsic part of psychopathy; any manifestation of the disorder without criminal behaviour will, as such, be due to a less severe level of pathology. Resultant from this viewpoint, psychopathy within community samples is studied dimensionally on the principle that levels of anti-social behaviour will increase in frequency and severity with the presence of increased levels of psychopathic traits.

The concept of aberrant self-promotion (ASP) is an attempt to conceptualise sub-clinical psychopathy among community samples (Gustafson & Ritzer, 1995). ASP is defined as a personality profile consisting of high scores on measures of narcissism and self-reported psychopathy and low scores on socialization and social desirability measures (Pethman & Erlandsson, 2002). Cluster analyses in both US and Scandinavian samples have indicated this profile represents a distinct cluster and is present in approximately 10% of the population (Gustafson & Ritzer, 1995; Pethman & Erlandsson, 2002). This would appear to indicate that the presence of a sub-clinical manifestation of psychopathy can be observed within the normal population. However, scores on the psychopathy measures within the group were lower than those observed with criminal psychopaths (Gustafson & Ritzer, 1995) indicating that this is nonetheless a reduced manifestation of the disorder. Although, it is arguable that this difference in scores may be more due to the anti-social behavioural items than lower levels of underlying psychopathy traits.

More generally, studies using the PPI in college students have found psychopathic personality traits to correlate strongly with measures of anti-social personality disorder (Benning, Patrick, Salekin, & Leistico, 2005c; Cale & Lilienfeld, 2002a; Gordon, Baird, & End, 2004; Hamburger et al., 1996), conduct disorder (Benning, Patrick, Blonigen, Hicks,

& Iacono, 2005) and adult anti-social behaviour (Benning, Patrick, Blonigen et al., 2005). This has been found even when using measures focusing primarily on the interpersonal and affective facets of psychopathy. Strong correlations have also been observed between non-criminal psychopathy and histrionic personality disorder (Cale & Lilienfeld, 2002a; Hamburger et al., 1996), which has not been found with offender samples (Hare, 1991). As mentioned in the previous section, this relationship does appear to relate predominantly to female psychopathy (Hamburger et al., 1996), although business managers with high levels of psychopathic traits have also been found to display significant levels of histrionic personality traits (Board & Fritzon, 2005), as do male actors (Cale & Lilienfeld, 2002a). This would appear to indicate that although some aspects of non-criminal psychopathy may represent less severe manifestations of the disorder, there are also differences in the behavioural manifestation of these traits in non-offender samples.

### **1.5.2. Noncriminal psychopathy as a moderated expression of the disorder**

An alternative view is that non-criminal psychopathy may be linked to similar levels of underlying affective and interpersonal deficits but that the expression of these may be moderated by external factors such as intelligence or socio-economic status and there is some evidence to indicate that this is the case. Certainly it has been theorised that intelligence may moderate the psychopaths' expression of aggression with higher levels of intelligence leading to more use of indirect forms of aggression which, although harmful, are not criminal (Porter & Woodworth, 2006). Arguably the increase in this form of aggression may be due to both increased aptitude, resulting from higher intelligence or social skills, and increased opportunity given the higher network densities present within business settings.

There have been a small number of studies attempting to study non-criminal psychopaths, as opposed to the dimensional study of psychopathic traits. All of these studies have found that individuals high on psychopathy within the community were also found to display levels of past antisocial and criminal behaviour similar to those seen in psychopaths taken from offender samples (Belmore & Quinsey, 1994; DeMatteo, Heilbrun, & Marczyk, 2006; Widom, 1977). However, with the exception of DeMatteo, these studies utilised psychopathy criteria focusing almost exclusively on the anti-social components.

Furthermore, all studies used advertisements emphasising aspects of psychopathy relating to impulsivity and sensation seeking which is liable to have biased results towards individuals displaying high factor 2 scores and thus higher levels of anti-social behaviour.

In contrast, in a series of case studies looking at psychopathy within industry, Babiak (2000) identified a number of 'corporate psychopaths'. These individuals were all found to score over the cut-off on both the PCL:SV and the PCL-R (Babiak, 2000). In contrast to offender samples, these corporate psychopaths were found to score highly on factor 1 traits but only moderately on factor 2 (Babiak, 2000), indicating that their primary deficits were along the affective/interpersonal axis rather than due to chronic anti-social behaviour. These corporate psychopaths were described as thriving in modern corporate environments by conning, manipulating and backstabbing their way up the corporate ladder. They were found to cause significant damage to both colleague's careers and the company itself whilst maintaining an image, at least in the view of the upper management, of being a model and high potential employee (Babiak, 2000; Babiak & Hare, 2006). Indeed, in a follow up of these case studies it was found that all except one of these psychopaths was still working for the same employer and in most cases had been promoted further up the corporate ladder (Babiak, 2000). These case studies would appear to support the theory that individuals may display core psychopathic personality features, including a number of those on factor 2, yet not have these manifest themselves in overtly anti-social or criminal traits.

Similarly, a study into the presence of personality disorders in high status business managers compared to both psychiatric patients and offenders found that several business managers presented similar profiles to that of psychopaths with high scores on symptoms of narcissism and histrionic personality disorder (Board & Fritzon, 2005). In particular, both business managers and psychopaths displayed traits related to superficiality, insincerity, egocentricity, manipulativeness, grandiosity and lack of empathy. However, they were associated with compulsive personality traits such as perfectionism, rigidity and excessive work devotion, which are arguably oppositional to factor 2 traits such as impulsiveness and irresponsibility (Board & Fritzon, 2005).

However, recent research looking at results from the Cambridge Study in Delinquent Development raises questions as to successful psychopaths. Specifically it was found that that measures of both status/wealth life success and relationship life success were negatively related to the psychopathy factors, and in particular the affective factor (Ullrich, Farrington, & Coid, 2008). Indeed, in contrast to expectations psychopathy displayed stronger negative relationships with status and wealth than with relationship success. However, it is important to note that the sample used in this study was specifically selected for its vulnerability to later to delinquency, specifically using inner-city working class males. As such, arguably they lacked many of the protective factors, such as wealth and educational opportunities, which might otherwise allow high psychopathy scorers to become 'successful'.

Although these studies would appear to mostly support the existence of successful psychopathic individuals, there is, as of yet, limited empirical research into the prevalence of such individuals or possible moderating factors which may result in one psychopathic individual becoming a criminal whilst another becomes successful in business.

### **1.5.3. Neurological deficits in non-criminal psychopathy: A dual-deficit perspective**

There have been a number of studies focusing on the downward extension of neurological deficits observed in offenders to non-criminal populations. These have focused predominantly on the affective deficits observed within psychopathy, both in terms of behavioural measures and fMRI data, although some studies have also considered the presence of cognitive deficits, such as response inhibition.

There have been a number of studies that investigated psychopathy in relation to blink startle reflex in non-criminal populations. Vanman and colleagues assessed a community sample using the PCL-R (Vanman, Mejia, Dawson, Schell, & Raine, 2003) and found that individuals high on both factors of psychopathy displayed reduced blink startle potentiation when exposed to unpleasant images, whereas those with high factor 2 scores displayed normal blink startle potentiation (Vanman et al., 2003). Indeed, when a regression analysis was carried out, factor 1 scores were found to be related to less blink startle potentiation whereas factor 2 scores were related to more startle potentiation when

primed using negative slides (Vanman et al., 2003). This suggests that although factor 1 scores are associated with fear-response deficits in non-criminal psychopaths, factor 2 scores are related to greater fear response. These findings have also been supported using community-validated self-report measures such as the PPI. Specifically, it was found that participants scoring highly on total and factor 1, but not factor 2 scores displayed reduced startle potentiation after priming with negative images (Benning, Patrick, & Iacono, 2005; Justus & Finn, 2007). It was also found that those high on factor 1 psychopathy displayed significantly lower electrodermal reactivity in response to these negative images (Benning, Patrick, & Iacono, 2005) further supporting the presence of affective deficits in non-criminal psychopathy.

Evidence of deficits in empathic responding have, however, been more mixed. Research has consistently failed to find a behavioural difference in the processing of both emotional facial expressions (Book, Quinsey, & Langford, 2007; Gordon et al., 2004) and emotional words (Melvin, 2005) among high-psychopathy scorers in the community. However, it is important to note that the former study did not differentiate between recognition of the different types of facial expression and the latter utilised the Levenson Psychopathy Self-Report scale, which has been found to be biased towards the anti-social, not personality, facets of psychopathy (see 3.1.1). In contrast, fMRI scans did find in the Gordon study that participants high on factor 1 psychopathy displayed significantly less activation of the amygdala compared to low-scorers when processing emotional images (Gordon et al., 2004). Indeed, high factor 1 scorers appeared to process emotional facial stimuli in a similar fashion to unemotional stimuli, indicating that they appeared to be using compensatory cognitive strategies to complete the task (Gordon et al., 2004). Indeed, when emotional facial expression were presented for only 47ms, thus reducing possible cognitive compensatory mechanisms, emotional facial identification performance was found to significantly correlate with affective empathy deficits (Besel, 2007).

There have been a number of studies looking at cognitive deficits in community based psychopaths with mixed results. Miller and Lynam found that high psychopathy scorers were significantly less likely to choose a delayed, but greater, reward over a smaller, but immediate, recompense indicating a deficit in delayed gratification (Miller & Lynam, 2003). Similarly, research using the Iowa Gambling Task has indicated that individuals

scoring high on psychopathy made more risky selections and won significantly less money than controls (Mahmut, Homewood, & Stevenson, 2008). However, Sellbom and Verona found that although high factor 2 psychopathy scorers displayed significant deficits in both response inhibition and in executive cognitive functioning, high scorers on factor 1 were found to display higher levels of executive cognitive functioning, resulting in total scores failing to show an association either way (Sellbom & Verona, 2007). Research has also found that high scoring community psychopaths displayed better performance on executive function tasks compared to controls or convicted psychopaths (Ishikawa, Raine, Lencz, Bihrlé, & Lacasse, 2001). These findings may indicate that non-criminal psychopaths may have increased levels of impulsivity and reduced response inhibition but they also display some level of increased executive functioning which may help compensate for this deficits.

#### **1.5.4. Non-criminal psychopathy: Conclusions**

Research evidence would appear to support the existence of psychopathic traits among community samples. Furthermore, these traits would appear to display similar affective deficits to those observed in offender populations at least at the neurological, if not the behavioural, level. The research would appear to indicate that most manifestations of these traits among community populations are at sub-clinical levels. Nonetheless, there is evidence that certain individuals may possess levels of clinical levels of psychopathic personality traits which manifest themselves in a non-criminal fashion. Furthermore, such individuals have been found to be highly successful in business environments due to their ruthlessly manipulative natures. Such psychopaths would appear to have equally high levels of both affective and interpersonal deficits as psychopathic offenders, but these will manifest themselves in non-criminal, yet nonetheless frequently disruptive and harmful forms, such as the use of indirect aggression.

#### **1.6. Psychopathy: Conclusions**

In conclusion, the research would appear to indicate that psychopathy is an identifiable, dimensional, disorder underpinned by a constellation of interpersonal, affective and behavioural traits, with evidence of neurological deficits underlying these. The evidence supports a three-factor interpretation of the disorder, with associated anti-social behaviour traits best conceptualised as a downstream consequence of psychopathy, rather than a core



trait. There is strong evidence for the existence of psychopathy among both female and non-criminal populations, although there are questions as to its level of prevalence and behavioural manifestations within these. This is particularly relevant in relation to the use of different forms of aggression, as will be discussed in the following chapter.

## CHAPTER 2

### 2. Aggression Literature Review

#### 2.1. Introduction

As was briefly mentioned in the previous chapter, and will be dealt with in more detail in the current chapter (see 2.6), psychopathy has long been shown to display a significant link to increased aggression use. The primary aim of the current thesis is to investigate this relationship in more detail. In particular the current research seeks to investigate the use of indirect forms of aggression in non-criminal populations and the relevance of this to the behavioural manifestation of psychopathic personality traits in this population. As such, the current chapter will seek to explore in more depth prior research into aggression and in particular research looking at the links between psychopathy and aggression use.

There has been considerable research into aggression over the years; however, most of this has focused specifically on direct physical, and often reactive, forms of aggression. More recently, researchers have indicated that human aggression cannot be considered as a unidimensional construct (Björkqvist, Österman, & Kaukiainen, 1992; Crick & Grotpeter, 1995; Vitaro, Brendgen, & Barker, 2006). The most prominent theorised division within the aggression research literature focuses on the function (proactive/reactive) and form (direct/indirect) of aggression (Little, Henrich, Jones, & Hawley, 2003). These typologies have been found to have a distinct influence on the association of aggression with a variety of psychosocial and personality correlates and also in relation to its developmental and aetiological basis. As such, this chapter will first consider the general definitions of aggression, before discussing the proactive/reactive and direct/indirect typologies and the theorised aetiological development of these differing forms of aggression. The review will then move on to discuss sex differences in aggression and the relationship with empathy and psychopathy.

#### 2.2. Defining aggression

There have been a considerable number of aggression definitions advanced over the years (Parrott & Giancola, 2007). One of the more recent definitions put forward by a number of theorists is “any behaviour directed toward another individual that is carried out with the

immediate intent to cause harm [and that] the perpetrator must believe that the behaviour will harm the target and that the target is motivated to avoid the behaviour” (Anderson & Bushman, 2002). This definition does not include either accidental harm or harm with a prosocial intent. Nor does it specify the exact form of the harm, as such covering indirect forms of aggression where the harm will be psychological rather than physical, or the overall function of the act. Nonetheless research has indicated a number of distinct aggression typologies which have important implications for the understanding of aggression and its predictors.

### **2.3. The proactive- reactive distinction**

The first distinction made within the aggression literature is based on the function of aggression. This has been referred to most recently as the proactive/reactive distinction (Dodge, Pepler, & Rubin, 1991), a conceptualisation that has evolved out of the hostile/instrumental distinction (Buss, 1961). Although the two distinctions display a difference in theoretical emphasis, in practice they refer to similar behaviours and tend to be used interchangeably within the literature. The hostile-instrumental terminology appears to have fallen out of favour in recent years, with the vast majority of research into this distinction based on the reactive-proactive distinction (e.g., Barry et al., 2007; Connor, Steingard, Cunningham, Anderson, & Melloni, 2004; Dodge & Coie, 1987; Dodge et al., 1991; Miller & Lynam, 2006; Poulin & Boivin, 2000b; Vitaro, Brendgen, & Tremblay, 2002). Following the current aggression literature, the current section will utilise the terms reactive and proactive aggression to refer to this distinction.

Reactive aggression has been explicitly associated with the frustration-anger theory of aggression (Vitaro & Brendgen, 2005) and is hypothesised to be the result of activation of the mammalian threat-response system. Research has indicated that animals show graduated response to threatening or frustrating stimuli, of which reactive aggression is the final response when threat is either perceived as being very close or escape is perceived as unavoidable (Blanchard, Blanchard, Takahashi, & Kelley, 1977). Developmentally, increased levels of reactive aggression have been theorised to result from exposure to threatening and harsh environments or abusive parenting (Dodge et al., 1991) resulting in heightening sensitivity of the threat response system (Blair, 2001b). Increased levels of reactive aggression have also been associated with a biological predisposition towards a

higher resting baseline for the threat response circuitry and reduced regulation of the threat response system (Blair, 2001b). Certainly, exposure to childhood abuse has been found to increase levels of reactive aggression (Farrington & Loeber, 2000) as has the presence of post-traumatic stress syndrome (Silva, Weinstock, Ferrari, Derecho, & Leong, 2001). Similarly, neurological impairments in the frontal lobe systems associated with response regulation have been found to result in increased levels of reactive aggression (Krakowski et al., 1997) indicating that this aggression can be the result of physiological as well as social factors.

Proactive aggression is more closely associated with the social learning theory of aggression (Vitaro et al., 2006) and has been theorised to result predominantly from learning environments whereby the use of aggression to achieve goals is rewarded (Dodge et al., 1991). Certainly, there is evidence that, unlike with reactive aggression, use of proactive aggression was not predicted by experiences of abuse although it was predicted by exposure to violent acts by family members (Connor et al., 2004). Proactive, but not reactive, aggression was also found to correlate significantly with parents who condone aggressive behaviours (Raine et al., 2006). Similarly, individuals high on proactive aggression are more likely to associate with proactively aggressive peers (Poulin & Boivin, 2000b), however, this association was not found to result in increased levels of proactive aggression itself (Poulin & Boivin, 2000b). Specifically, although individuals were more likely to both become and remain friends with peers displaying similar levels of proactive aggression this association did not result in increases in the absolute level of aggression displayed.

In support of these theorised developmental differences, proactive and reactive aggression has been found to be differentially correlated with differing socio-cognitive processes. Specifically, reactively, but not proactively, aggressive children have been found to make significantly more hostile attributions in ambiguous situations (Dodge & Coie, 1987). In contrast, proactive aggression appears to be significantly correlated with reported use of aggressive responses and increased outcome expectancies of these responses (Miller & Lynam, 2006). This appears to indicate that proactively aggressive individuals are more likely to perceive aggression as both a valid and beneficial response strategy.

Strong evidence as to a division between proactive and reactive aggression emerges from factor analytic studies supporting the existence of two distinct aggression factors. Poulin and Boivin subjected the Dodge and Coie (1987) teacher rating scale to a confirmatory factor analysis and found that the two factor model displayed a significantly better fit to the data than a single-factor model (Poulin & Boivin, 2000a). Similarly, the Reactive-Proactive Aggression Questionnaire, a self-report measure primarily developed for use with adolescents, was also found to display better fit to a two factor model when subjected to a confirmatory factor analysis (Raine et al., 2006). However, in both cases the two aggression factors were found to be highly correlated with each other (Poulin & Boivin, 2000a; Raine et al., 2006) indicating that these two types of aggression are not independent. It has been argued that this high correlation may be in part due to overlap in the physical form the aggression takes (Little et al., 2003), in other words whether the aggression is direct compared to indirect. Prior research has generally compared proactive and reactive forms of direct aggression only and as a result there may have arguably been confounding effects due to similarity of aggression form. Indeed, once the form of the aggression was controlled for the correlation between proactive and reactive aggression was found to disappear (Little et al., 2003).

Further supporting the proactive-reactive distinction, the two types of aggression have been found to display differential correlations with a variety of factors including temperament (Barry et al., 2007; Miller & Lynam, 2006; Raine, Brennan, Farrington, & Mednick, 1997) and long-term socio-psychological outcomes (Card & Little, 2006). For instance, reactive aggression was found to be uniquely correlated with measures of schizotypy, impulsivity, stimulation seeking, anxiety (Raine et al., 2006) and internalising problems (Card & Little, 2006). In contrast, proactive aggression was found to be independently correlated with assertiveness (Miller & Lynam, 2006), blunted affect and psychopathic traits (Raine et al., 2006), specifically the narcissism and callous-unemotional factors (Barry et al., 2007; Marsee & Frick, 2007). Conflicting findings have been found in relation in hyperactivity and attention problems with Raine finding that proactive aggression was uniquely associated with these deficits (Raine et al., 2006), whereas a meta-analysis by Card and Little indicated that these were more related to reactive aggression (Card & Little, 2006). However this may be related to age, with the relation between proactive aggression and attention deficit problems decreasing with age, whereas their relation with reactive

aggression was found to increase (Card & Little, 2006). This would appear to support the hypothesis that as normal individuals get older they become socialised against using proactive aggression. Specifically, it is hypothesised that normal range individuals find viewing other people's emotional distress to be an aversive stimuli, which results in conditioning against causing others harm (Blair, 2001a). However, individuals with deficits in empathic responding, such as psychopaths, do not experience the same aversive response and thus will continue to utilise proactive aggression.

Another source of evidence as to the proactive-reactive distinction emerges from the relation between the different types of aggression and both social functioning and delinquency. Although both proactive and reactive aggression have been found to be independently related to poor social group status, the relationship for reactive aggression was found to be significantly stronger (Card & Little, 2006). Furthermore, only reactive aggression was associated with low peer acceptance and preference, although both types of aggression were found to be independently correlated with peer rejection. Use of reactive aggression was also found to be significantly correlated with increased peer victimisation although this relation did decrease with age (Card & Little, 2006). In contrast, proactive aggression was associated with decreased levels of peer victimisation. Unsurprisingly, given its strong correlation with psychopathy, proactive aggression is strongly associated with increased levels of delinquency (Raine et al., 2006; Vitaro et al., 2002) including substance use and property offences as well as violent offending (Miller & Lynam, 2006). Findings with reactive aggression have been more mixed. Many studies have failed to find a significant independent relation between reactive aggression and delinquency (Miller & Lynam, 2006; Raine et al., 2006; Vitaro et al., 2002). However, Card and Little found in their meta-analysis that reactive aggression did display a significant relationship to delinquency but only in older samples (Card & Little, 2006). These findings would appear to indicate that proactively aggressive children engage in delinquency at a younger age than reactively aggressive children and thus may represent a greater risk of following the 'life-course persistent' delinquency route (Frick, 2007; Moffitt, 1993).

There have, however, been criticisms of the proactive-reactive distinction. Bushman and Anderson in particular criticise the distinction based on the high correlation between the two aggression types and the difficulty of determining the specific goal, the influence of

affect and level of planning involved in any individual aggressive act (Bushman & Anderson, 2001). It is certainly arguable that difficulties can arise in determining the motivation of a specific aggressive act, especially if based only on external, observational, information (Barratt & Slaughter, 1998). Indeed it may be argued that the distinction is not be a simple dichotomy, but rather that individuals aggressive behaviours can have both proactive and reactive components. Indeed it has been argued that aggression should be considered more in terms of mixed-motive aggression rather than as presenting strictly delineated motivations (Bushman & Anderson, 2001). Therefore it may be more appropriate to represent proactive-reactive aggression on a continuum rather than representing a distinct dichotomous separation.

#### **2.4. The direct-indirect distinction**

The distinction between direct and indirect aggression is based on the form the aggressive act takes. Although the theoretical division of aggressive acts between direct and indirect aggressive acts is far from new (Buss, 1961), up until relatively recently most aggression research has focused exclusively on the more direct, and in particular physical, aggression. It is only in the last decade or so that research has considered other forms of aggression. This alternative form of aggression has been referred to as either indirect (Björkqvist, Österman, & Kaukiainen, 1992; Ireland, 2001), relational (Crick & Grotpeter, 1995) or social (Underwood, 2003) aggression and has been defined as “a type of social manipulation [whereby] the aggressor manipulates others to attack the victim, or, by other means, makes use of the social structure in order to harm the target person, without being personally involved in attack” (Björkqvist et al., 1992). Though the three conceptualisations do convey somewhat different emphasis, nonetheless, the actual behaviours captured by these definitions are almost identical (Archer & Coyne, 2005). Furthermore, similar findings in terms of sex differences, temperamental correlates and social outcomes have been found across the three definitions (Archer & Coyne, 2005). As such, the term indirect aggression will be adopted here within a broader capacity to include social and relational aggression.

There are a number of sources of evidence supporting the utility of differentiating between direct and indirect forms of aggression. There has been psychometric support for the division between the two types of aggression with confirmatory factor analysis indicating a

significantly better fit to the data if direct and indirect aggression are considered separate factors (Little et al., 2003; Vaillancourt, Brendgen, Boivin, & Tremblay, 2003). The two types of aggression have been found to be moderately, but significantly, related both in terms of general aggression use (Little et al., 2003; Richardson & Green, 2003) and bullying behaviours (Archer, Ireland, & Power, 2007; Ireland, 1999; Ireland & Monaghan, 2006), indicating that a unified aggression factor may nonetheless underpin these two types of aggressive acts.

Direct and indirect forms of aggression display different associations with a number of external correlates, in particular in relation to psycho-social adjustment and social relations (Crick & Grotpeter, 1995; Leadbeater, Boone, Sangster, & Mathieson, 2006; Werner & Crick, 1999; Xie, Cairns, & Cairns, 2002). There has also been mixed evidence with regards to the relation between psycho-social maladjustment and indirect aggression. Some studies have replicated findings observed with direct aggression and found significantly higher levels of peer rejection, loneliness, depression, self-harm and anti-social behaviour among indirectly aggressive children and students (Crick & Grotpeter, 1995; Werner & Crick, 1999). Other research has found that only use of physical but not indirect aggression was associated with an increase in depressive symptoms and peer rejection (Leadbeater et al., 2006). Furthermore, research has also found indirect aggression to be associated with an increase in perceived popularity (Xie et al., 2002), dating preference by members of the opposite sex (Pellegrini & Long, 2003), increased social network density (Green, Richardson, & Lago, 1996) and centrality (Xie et al., 2002). These studies did not find use of indirect aggression to be associated with poor school performance, school dropout or later delinquency, in contrast to direct aggression results (Xie et al., 2002). However, the use of indirect aggression was still associated with increased indirect victimisation (Leadbeater et al., 2006). These conflicting findings may be in part due to the methodology used to measure indirect aggression in these studies. Specifically, the latter studies used a combination of self-reports, peer ratings and observational data to assess aggression levels. In contrast, the former studies used only peer nominations. It is arguable that peers may be more likely to nominate those who are less skilled, and thus more obvious, when using indirect aggression and as such may not give a true representation of participants' indirect aggression levels (Archer & Coyne, 2005).



There is a small but growing research evidence-base into the relation between indirect aggression and personality variables. There is some evidence of differential relations for direct and indirect aggression with certain factors. Research has indicated that direct aggression correlates more highly with anger than indirect aggression. In contrast, indirect aggression was found to be more significantly related to measures of hostility (Archer & Webb, 2006; Richardson & Green, 2003). This would appear to indicate that use of direct aggression is more affectively charged than indirect aggression. Direct, but not indirect, aggression was also found to be significantly positively correlated with negative assertion and extraversion and significantly negatively correlated with perspective taking, empathic concern and behavioural inhibition (Richardson & Green, 2003), though other research has also indicated a negative relationship between indirect aggression and empathy (Sergeant, Dickins, Davies, & Griffiths, 2006). Indirect aggression on the other hand was found to be significantly negatively correlated with negative assertion, social desirability, attention shifting and significantly positively correlated with personal distress and neuroticism (Richardson & Green, 2003). However it is noteworthy that this research was conducted using a measure which, arguably (see section 3.2.2), assesses predominantly reactive forms of indirect aggression. Therefore it is questionable how well these results can be generalised to indirect aggression more generally.

Unsurprisingly, given its strong social nature, indirect, but not direct, aggression was found to be significantly correlated with high levels of social intelligence and social skills at all age groups (Kaukiainen et al., 1999). Specifically it has been linked to the ability to decode social situations, decode others social cues and to interact with the social situation such as to achieve social goals. It has been theorised that increased use of indirect aggression as individuals get older may also be due to increased competency in social skills allowing the use of most sophisticated aggression techniques and indeed that the presence of high levels of social skills may even be a prerequisite to effective indirect aggression use (Björkqvist, Österman, & Kaukiainen, 2000). Certainly, there is strong evidence that moving into later adulthood indirect aggression takes over from direct aggression as the primary form of aggressive behaviour (Walker, Richardson, & Green, 2000). This is particularly notable within studies of prison bullying whereby among juvenile offenders direct aggression is the main form of bullying whereas young and adult offenders are more likely to utilise indirect forms (Ireland, 2002; Ireland & Monaghan, 2006). Use of indirect aggression has been

observed in children as young as four (Vaillancourt et al., 2003) indicating that individuals are liable to utilise this form of aggression even when possessing relatively rudimentary social skills. It has, however, been argued that the exact form this takes becomes more sophisticated as children get older and thus develop more complex social skills (Crick, Casas, & Ku, 1999).

It has been argued that indirect aggression displays considerable evolutionary advantages (Archer & Coyne, 2005). Primarily, it has been argued that within close social groups use of direct aggression carries significantly more risks than indirect aggression. Given the indirect and circuitous nature of the aggression, it is less likely to result in retaliation either from the individual or from the social group as a whole, in contrast to use of physical aggression (e.g., Archer & Coyne, 2005; Suomi, 2005). Furthermore, indirect aggression is more effective at lowering the social standing of the victim, thus giving female aggressors an edge in competing for a mate (Archer & Coyne, 2005). It has been argued that indirect aggression is more liable to emerge as an aggressive strategy in social situations where there are high costs attached to the use of physical aggression (Archer & Coyne, 2005). Certainly, it has generally been found that indirect aggression flourishes in office or university environments where the sanctions for the use of direct aggression would be high (Björkqvist, Österman, & Lagerspetz, 1994). Similarly, that indirect aggression results in little to no sanctions, social or institutional, has been put forwards as the reason for observed high levels of indirect aggression within prison settings (Ireland, 2001, 2002), despite the high levels of violence and direct aggression normally associated with such populations. Unlike direct aggression, it has been argued that use of indirect aggression requires appropriate social skills. This has been supported by research indicating that increased indirect aggression is correlated with higher levels of social intelligence, once the shared variance with empathy has been controlled for (Kaukiainen et al., 1999).

## **2.5. Sex differences in aggression**

Consideration cannot be given to the direct/indirect aggression distinction without discussing sex differences in aggression. Women have consistently been found to demonstrate lower levels of direct, and in particular physical, aggression (Archer, 2004). Sex differences in direct verbal aggression are more ambiguous, however, with a recent meta-analysis finding only a moderate effect size and with some studies failing to find any

sex difference at all (Archer, 2004). However, this was only found for younger age groups, with older age groups displaying strong sex differences in the male direction in the use of direct verbal aggression (Archer, 2004). In contrast, the reverse appears true for indirect aggression with women, certainly in adolescent age groups, displaying significantly more indirect aggression than men, although this difference does not carry through into adulthood (Archer, 2004). This is a finding that has been replicated across a number of different cultural settings (Österman et al., 1998) and this has led to numerous theorists claiming that men and woman differ in aggression qualitatively but not quantitatively (Björkqvist, 1994). However, the relationship appears to be more complex than this and may be dependant on age.

Studies using children and adolescents have generally found strong sex differences in the usage of indirect aggression with female participants scoring significantly higher on these measures compared to males (Österman et al., 1998). However, not all studies managed to find a significant difference (Ireland, 1999; Toldos, 2005) and some even found increased levels of indirect aggression in males (Peets & Kikas, 2006). This would appear to be in part related to the measurement method used. Observational and teacher rating methods consistently show significant findings in the female direction. In contrast, peer ratings and particular peer nominations are more conflicting in their findings with results generally indicating either no sex difference or one in the male direction (Archer, 2004). It is arguable, however, that peers may nominate those who are more overt and disruptive in terms of aggression, which would fail to capture more subtle or successful users of indirect aggression. Self-report measures have returned equivocal findings depending on the type of indirect aggression and the population assessed. Forrest and colleagues found no significant sex differences in the level of the general indirect aggression in an adult community sample (Forrest, Eatough, & Shevlin, 2005). In contrast, Ireland found that male prisoners reported more indirectly aggressive bullying in comparison to female offenders (Ireland, 1999).

Age also appears to affect sex differences in indirect aggression. Only small sex differences have been observed in young children but by mid-adolescence significant sex differences are observable between girls and boys (Archer & Coyne, 2005; Vaillancourt, Miller, Fagbemi, Cote, & Tremblay, 2007). This declines into adulthood though, with

males and females generally found to display similar levels of indirect aggression (Archer & Coyne, 2005; Björkqvist, 1994; Forrest et al., 2005). Males, however, are still found to display significantly higher levels of direct aggression (Archer, 2004; Forrest et al., 2005). It would appear that by adulthood men display preferential use of direct aggression, in particular direct verbal aggression whereas women will preferentially utilise indirect aggression (Hess & Hagen, 2006) but that exact levels of each are often dependant on situational constraints. However, the absolute levels of indirect aggression used are the same between the two sexes (Archer, 2004) with males displaying generally more aggression than females overall (Archer & Coyne, 2005).

There is, however, evidence of differences in the type of indirect aggression used by men. Specifically, men would appear to utilise forms of indirect aggression which involve direct criticisms or verbal insults veiled under the guise of advice (Björkqvist, 1994). As such, these behaviours are only indirect insofar as it is difficult to specifically accuse them of aggression. In contrast, women tend to use more socially manipulative forms of indirect aggression, attacking others circuitously through friendships and social groups (Björkqvist, 1994). However, this finding is not consistent, with some studies failing to find a difference (Forrest et al., 2005).

### **2.5.1. Theories of the sex differences in aggression.**

There have been number of theories put forward to explain the sex differences in aggression. The current section will consider the most predominant of these: the effect/danger ratio, the related sexual selection theory, and social role theory (Archer, 2004).

The effect/danger ratio was first put forward by Björkqvist (1994) as an explanation of observed sex differences in types of aggression used. It theorises that use of different aggressive strategies will be based on its perceived effectiveness and its perceived dangers or costs both physically and socially (Björkqvist et al., 1994). Women are theorised to utilise less direct and more indirect aggression due to the increased risks associated with female direct aggression, both on a practical level due to physical size differences and from a reproductive strategies viewpoint (Björkqvist et al., 1994; Campbell, 1995). Concurrent

with this, due to the close nature of female social groups (Crick & Grotpeter, 1995), and that females have often been found to display significant higher levels of social skills than males (e.g., Riggio, 2004), indirect aggression is liable to also be more effective for females. As such, it is hypothesised that women do not necessarily display less aggression merely that the form of the aggression changes based on perceived effect/danger ratio analysis. This theory has also been applied to the observed reduction in direct aggression and accompanying increase in indirect aggression as individuals get older (Björkqvist et al., 1994; Ireland, 2002; Walker et al., 2000). This theory has also been applied to the increased level of indirect aggression use in prisons (Ireland, 1999). Direct aggression in a prison situation is liable to evoke a swift response by the prison authorities, as well as possible retaliation by other prisoners or even the victim. In contrast, indirect aggression, although not necessarily generating the same level of effect, nonetheless causes significant harm (Archer & Coyne, 2005) whilst drawing down little in terms of sanctions of the perpetrators.

The cost of using direct aggression increases with age as individuals become subject to both more criminal responsibility and greater risk of losing employment and thus livelihood. In addition, the effectiveness of alternative strategies, specifically indirect aggression, increases due to improving social skills. Certainly individuals, both male and female, utilise indirect aggression more comparative to direct aggression as they grow older (Björkqvist et al., 1994) and indeed the gender differences between male and female indirect aggression use are no longer apparent in adulthood (Archer, 2004) where, arguably, the risks associated with direct aggression use is equally high for males and females. Indeed, as would be expected given the decline in physical abilities, seniors are found to almost exclusively use indirect aggression (Walker et al., 2000). Furthermore, girls have been found to rate indirect aggression as more harmful than boys (Coyne, Archer, & Eslea, 2006; Owens, Shute, & Slee, 2000), supporting its increased effectiveness within female populations. Indeed, girls tend to report that indirectly aggressive girls are perceived as more popular (Currie, Kelly, & Pomerantz, 2007) and possessing more power (Vaillancourt & Hymel, 2004). However, in contrast to what would be suggested by the effect/danger ratio hypothesis, males show higher overall levels of aggression even once the direct/indirect distinction has been taken into account (Archer, 2004).

Although using a number of similar underlying principles to the effect/danger ratio theory, the sexual selection theory has its basis in evolutionary psychology. It theorises that aggression is an evolutionary adaptation resulting from natural selection, competition for resources, and sexual selection, competition for mates (Campbell, 1995). Sex differences in the use of aggression are due to differential parental investment (Trivers, 1972) and thus different sexual selection strategies. Specifically, since women invest more in their offspring than males they are theorised to be more selective in their choice of partners. In contrast males must compete for female attention, thus explaining the increased levels of male violent offending particularly during periods where reproductive competition is highest i.e., during early adulthood (Sampson & Laub, 2003). However, women are also actively involved in mate selection, seeking to attract males with higher levels of resources and status (Kokko, Morley, Brooks, & Jennions, 2003) as this will increase the survival chances of their offspring. As survival of the offspring is more dependant on the mother than the father (Hrdy, 1999), use of direct aggression is considered to carry greater risks for females (Campbell, 1995). Therefore, it is theorised that use of indirect aggression is favoured by females as, from an evolutionary standpoint, it carries less risks and greater benefits than other forms of aggression.

Certainly, not only is indirect aggression found to be rated as more harmful by women, it is also perceived as being an effective strategy during intrasexual competition (Buss & Dedden, 1990). Furthermore, female use of aggression generally, and indirect aggression specifically, appears to be related to reproductive strategies (Vaillancourt, 2005). Girls are found to commit more indirectly aggressive acts during adolescence, when they are biologically most reproductively active, compared to other periods in their lives (Björkqvist et al., 1992; Xie et al., 2002). There is also considerable evidence supporting the innate nature of the female's preferential usage of indirect aggression. Firstly, the strong cross-cultural evidence from a large number of diverse cultures (Österman et al., 1998). There is also evidence that factors, such as pre-natal testosterone exposure, found to be related to increased levels of direct aggression in males similarly increases aggression in females but in indirect rather than direct forms (Coyne, Manning, Ringer, & Bailey, 2007). However, the failure to find sex differences in indirect aggression among adult populations (Archer, 2004) does raise questions as to the validity of the evolutionary model. Arguably, most of this research was conducted in environments whereby physical aggression, for

males or females, is either highly socially undesirable or subject to significant sanctions, which may have biased results. In contrast, a scenario study measuring response preference found that, as would be predicted, males reported preferential responding in a physically aggressive manner whereas female reported preferential use of indirect aggression (Hess & Hagen, 2006).

The social role theory in contrast places the root of sex differences in aggression in the historical division of labour between men and women and the resultant socialization practices (Eagly, 1987). Role status is also theorised to have an effect with higher status roles, traditionally occupied by men, promoting a more agentic attitude. Although this theory does not make any specific predictions in relation to types of aggression, it does posit that there will be an 'overall' difference in aggression in the masculine direction, which will be most pronounced for physical aggression. Furthermore, as it is dependant on socialization, sex differences in aggression should increase with age as social roles become more entrenched (Tremblay et al., 1999).

The evidence supporting the social role theory is, however, mixed. Certainly, as predicted males would appear to show greater overall aggression; however, girls do still appear to show greater evidence of indirect aggression at most age groups. Furthermore, large sex differences in physical aggression are apparent from an early age (Archer, 2004) and appear to become less, not more pronounced, during adulthood (Archer, 2004; Ireland, 2002). This would raise questions as to the validity of the social learning hypothesis of aggression. Furthermore, similar findings with regard to sex differences and types of aggression have been found across diverse cultures (Österman et al., 1998), which would not necessarily be expected should these differences be culturally governed. However, more and more in western cultures where gender equality is becoming more prevalent, there is found to be a dramatic rise in female criminality and aggression (Puzzanchera, Stahl, Finnegan, Tierney, & Snyder, 2003), which would point towards at least some level of social mediation.

### **2.5.2. Sex differences: Conclusions**

The evidence would appear to primarily support an evolutionary model of sex differences in aggression. However, there does also appear to be at least some evidence of mediation due to social roles. In particular, this may affect calculation of the effect/danger ratio, with social acceptability of certain behaviours by sex moderating both the effectiveness of these behaviours and the perceived consequences of these actions. Arguably, a result of this may be the use of more masculine aggression techniques by some females and conversely more feminine styles of aggression by males.

## **2.6. Aggression and psychopathy**

The presence of psychopathy has long been linked to increased use of aggression, both based on theoretical links and experimental evidence. Most research in this area, however, has concentrated on male psychopaths and in particular offender samples. Furthermore, the research looking at psychopathy and use of aggression has almost exclusively studied direct forms of aggression, and in particular physical aggression and violent offending, with little research considering its relationship with indirect aggression. Nonetheless, it would be expected that a number of findings from research into the relationship between direct aggression and psychopathy will carry through to the relationship with indirect aggression. As such this section will first consider research into psychopathy and direct forms of aggression, for both males and females, before considering the research and theoretical links between psychopathy and indirect forms of aggression.

### **2.6.1. Male psychopathy and direct aggression**

There has been considerable research linking psychopathy and use of direct aggression, and in particular physical aggression and violence. Psychopaths have been found to violently reoffend significantly more compared to non-psychopaths in both American (Hemphill et al., 1998) and European samples (Hare, Clark, Grann, & Thornton, 2000). Similarly, psychopathy as measured by the PCL:SV has been found to be the single best predictor of violent offending in released psychiatric patients, a relationship that was found to remain even after accounting for environmental factors (Silver, Mulvey, & Monahan, 1999). Retrospective studies of past violent offending have also indicated strong



associations, with psychopaths found to display significantly more violent convictions than non-psychopaths (Kruh et al., 2005; Porter, Birt, & Boer, 2001). Institutional misconduct reports have found psychopathy to correlate significantly with official reports of both physical and verbal aggression (Edens et al., 2002; Edens et al., 1999).

Evidence for an association between increased levels of aggression and psychopathy has also been found using self-report measures of aggression. Forth and colleagues found that levels of psychopathy, assessed using the PCL:SV, among male students was significantly correlated with self-reported use of violence (Forth et al., 1996). Similarly, self-report psychopathy was found to correlate significantly with scores on the Buss-Perry aggression questionnaire (Patrick, Edens, Poythress, Lilienfeld, & Benning, 2006; Sandoval et al., 2000) and also both self-reported violent delinquency and scores on measures of proactive and reactive aggression (Miller & Lynam, 2003). They also found that those classified in the high psychopathy group displayed significantly more aggressive responses on a laboratory aggression task and in response to social vignettes. However, Miller and Lynam's (2003) study used similarity to the five-factor model prototype as a measure of psychopathy which has, as of yet, not been effectively validated as a psychopathy measure.

The evidence regarding the influence of specific psychopathy factors, however, is more mixed. Different studies have found correlations between violent offending and recidivism to be related predominantly to factor 1 scores (Kruh et al., 2005), factor 2 scores (Harpur et al., 1989) or indeed both equally (Hare et al., 2000; Porter et al., 2001). Examination of violent offending in relation to the three-factor model has indicated that although most violent offences are significantly correlated with the affective facet, interpersonal aggression, such as fighting and domestic abuse, is significantly correlated with the impulsivity factor only (Hall et al., 2004). Similarly, Vitacco found, using structural equation modelling, that the affective facet most strongly predicted violence although there was nonetheless a significant correlation with the impulsivity factor. However, when the analysis was applied to the four-factor model there was also a strong significant relationship with the antisocial behaviour facet (Vitacco et al., 2005). These findings would appear to support the influence of both the affective and the anti-social behavioural items on the increased levels of violence presented by psychopaths.

There is evidence that as well as being related to a significant increase in the amount of aggression displayed, psychopathy may also be related to significant differences in the function of the aggression used. Cornell classified offenders' violent offences as either proactive or reactive, and found that psychopaths were significantly more likely to display proactive violence compared to non-psychopaths and these differences were found to be significant for both factor 1 and factor 2 scores (Cornell et al., 1996). Psychopaths have also been found to engage in more proactive crimes, such as non-political, non-custody related unlawful confinement, and for more instrumental motivations, such as material or sexual gain (Hervé, Mitchell, Cooper, Spidel, & Hare, 2004). These findings have also been supported using self-report measures, with five-factor model measured psychopathy demonstrating significantly higher correlations with proactive compared to reactive aggression (Miller & Lynam, 2003).

More recent research would appear to suggest that use of proactive aggression by psychopaths is specifically related to factor 1 scores and in particular the affective deficit. Woodworth and Porter found that over 90% of homicides committed by psychopaths were classified as being wholly or primarily proactive, compared to only half of those committed by non-psychopaths (Woodworth & Porter, 2002). Furthermore, this was found to be significantly related to factor 1 scores but not factor 2 scores. An analysis of violent offences by youth offenders similarly found that proactive offending was significantly predicted by the affective facet, whereas reactive violence was significantly predicted by the antisocial behaviour items alone (Flight & Forth, 2007). Reidy and colleagues (2007) found that although factor 1 was related to both reactive and proactive aggression, factor 2 was only related to reactive aggression. Although this study did use the Levenson's self-report scale which has been found to be related more strongly to the impulsive and antisocial aspects of psychopathy (see section 3.1.1), which may account for why factor 1 was nonetheless found to be related to reactive aggression. There is, however, evidence that psychopaths' proactive aggression may also be related to a thrill-seeking or sadistic motivation with some violent acts being committed due to pleasure derived specifically from the act rather than any material gain (Porter & Woodworth, 2006). Psychopathic sexual offenders have been found to be more opportunistic in their victim types and to display higher levels of gratuitous and sadistic violence during the commission of sexual homicides (Porter et al., 2000). Again, this was significantly related to scores on factor 1

not factor 2 of the PCL-R (Porter, Woodworth, Earle, Drugge, & Boer, 2003). A number of studies have also found a significant predictive relationship between the interpersonal facets and use of proactive aggression (Barry et al., 2007; Vitacco et al., 2005).

It has been argued based on these findings that increased proactive aggression among psychopaths is related to their low levels of affective arousal, lack of empathy and lack of attachment to others (Blair et al., 2005; Meloy, 2006). Certainly, research has found significant negative associations between affective empathy and direct aggression for both adolescent (Cohen & Strayer, 1996; Endresen & Olweus, 2002; LeSure-Lester, 2000) and adult samples (Mehrabian, 1997; Mehrabian & Epstein, 1972; Miller & Eisenberg, 1988; Richardson & Green, 2003). Furthermore, psychopaths have been found to lack aversive affective reactions to others' facial expressions of distress (Blair, 1999), impairing their moral socialisation (Blair et al., 2005). As a result, it is theorised that psychopaths are liable to consider violence dispassionately as simply another means to an end (Porter & Woodworth, 2006), although occasionally it would appear that the 'end' may be the pleasure gained from the violent act itself.

In contrast, use of reactive aggression in psychopathy appears to be predominantly related to factor 2 scores, and in particular the antisocial facet (Flight & Forth, 2007). This is far from surprising, given that the criteria for the 'poor behavioural controls' item specifically relates to the commission of impulsive and poorly controlled aggression. Arguably, the relationship between psychopathy and reactive aggression may simply reflect that one of the best predictors for future violent behaviour is prior acts of violence (Gendreau, Goggin, & Smith, 2002). Porter and colleagues have commented on the low level of reactive homicide among psychopathic offenders, resulting in a "selective impulsivity" hypothesis. The psychopaths' impulsive aggression may reflect a conscious choice not to inhibit such behaviours when the perceived stakes are low but are more likely to inhibit this behaviour and plan an instrumental act should the stakes be perceived as high (Porter & Woodworth, 2006; Woodworth & Porter, 2002). This is supported by the finding that impulsiveness was significantly negatively correlated with PCL-R scores in homicide offenders (Woodworth & Porter, 2002). However, research into the effect of high stake situations on response modulation in psychopathy is still required. Alternatively, it has been theorised that increased levels of reactive aggression may emerge due to damage in the threat regulatory

systems located in the frontal cortex (Blair, 2006b) which have similarly been primarily associated with factor 2 traits. Specifically, deficits in response perseveration and reversal may lead to increased frustration, in turn resulting in increased levels of reactive aggression (Blair, 2006b).

### **2.6.2. Female psychopathy and direct aggression**

Despite the strong evidence relating psychopathy to aggression and violence in male populations, the evidence in relation to female psychopathy is considerably more mixed. Female psychopathy scores have not been found to be significantly related to institutional misconduct or violence (Salekin et al., 1997; Warren & South, 2006). However, significant correlations were found with self-reported aggression in one of these studies (Salekin et al., 1997) indicating that the lack of correlation may have been due to a failure of detection of the infractions. Unlike with male psychopaths, a study into recidivism among female offenders found that the PCL-R was correlated only with non-violent recidivism (Warren & South, 2006; Warren et al., 2005). In contrast, several other studies have found PCL-R scores to be significantly correlated with the number of violent crimes committed by female psychopaths (Loucks, 2005, cited in Nicholls, Ogloff, Brink, & Spidel, 2005; Vitale et al., 2002), as well as with the aggressiveness symptom from the ASPD diagnostic criteria (Berardino et al., 2005). Interestingly, those failing to find a relationship have generally used the PCL-R categorically as opposed to dimensionally which is liable to result in a loss of power, indicating that some of these conflicting findings may be methodological in nature. Nonetheless, examination of the magnitude of the correlation found between violence and the PCL-R indicates that the relationship is weaker for female psychopaths compared with males.

Studies using community samples have likewise found conflicting results. Forth and colleagues found that psychopathy was significantly correlated with self-reported violent delinquency in male but not female participants (Forth et al., 1996). In contrast, Miller and Lynam found that psychopathy was significantly correlated for both males and females with self-report measures of both proactive and reactive direct aggression, although, as previously mentioned, use of the five-factor model generated psychopathy scores is questionable (Miller & Lynam, 2003). There is also some evidence of qualitative

differences in the violent offending of female psychopaths, with female psychopaths significantly more likely to target strangers whereas non-psychopaths are more likely to violently offend against acquaintances (Weizmann-Henelius, Viemero, & Eronen, 2003). As with male offenders, using the three factor model, it would appear that is it the affective facet alone which significantly predicts levels of self-reported direct aggression (Odgers, Reppucci, & Moretti, 2005).

There has not, as of yet, been any study considering in depth the differences in proactive compared to reactive aggression in female psychopaths. However, female psychopaths tend to display significant levels of differential item functioning on the antisocial facet items, but not on the affective or interpersonal facet items (Bolt et al., 2004). This is particularly the case for the Poor Behavioural Controls item which assesses explosive outbursts of anger and aggression. It could, as such, be theorised that the reduced relationship between psychopathy and aggression observed in female psychopaths may be due to reduced levels of reactive compared with proactive aggression. Certainly, it has been reported that increased levels of impulsivity are generally significantly related to running away, self-harm, manipulation and complicity in property crimes in females whereas with males it is more likely to be characterised by aggression and violence (Forouzan & Cooke, 2005). Another possible explanation for these conflicting studies is the failure of such studies to adequately assess female forms of aggression (Cale & Lilienfeld, 2002b). Specifically, it has been found that females display a consistent preference towards the use of indirect compared to direct aggression (see 2.5). As such, it is theorised that female psychopathy is liable to manifest itself in increased levels of indirect rather than direct aggression.

### **2.6.3. Psychopathy and indirect aggression**

Despite the considerable research looking at psychopathy and aggression, particularly direct violence, research into indirect aggression has been somewhat thinner on the ground. Theoretically there is very little reason to consider that the increased aggression observed among psychopaths would be limited to direct aggression. Indeed, indirect aggression may be more beneficial used proactively, given the reduced risks associated with this (Björkqvist et al., 1994), and the superficial charm and manipulateness associated with

psychopathy (Hare, 1999, 2003). Certainly, as with direct aggression, usage of indirect aggression has been associated with low levels of empathy (Björkqvist et al., 2000), a central psychopathy deficit and one also linked to proactive uses of direct aggression (Flight & Forth, 2007). Furthermore, bullying behaviours, often classified as being proactive in nature (Sutton, Smith, & Swettenham, 1999), have been described as taking indirect as well as direct forms, especially within prison settings (Ireland, 1999, 2001; Ireland, Archer, & Power, 2007; Ireland & Monaghan, 2006). As such the study of the relationship between psychopathy and indirect aggression may have some direct practical implications for the management of psychopaths within prison settings and their involvement in prison bullying. Certainly as, arguably, psychopaths may be particularly likely to be involved in bullying behaviours (Sutton & Keogh, 2000; Viding, Simmonds, Petrides, & Frederickson, 2009).

Indirect aggression has been hypothesised as being of particular relevance to female psychopathy as a possible explanation for the conflicting findings observed between direct aggression and psychopathy in female offenders (Cale & Lilienfeld, 2002b). Qualitative studies of female psychopaths have also described them using more manipulative behaviours and 'acting out' in more indirect ways than their male counter-parts (Forouzan & Cooke, 2005). It has also been theorised that increased levels of indirect aggression may also be relevant among so-called 'successful' or non-criminal psychopaths (Porter & Woodworth, 2006). These individuals, due to their increased social intelligence, may utilise indirect aggression as a less risky and more effective form of proactive aggression than direct violence. Certainly, it has been argued that indirect aggression forms an important part of workplace bullying which in turn appears to be related to manipulations of social dominance (Baron, Neuman, & Geddes, 1999). Furthermore, many of the behaviours described in recent case study research into successful psychopaths are particularly consistent with the manifestation of indirect aggression (Babiak, 2000). However, despite this, minimal research has thus far been conducted into the exact relationship between psychopathy and indirect aggression. Furthermore, the existent research has mostly focused on either adolescent samples or utilises questionable assessment tools.

### **2.6.3.1. Psychopathy and indirect aggression in adolescents**

There have been two studies which have considered indirect aggression and psychopathy in samples of female adolescent offenders. Odgers and colleagues studied a population of incarcerated female young offenders, aged between 13 and 19, using the PLC:YV and a self-report measure of indirect aggression. They found that psychopathy and specifically the affective factor was significantly related to indirect aggression (Odgers et al., 2005). However, this relationship was no longer found to be significant once the effects of maternal abuse were controlled for. This would appear to suggest that childhood victimization is of greater importance in predicting both direct and indirect female adolescent aggression than psychopathy. Juvenile female offenders, however, have very high rates of victimization (Lederman & Brown, 2000) and may, arguably, not be representative of female psychopathy in general. Furthermore, there has been only limited validation of the PCL:YV in female samples (Odgers et al., 2005). As such, it is questionable how accurately this measure is capturing the female characteristics of psychopathy.

In another study using female juvenile offenders, Marsee and Frick (2007) studied the relationship between indirect aggression and callous-unemotional traits. Although not strictly a measure of psychopathy, the presence of callous-unemotional traits in childhood has been strongly associated with both factor 1 psychopathic traits and the later development of psychopathy (Frick, 2007). Callous-unemotional traits were found to be significantly related to the presence of both reactive and proactive indirect aggression although this was significantly stronger for the latter form of aggression (Marsee & Frick, 2007). Furthermore, once proactive direct aggression had been controlled for there was still a significant association between proactive relational aggression and callous-unemotional traits though the reverse was not true. This suggests that females higher on psychopathic traits will use indirect forms of proactive aggression over direct forms.

Marsee and colleagues also considered the relationship between psychopathic traits and self-reported direct and indirect aggression (Marsee, Silverthorn, & Frick, 2005) in a community sample of 10 to 17 years olds. This study used both teacher and self-report versions of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), developed using PCL-R items modified to be more relevant to the psychopathy concept in

children. Although both teacher and self-reported total psychopathy was found to be significantly correlated with indirect aggression once the effect of direct aggression was controlled for this was no longer significant for teacher ratings. However, inspection of the correlations by gender indicated that teacher rated psychopathy was significantly correlated with relational aggression for girls but not boys even once the effects of direct aggression had been controlled for (Marsee et al., 2005). In contrast, self-reported psychopathy was found to be equally associated with indirect aggression for both girls and boys. Although, there was a significant interaction between psychopathy and sex for direct aggression with psychopathy predicting higher levels of direct aggression for boys than girls (Marsee et al., 2005). These conflicting findings may be, in part, due to the large age range observed within this study. Use of the teacher-rated version of the ASPD is recommended for younger children whereas the self-report version is considered to hold greater validity in older adolescents. Another explanation is that, as has been previously discussed (see 2.5), sex differences in aggression have been found to vary considerably over the course of adolescence, which may have affected results.

Penney and Moretti similarly compared the relationship between psychopathy and direct and indirect aggression in girls and boys. In this case, they used an at-risk population of adolescents aged between 12 and 18 assessed for psychopathy using the PCL:YV (Penney & Moretti, 2007). They found that once direct aggression was controlled for, girls used more indirect aggression than boys, however, psychopathy predicted use of this type of aggression significantly and equally for both sexes. Increased levels of both direct and indirect aggression were found to be related to the affective and impulsive factors but not the interpersonal style factor of psychopathy. The results of this study would appear to suggest that psychopathy predicts both direct and indirect aggression in similar ways, but the specific type of aggression used will be dependant on innate sex differences in the use of aggression.

### **2.6.3.2. Psychopathy and indirect aggression in adults**

Thus far there have only been a handful studies which have examined indirect aggression and psychopathy in an adult sample, many published within the last year. In an unpublished thesis, Ben-Horin (2001) looked at the relationship between two-factor PCL-R assessed psychopathy and indirect aggression in an adult female offender sample.



Significant relationships were found between both direct and indirect aggression and total and factor 2 aggression scores. Furthermore, indirect, but not direct, aggression was significantly correlated with factor 1 scores. In contrast to previous findings, however, it was reactive not proactive indirect aggression which was significantly correlated with factor 1 scores, whereas the inverse was true for factor 2 scores (Ben-Horin, 2001). However, there were issues of ethnicity involved with African-American inmates scoring significantly higher on both aggression and psychopathy scales. Indeed once the effect of ethnicity had been controlled for there was no longer found to be a relationship between psychopathy and indirect aggression use. However, this study did use a peer nomination instrument as a measure of indirect aggression. Peer nomination measures of aggression are arguably vulnerable to bias, failing to capture the true extent of a participants' aggression, as well as being vulnerable to floor effects (see 3.2.1). Use of peer nominations within Ben-Horin's study may pose particular problems as it is reliant on participants knowing all other participants equally. Given that individual offenders are liable to differ on the amount of time they have spent on the wing, this is not necessarily the case.

Miller and Lynam's (2003) research was up until very recently the only study to look at indirect aggression and psychopathy in an adult community sample. They looked at five-factor model assessed psychopathy and self-reported indirect aggression in a sample of college-age students. Psychopathy was found to be significantly correlated with indirect aggression, and this correlation was significantly stronger for female compared to male participants. However, the use of the five-factor model to estimate psychopathy scores is somewhat questionable and has not, as of yet, been effectively validated.

More recently Coyne and Thomas (2008) looked at the relationship between self-reported psychopathy, as measured by the Levenson's Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) and both direct and indirect aggression. Primary psychopathy, closely associated with the PCL-R factor 1, was found to be significantly predicted by the use of both direct and indirect aggression but secondary psychopathy, often taken to be PCL-R factor 2, was only predicted by direct aggression use. However, the LSRP has been strongly criticised on the grounds that it appears to be more a generalised assessment of anti-social behaviour and chronic criminality than actual

psychopathic personality (Brinkley, Schmitt, Smith, & Newman, 2001; Hicklin & Widiger, 2005).

Schmeelk et al (2008) in contrast did use the short version of a well-validated measure of self-report psychopathy, the PPI, to study the relation between this and indirect aggression within a community sample. They found that psychopathy total scores and the impulsive antisociality factor (corresponding to the two-factor model factor 2) were significantly correlated with indirect aggression use but that fearless dominance (corresponding to factor 1) was not. Possible sex differences in this relationship were also investigated, in particular looking at the interaction effect of sex on this relationship, however this effect was not found to be significant.

Finally, a recent study looked at the relation between personality pathology, including PPI assessed psychopathy, and both proactive and reactive direct and indirect aggression (Ostrov & Houston, 2008). This study is as such the first among adults to consider not only how psychopathy may interact with different forms of aggression but also the impact on the function it occupies. This study found that both proactive and reactive indirect aggression and proactive direct aggression were significantly related to impulsive antisociality, however that reactive indirect aggression was significantly negatively related to fearless dominance. There was also found to be an interaction effect of sex with regard to proactive indirect aggression, with significant associations between impulsive antisociality and this form of aggression for females but not for males. This would seem to imply that female psychopaths may be more liable to use indirect aggression proactively compared to males, although both seem to be equally related to the use of reactive indirect aggression.

These later two studies have particularly focused on only on the two-factor model of the PPI-R and although offering support for the relationship between psychopathy and indirect aggression also raise some equivocal findings in relation to sex differences. However, it is arguable that the two-factor model of the PPI-R does not adequately capture the full psychopathy construct, and in particular the affective deficits involved in psychopathy (see 3.1.3). It is, as such, arguable that the coldheartedness scale of the PPI-R should be considered as a third, independent factor. Certainly, the assessment of psychopathy

affective deficits may be particularly important given the observed relationship between these and proactive uses of aggression. As such, although these results would appear to offer some support for a relationship between psychopathy and indirect aggression, at least among non-criminal populations, it is clear further research is required. Certainly, the exact role of the different psychopathy factors within this relationship is not entirely certain and deserves further consideration.

#### **2.6.4. Psychopathy and aggression: Conclusions**

In conclusion, psychopathy is clearly related to the use of direct aggression in male samples. Psychopathic affective deficits, and in particular low empathy, are particularly associated with an increase in the use of proactive aggression. In contrast the anti-social and impulsivity facets are associated with increased reactive aggression. Findings in relation to female aggression appear to be considerably more mixed, with a failure to consistently find a significant relationship between psychopathy and use of direct aggression. One explanation put forward is a preferential use of indirect aggression among female psychopaths. Certainly, there are good theoretical links between the use of psychopathy and indirect aggression, however there has, as of yet, been little empirical research.

Indirect aggression has been identified as a theoretically important concept in understanding both female and non-criminal psychopathy. Specifically, it has frequently been theorised that the failure to consistently replicate the relationship between psychopathy and direct aggression among female samples may be due to the preferential usage of indirect aggression among women (Cale & Lilienfeld, 2002b). Similarly, many of the behavioural manifestations observed among non-criminal psychopaths bear strong resemblance to descriptions of indirect aggression (Babiak, 2000). The study of the relationship of indirect aggression and psychopathy may, as such, offer greater insights into the factors involved in the behavioural manifestation of psychopathic personality traits in these population groups. Further understanding of the factors moderating the relationship between psychopathy and indirect aggression may also benefit the treatment of psychopathy. Indirect aggression has been associated with increased intelligence and social skills but not later maladjustment and delinquency (Xie et al., 2002).

## 2.7. Hypotheses

Based on a review of the literature, a number of hypotheses have been generated which the following studies, reported in chapters 4 to 9, aim to test. Based on both theoretical links and prior research, it is expected that a positive correlation will be observed between psychopathy and indirect aggression and that this will be related to the affective and impulsive factors from the three-factor model of psychopathy, hypotheses which will be tested in Chapter 4. Despite the considerable theoretical links, there is only a small, but growing, body of research considering the relationship between indirect forms of aggression and psychopathic personality traits and even less looking specifically at the role of the individual factors in this.

- Hypothesis 1: There will be a positive correlation between psychopathy and indirect aggression and this will be driven by the affective and impulsivity factors

It is also hypothesised that any correlation observed between psychopathy and direct aggression is not wholly due to the relationship between these variables. Measures of direct and indirect aggression have been found to correlate moderately strongly (Richardson & Green, 2003; Vaillancourt et al., 2003). As such, it is arguable that any correlation observed between psychopathy and indirect aggression may result from the shared variance between indirect and direct forms of aggression. However, a number of psychopathy variables, such as low levels of empathy, found to increase direct aggression are also independently related to levels of indirect aggression (Kaukiainen et al., 1999). As such, it was hypothesised that there would remain a significant relationship between psychopathy and indirect aggression even after controlling for the effects of direct aggression. This hypothesis will be tested in chapter 5, including the development of a structural equation model to determine the exact relationship between psychopathy and both direct and indirect aggression.

- Hypothesis 2: The relationship between psychopathy and indirect aggression will remain even once direct aggression has been controlled for.

A number of variables have been identified as possible mediators and moderators of the correlation between psychopathy and indirect aggression. Increased indirect aggression

has been associated with lower levels of affective empathy (Björkqvist et al., 2000; Kaukiainen et al., 1999) and indeed it has been theorised that the use of indirect aggression is a result of a combination of low empathy and high social skills (Björkqvist et al., 2000). Psychopathy has similarly been associated with low empathy; indeed this has been put forward by a number of theories as the central deficit underlying the psychopathy construct (Blair et al., 2005). This empathy deficit has, however, only been found for affective empathic responses not cognitive forms of empathy, such as perspective taking (Blair, 2005). As such, it was hypothesised that affective empathy deficits will mediate the relationship between psychopathy and indirect aggression. In contrast, there is expected to be no association between psychopathy and cognitive empathy. Chapter 5 will also seek to test these mediation models using self-report measures of empathy whereas Chapter 9 will utilise behavioural measures of both affective and cognitive empathy to further verify these mediation models.

- Hypothesis 3: The relationship between psychopathy and indirect aggression will be mediated by levels of affective empathy but not cognitive empathy

The relationship between psychopathy and the use of indirect aggression is also hypothesised to be moderated by sex. Specifically, female psychopathy is hypothesised to display a stronger correlation with the use of indirect aggression than male psychopathy. Research into indirect aggression has indicated that women will preferentially use indirect forms of aggression whereas males will preferentially use more direct aggression (Hess & Hagen, 2006). Indeed, it has been hypothesised that the mixed findings from studies of direct aggression and female psychopathy may result from this preferential usage of indirect over direct aggression (Cale & Lilienfeld, 2002b). Prior research using both adolescent (Marsee et al., 2005) and student (Miller & Lynam, 2003) samples appears to support this hypothesis, although the latter did suffer from a number of methodological issues (see 2.6.3). Other research with adults has been more equivocal, with some research failing to indicate a sex difference (Schmeelk et al., 2008), whilst other research has indicated that the sex difference may only be at the factor level (Ostrov & Houston, 2008). Therefore, on the basis of prior research using adult populations no absolute difference in the use of indirect aggression is expected (Archer, 2004). Chapter 6 will perform a number of sex analyses to test this hypothesis.

- Hypothesis 4: Females will display a stronger relationship between psychopathy and indirect aggression than males.
- Hypothesis 5: There will be no difference in the overall level of indirect aggression use between males and females.

Participants' level of social skills is also hypothesised to have an effect on the relationship between psychopathy and indirect aggression. Specifically, research has indicated that higher levels of social skills are associated with increased levels of indirect aggression (Kaukiainen et al., 1999). Indeed, the Björkqvist theory of indirect aggression proposes that use of indirect aggression is dependant on a combination of low empathy, as seen in psychopathy, and high social skills (Björkqvist et al., 2000). As such, it is hypothesised that social skills may moderate the use of indirect aggression by psychopaths, such that individuals with high social skills and high psychopathy will engage in higher levels of indirect aggression than those with equally high psychopathy but low levels of social skills. This hypothesis will be tested in Chapter 7 using a series of regression analyses on self-report measures of social skills, indirect aggression and psychopathy.

- Hypothesis 6: The relationship between psychopathy and indirect aggression will be moderated by social skills.

As all the preceding studies will have been conducted using a university sample, which arguably may not be representative of the wider population, Chapter 8 will seek to generalise the findings from the prior studies to a non-student community sample. Prior to these studies however, Chapter 3 will first critically review the various measures of both psychopathy and indirect aggression, given the equivocal results that have resulted for the differing measures used. Due to the limited prior research in this area, this thesis will primarily aim to take a broad look at the relationship between psychopathic personality traits and the use of indirect aggression, considering a number of possible theoretically identified mediator and moderator variables.

## CHAPTER 3

### 3. Assessment of Psychopathy and Aggression

The research presented in this thesis is based on the use of two principal self-report assessment instruments to assess psychopathy and indirect aggression. These are the Psychopathic Personality Inventory – Revised (PCL-R; Hare, 2003) and the Indirect Aggression Scale (IAS; Forrest et al., 2005) respectively. Given the importance of the validity and reliability of these instruments, this chapter will look to examine these in more depth, as well as take a moment to justify the use of self-report measures for these two variables and briefly examine alternative measures for these concepts.

A number of other measures were also used within this research to measure related concepts, such as empathy, social skills, direct aggression and socially desirable responding. However, these will not be described in depth here due to space limitations. Instead, will be covered in the method sections of the individual studies they were utilised in.

#### 3.1. Psychopathy assessment: Self-report scales

The use of self-report scales in psychopathy research has long been a source of controversy. It has been argued that given psychopaths' propensity towards dishonesty and deception, the validity of their responses on self-report scales may be questionable at best. Furthermore, it has been found that psychopaths are particularly skilled at deceiving self-report scales when instructed to do so (Edens, Buffington, Tomicic, & Riley, 2001) whilst avoiding detection on the associated validity scales (Book, Holden, Starzyk, Wasylkiw, & Edwards, 2006; Edens et al., 2001; MacNeil & Holden, 2006). However, there is also evidence that, for the most part, psychopaths do not necessarily engage in such impression management, certainly under circumstances where there is not an obvious and immediate benefit to themselves to do so (Lilienfeld & Andrews, 1996). Indeed clinical accounts frequently indicate that psychopaths are often surprisingly candid in interviews regarding their antisocial behaviour and indeed in many cases boastful (Cleckley, 1988; Hare, 1999). It is arguable that high-psychopathy scorers may hold different conceptions of what are

desirable or admirable traits (Lilienfeld, 1994) and as such may be less likely to engage in the forms of social impression management found among non-psychopathic respondents.

It has been argued that a significant advantage of self-report measures is their ability to tap into respondents' subjective states or traits, particularly those that may not be easily accessible by outside observers (Lilienfeld & Fowler, 2006). However, this may not necessarily be the case with psychopathy as a lack of insight has been strongly associated with the disorder (Cleckley, 1988). This is not an insurmountable deficit, however, as self-report responses do not need to be factually accurate to be useful (Lilienfeld, 1994). Even inaccurate responses may nonetheless offer insight into the respondent's attitudes and self-perceptions, such as items indicating blame externalisation or grandiose views of self-worth (Lilienfeld & Fowler, 2006).

Given these issues it may be questionable why anyone has attempted to develop psychopathy self-report measures at all. Self-report scales do nonetheless offer a number of distinct advantages over interview based methods such as the PCL-R. Firstly, on a practical note, they are both quicker and cheaper to administer, requiring significantly less training and administration time. This can render them invaluable as screening measures to allow effective targeting of resources, or for use in research, whereby the assessment of large populations is often necessary. Arguably, there is an increased level of reliability since they are not dependant on the clinician's subjective interpretation or inference from clinical interviews. Furthermore, they do not require the use of collateral or file information, thus allowing the effective assessment of non-institutionalised populations. Indeed, unlike clinical assessments of psychopathy, in particular the PCL-R or the PCL:SV, which were developed and validated using offender or psychiatric populations, many self-report measures were developed specifically to allow the dimensional assessment of the construct within community samples. This next section will present a brief over-view of three of the most commonly used psychopathy self-report measure and their respective advantages and disadvantages.



### **3.1.1. Levenson's self-report psychopathy scale (LSRP; Levenson et al., 1995)**

One of the more commonly used psychopathy self-report scales is Levenson's Self-Report Psychopathy Scale (Levenson et al., 1995). This scale was developed to measure the theoretical constructs of Primary and Secondary Psychopathy theorised to be broadly analogous to PCL-R factor 1 and factor 2, respectively. The LSRP displays adequate internal consistency for total and primary psychopathy scores, with Cronbach alphas of .83 and .80 respectively but only .64 for secondary psychopathy (Brinkley et al., 2001). Primary and secondary psychopathy were found to be moderately, but significantly correlated, mirroring findings with the PCL-R factors (Levenson et al., 1995; Lynam, Whiteside, & Joanes, 1999).

Levenson and colleagues (1995) found the LSRP was significantly positively correlated with measures of impulsivity and anti-social behaviour and negatively with measures of fear response. However, contradicting its theorised correspondence with PCL-R factor 1, primary psychopathy was found to be a more significant predictor of anti-social behaviour than secondary psychopathy, a reverse of the relationships seen with factor 1 and factor 2 of the PCL-R. Furthermore, Brinkley et al. (2001) found the scale to correlate only moderately with PCL-R total scores. Indeed, the correlation achieved was little better than that achieved by non-specific measures of social deviancy. Furthermore, the LSRP total score and both psychopathy factor scales were found to display considerably stronger correlations with factor 2 than factor 1 scores. Although the primary psychopathy factor was found to display a significant correlation with factor 1 scores, it nonetheless displayed stronger correlations with factor 2 scores, in contrast to what would be expected should this scale primarily be a measure of the interpersonal and affective psychopathy deficits. This would appear to indicate that the scale fails to tap into the unique variance associated with PCL-R factor 1.

As such, it would appear that the LSRP taps into generalised social deviance rather than any specific psychopathy related personality traits. Indeed, when Hicklin and Widiger (2005) examined the associations between various psychopathy and anti-social personality disorder (ASPD) self-report scales and the five factor model of personality, it was found that the LSRP displayed a profile more in keeping with the measures of ASPD as opposed

to the psychopathy scales. It was also found to display the lowest convergent validities with either ASPD or psychopathy, indicating that it may even fail to adequately capture either of these constructs.

### **3.1.2. Hare's self-report psychopathy scale (SRP-II; Hare, 1985)**

The Self-Report Psychopathy (SRP-II) scale was developed by Hare (Hare, 1985) as a self-report version of the PCL-R. The scale contains 60 items divided into two factors, replicating the structure of the PCL-R. The SRP-II displays good construct validity, displaying significant positive correlations with measures of narcissism (Paulhus & Williams, 2002; Zagon & Jackson, 1994), machiavellianism (Williams & Paulhus, 2004) and anti-social personality disorder (Salekin, Trobst, & Krioukova, 2001), as well as strong negative correlations with measures of both empathy and anxiety (Zagon & Jackson, 1994). It has also been found to display significant correlations with both the PCL-R (Hare, Hart, & Harpur, 1991) and PCL:SV (Forth et al., 1996), as well as a correlation coefficient of .91 with the PPI (Lilienfeld & Andrews, 1996), indicative that these scales assess the same underlying construct. The scale has also been found to display similar correlations to the PCL-R with scales of normal personality functioning such as the interpersonal circumplex (Salekin et al., 2001) and the five factor model (Hicklin & Widiger, 2005), indicate that the SRP-II adequately captures the personality traits associated with the psychopathy construct.

There are nonetheless concerns over the validity of the SRP-II and in particular with its factor structure. Using only 22 of the scale's 60 items, the factor structure was rationally generated so as to replicate that of the PCL-R (Hare, 1991); however, the factor 1 scale was found to display very poor internal consistency (Cronbach's alpha = .47; Benning, Patrick, & Iacono, 2005). Furthermore, attempts to replicate the proposed factor structure using statistical methods have also consistently failed. Attempts to generate a statistically derived factor structure have generated strong two and three factor solutions, based on a 31-item version of the test (Williams, Nathanson, & Paulhus, 2002). Although the two-factor solution from this did not appear to adequately capture the interpersonal features of the disorder, the three-factor solution did appear to replicate Cooke & Michie's (Cooke & Michie, 2001) three factor model, generating impulsivity, interpersonal and affective sub-

scales. However, the affective factor displayed poor construct validity, appearing more to measure emotional stability than affective deficits per se (Williams et al., 2002).

With the development of the four facet model of psychopathy (Hare, 2003), a revised version of the SRP-II was developed to bolster items of the three-factor model derived by Williamson and colleagues (2002), as well as to tap into the antisocial facet, which was deemed to be lacking from this model. Items were selected on the basis of correlations with the existing factor scales and resemblance with theoretical concepts of anti-social behaviour, resulting in four scales of 10-items each, designed to broadly replicate the PCL-R's four-facet model. A confirmatory factor analysis indicated that this model was an adequate fit to the data (Williams, Nathanson, & Paulhus, 2003). However, although statistically significant, correlations with the PPI were moderate whereas correlations with the LSRP were considerably higher (Williams et al., 2003). Given that the latter has been found to have a strong bias towards factor 2 and general social deviance, this would appear to indicate that the SRP-III may only tap into the behavioural components of psychopathy. Indeed, only the affective factor of the SRP-III factors was found to significantly correlate with PCL-R factor 1 scores and this was in a negative direction (Williams et al., 2003), contrary to that which would be expected theoretically, which raises significant questions over the scale's validity.

### **3.1.3. The psychopathic personality inventory-revised (PPI-R; Lilienfeld & Widows, 2005)**

The Psychopathic Personality Inventory and its more recent revised version may, arguably, be the best validated of the various psychopathy self-report measures (Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005). Developed specifically to measure the personality features of psychopathy among a non-institutionalised population, Lilienfeld and colleagues used statistical techniques to derive the central psychopathic personality features from a large pool of items drawn from the literature (Lilienfeld & Andrews, 1996). The PPI consisted of 187 items separated into eight sub-scales, which was reduced to 154 items in the revised version. The differences between the original and revised versions of the scale consisted predominantly of a simplification of some of the language, the removal of culture-specific references and the removal of a small number of items and did not have

a major impact on the overall structure or content of the scale (Lilienfeld & Widows, 2005). As such, the validity findings from the PPI and the PPI-R will be discussed in the following section interchangeably.

The scale is divided into eight sub-scales, a structure which remained the same between the two versions of the scale: machiavellian egocentricity capturing the psychopaths self-serving narcissism and manipulative interpersonal style, social influence assessing glib and superficial charm, coldheartedness sub-scale tapping into affective deficits and lack of guilt, carefree nonplanfulness assessing an impulsive indifference towards planning one's own actions, fearlessness capturing the absence of anticipatory fear and increased risk taking, blame externalisation representing the psychopath's failure to accept responsibility, rebellious nonconformity assessing a reckless lack of concern for social mores and stress immunity, covering the tendency to remain calm under anxiety-provoking circumstances.

Both the original scale and the revised versions were found to display good internal consistency, with a Cronbach's alpha of .95 (Benning et al., 2003) for the original and .93 for the revised version (Lilienfeld & Widows, 2005). The psychopathy sub-scales were similarly found to display very good internal consistencies in community samples, between .78, for coldheartedness, and .87, for social influence and fearlessness, in the revised version (Lilienfeld & Widows, 2005). Both versions of the scale demonstrated very good test-retest reliability of .93 over an average interval of 19.94 days (Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005). These findings support the PPI-R as a highly consistent and reliable measure of psychopathy.

There is also considerable research supporting the construct validity of both the PPI and its revised version. PPI total scores were found to be strongly and significantly correlated with PCL-R scores for both male (Poythress, Edens, & Lilienfeld, 1998) and female offenders (Berardino et al., 2005). Furthermore, unlike other self-report psychopathy scales, the PPI total score was found to correlate equally with PCL-R factor 1 and factor 2 scores. Indeed, once the shared variance between these two scales had been accounted for, the scale remained significantly correlated with factor 1 scores but not factor 2 (Poythress et al., 1998). This would suggest that, unlike other self-report measures which have been found to focus predominantly on the anti-social behavioural aspects of psychopathy (Hicklin &

Widiger, 2005), the PPI-R manages to capture the interpersonal and affective psychopathic traits as well as social deviance. The PPI-R's criterion validity has also been supported in its relationship with other self-report psychopathy measures. In particular, it has been found to strongly correlate with SRP-II total scores (Lilienfeld & Widows, 2005), as well as significantly, although more moderately, with the LSRP (Hicklin & Widiger, 2005). Similarly, the PPI has been found to correlate significantly with measures of social deviance and anti-social personality disorder (Berardino et al., 2005; Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005). The correlations between the PPI-R and ASPD, social deviance and the LSRP have been found to be considerably lower than those observed with the PCL-R or SRP-II. This, however, would be expected given the PPI's focus on psychopathy related personality traits and indeed serves to further support the validity of the PPI-R as a measure of underlying psychopathic personality deficits as opposed to merely capturing a more generic antisocial behaviour trait.

The construct validity of the PPI has been demonstrated through its relationship with external correlates. For example, Lilienfeld and Andrews (1996) found the scale to be negatively correlated with measures of both fearfulness and social anxiety, as would be expected given the fear deficits associated with psychopathy (Blair et al., 2005). Research has also indicated that, as would be theoretically expected, the scale is positively correlated with measures of aggression and delinquent behaviour but is negatively correlated with measures of empathy (Benning et al., 2003; Patrick et al., 2006; Sandoval et al., 2000). Similarly strong significant correlations have been found between the PPI-R and both sensation seeking and machiavellianism (Lilienfeld & Widows, 2005), personality traits that have similarly been found to correlate with PCL-R psychopathy (Hall et al., 2004; McHoskey, Worzel, & Szyarto, 1998; Paulhus & Williams, 2002). Furthermore, similarly to other measures of psychopathy, the PPI-R total scores are related to the arrogant-calculating octant of the interpersonal circumplex, supporting its validity in relation to normal-range personality variables (Benning et al., 2003; Salekin et al., 2001). The PPI-R also replicates findings from the PCL-R in relation to the MPQ personality scales and the five factor model (Hicklin & Widiger, 2005; Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005). Indeed observation of the correlations between scores on the PPI-R and the five-factor model would appear to point towards the PPI-R assessing a personality profile similar to the psychopathy prototype developed by Miller and Lynam (Miller &

Lynam, 2003; Miller et al., 2001), with significant negative correlations between PPI-R scores and both agreeableness and conscientiousness. These findings support the PPI-R as a valid and reliable self-report measure of psychopathy, displaying both good convergent and construct validity, certainly when observed in terms of its total score.

Recently, Benning et al (2003) investigated the PPI's factor structure, finding that the scale replicated the two factor structure of the PCL-R. They found that the stress immunity, social influence and fearlessness sub-scales loaded on to the fearless dominance factor, bearing strong similarities to interpersonal aspects of the PCL-R's factor 1. Additionally they found that the PCL-R factor 2 was represented by an impulsive antisociality factor, with loadings from the rebellious nonconformity, blame externalisation, machiavellian egocentricity and carefree nonplanfulness sub-scales. Indeed, the impulsive antisociality factor from the PPI-R was found to correlate significantly with SRP-II factor 2 but not factor 1 whereas fearless dominance correlated more strongly with SRP-II factor 1 than factor 2 (Benning et al., 2003). However, the coldheartedness sub-scale was not found to load onto either of these factors and in the revised version of the scale it was suggested that this scale should be considered as a factor in its own right (Lilienfeld & Widows, 2005). Observation of these three factors would appear to indicate that they map onto the Cooke and Michie (2001) three-factor model factors, with coldheartedness corresponding to the affective factor, fearless dominance to the interpersonal factor and impulsive antisociality, as might be expected, to the impulsivity factor. However, some questions have been raised as to the exact factor structure of the PPI-R, more recent research using factor analysis on a large offender sample has failed to replicate this factor structure adequately (Neumann, Malterer, & Newman, 2008). Although it should be noted that this study was conducted on a different sample, offenders, to that on which the original factor structure was developed.

Although little research has, thus far, considered the differential relations between all three factors; both impulsive antisociality and fearless dominance have been found to display differential correlations with criterion variables. Differences have been found in relation to anti-social behaviour, with strong positive correlations present between the impulsive antisociality factor and both adult and childhood anti-social behaviour, substance abuse, aggression, boredom and both the boredom susceptibility and disinhibition sub-scales from the sensation seeking scale. Fearless dominance scores in contrast were found to be only

negligibly, although statistically significantly, correlated with levels of adult anti-social behaviour, but more strongly positive correlations with the thrill seeking sub-scale for the sensation seeking scale (Benning, Patrick, Blonigen et al., 2005; Benning et al., 2003; Patrick et al., 2006). Indeed, mirroring the PCL-R factors, the two scores appear to display inverse correlations in some cases. For example, fearless dominance was found to be significantly negatively correlated with measures of anxiety, depression and personality disorders, with the exception of ASPD. In contrast, impulsive antisociality was found significantly positively correlated to all personality disorder measures, anxiety and depression scores (Benning, Patrick, Blonigen et al., 2005; Benning et al., 2003; Patrick et al., 2006). These findings similarly reflect the differences observed between the two factors based on PCL-R (see 1.2.3.1) and thus serve to further support the scale's construct validity.

The two factors have also been found to differ on measures of normal personality functioning, occupying different octants on the interpersonal circumplex, and differential relationships on MPQ measures of personality (Benning et al., 2003). These findings appear to mirror those found with the PCL-R factors once the shared variance has been accounted for, supporting the validity of both the PPI-R and its factor structure. Indeed, the PPI factors were each found to correlate most significantly correlated to their respective PCL-R counter-parts (Benning, Patrick, Blonigen et al., 2005), although as of yet no comparison has been made between the PPI-R factors and the 3-factor model of psychopathy.

There has been some criticism, however, of the PPI factor structure, in particular the lack of correlation between the fearless dominance and impulsive antisociality factors (Benning et al., 2003). Although this raises issues as to whether or not the PPI is truly assessing a single unified construct, arguably, these results may reflect some of the heterogeneity in the underlying psychopathy construct. Nonetheless the PPI-R has been found to be a highly valid and reliable self-report measure of psychopathy, and the observed factor structure does appear to reflect many of the differential correlations observed within the PCL-R factor structure itself. Furthermore, unlike other self-report measures of psychopathy, the PPI-R appears to actually capture the underlying psychopathic personality deficits rather than merely assessing overt anti-social behaviour. This is particularly important given the

on-going debate over the exact role of anti-social behaviour in the psychopathy conceptualisation (see 1.2.3.2) and indicates that the PPI-R may be the most effective assessment tool when investigating non-criminal behavioural manifestations of psychopathic personality traits.

## **3.2. Indirect aggression assessment tools**

### **3.2.1. Use of self-report**

Both direct and indirect forms of aggression have been assessed in a number of different ways. Early aggression research made considerable use of experimental situations to elicit aggressive reactions and direct observation of aggressive interactions. However, such behavioural measures use highly artificial situations, thus lacking ecological validity and, arguably, present difficulties in interpreting aggressive intent. Furthermore, given the highly social and manipulative nature of indirect aggression, it is questionable whether either outside observation or laboratory paradigms could effectively capture this type of aggression. More recently researchers have started to use implicit behavioural measures, such as the Implicit Association Task, to capture indirect aggressive responses (e.g.; Richetin & Richardson, 2008), which may help circumvent some of the issues surrounding validity or socially desirable responses observed with overt behavioural measures. However, these measures arguably will not effectively capture or differentiate between the different forms of indirect aggression.

Peer reports have fared somewhat better and have seen considerable use in the study of both direct and indirect aggression in school children. Peer nominations, whereby participants nominate a number of their classmates who corresponds the most to a particular statement, have been used in a large number of studies albeit predominantly with school-aged samples (Archer, 2004). However, this method suffers from a number of drawbacks. Primarily that those nominated by peers are liable to be the more overtly aggressive children which may be an issue when measuring indirect aggression as many of the associated behaviours rely on manipulation and deceit (Xie, Cairns, & Cairns, 2005). Furthermore, particularly in large classes not all individuals may be equally well known to others and thus there may be a familiarity effect on nominations. Finally, peer nominations require small, close-knit groups of individuals who are familiar with each other's



behaviour patterns. This makes this method impractical for use in a large-scale study of adult community or student samples.

Peer ratings differ from peer nominations as each individual participant within a group is rated by every other participant on relevant behaviours/scales. However, arguably, such ratings rely on the ability of each rater to accurately judge the participant's behaviour across multiple settings in an unbiased and systematic fashion. Nonetheless this method has been used to great effect in school and indeed college samples. However, as with peer nominations, there are practicality issues involved in its use in large community samples, in particular access to, and response from, appropriate peers and bias towards more overt users of aggression.

Self-report measures can be used in a number of ways to measure aggression, both direct and indirect. However, these are not without criticism. In particular, it has been argued that such measures of aggression are vulnerable to socially desirable responding, due to the socially unacceptable nature of the behaviour, and indeed results may even be confounded by individual participants' social desirability bias (Suris et al., 2004). Nevertheless methods such as the preservation of anonymity or neutrally worded instructions can be used to help reduce this response bias (Paulhus, 2002). Aggression self-report measures have been found to correlate significantly negatively with measures of social desirability (Harris, 1997). However, arguably, this may also reflect that individuals high on social desirability may simply be less likely to commit socially undesirable acts. Furthermore, although it has been found that participants report higher levels of aggression when rating others, self-reports of aggression are nonetheless significantly correlated with peer ratings of both direct and indirect aggression (Richardson & Green, 2003). Self-report measures do have the advantage that they allow the reporting of behaviours and behavioural tendencies across a variety of settings that may not be available to peers, as well as capturing covert acts of aggression which may not necessarily otherwise be attributed to the individual. However, they do also require a level of self-awareness of one's own aggressive tendencies.

In conclusion, it would appear that though observational measures and peer ratings may be best suited for use with children and adolescents, self-reports appear to be appropriate in

the study of aggression in adults. Nonetheless, it is clear that social desirability can have an effect on responses, and as such self-report aggression scales should be administered with a measure of impression management and self-deception so as to control for this.

### **3.2.2. Richardson conflict response questionnaire (RCRQ; Richardson & Green, 2003)**

The RCRQ is a self-report scale consisting of 20 aggression items, 10 measuring direct aggression and 10 indirect aggression, along with 8 filler items representing non-aggressive methods of dealing with conflict. It was developed for use with adult samples, however it uses a number of items taken from scales developed for use with children. Respondents are asked to indicate on a 5-point scale how frequently within a given time period they had engaged in each of these behaviours whilst angry. As such, the scale arguably only considers reactive aggression as opposed to instrumental aggression and the items are predominantly written to reflect this. This is of relevance when engaging in psychopathy research since psychopathy has been strongly linked to increased levels of proactive aggression (Cornell et al., 1996; Porter & Woodworth, 2006). The scale was found to display good internal validity over a number of validation studies, with Cronbach alphas ranging between .77 - .91 for direct aggression and .80 - .84 for indirect aggression (Richardson & Green, 2003).

The scales' validity is supported by positive correlations between self-estimations and peer ratings on the scale, with a correlation coefficient of .55 for direct aggression and .58 for indirect aggression (Richardson & Green, 2003). Supporting the scale's construct validity as a measure of reactive aggression, direct aggression was found to correlate strongly with levels of anger and negatively with anger control. Strong positive correlations were also found, as expected, with the Aggression Questionnaire (AQ) measures of physical and verbal aggression (Richardson & Green, 2003). Indirect aggression, in contrast was not found to significantly correlate with either AQ physical or verbal aggression supporting its discriminant validity (Richardson & Green, 2003). Richardson and Green (2003) also found the indirect aggression scale correlated positively with machiavellianism as would be theoretically expected. However, indirect aggression was also found to be significantly

correlated with levels of neuroticism and, in contrast to previous findings (Kaukiainen et al., 1999), unrelated to levels of affective empathy (Richardson & Green, 2003).

It would appear that indirect aggression, as assessed by the RCRQ, measures a tactic associated with increased anxiety and distress related to social interactions, although whether this is a cause or a consequence is far from clear. There is some evidence that use of indirect aggression can be associated with depression and peer rejection (Crick & Grotpeter, 1995; Henington, Hughes, Cavell, & Thompson, 1998); research predominantly points towards indirect aggression being related to increased popularity and levels of social intelligence (Xie et al., 2002). Arguably this may be due to the RCRQ's over-emphasis on reactive aggression and acts committed in anger. The RCRQ also uses test items taken from scales directed at children or adolescents, which arguably may not effectively capture adult manifestations of relational aggression.

### **3.2.3. Indirect aggression scale (IAS; Forrest et al., 2005)**

Designed specifically to measure aggression within adult populations, the IAS items were developed from qualitative interview responses given by male and female adult participants of various ages regarding their personal experiences of indirect aggression. Indirect aggression was described to participants as “behaviour where they were hurt (or hurt another person) in more covert and manipulative ways” (Forrest et al., 2005). The scale consists of 25 items rated on a 5-point likert scale as to how often the respondent had used each of these behaviours in the last 12 months (from *never* to *regularly*). A factor analysis indicated that these items loaded onto three distinct factors: Malicious Humour, being the use of humour to harm the victim; Social Exclusionary Behaviours, aggressive behaviours relying on social manipulation, deception and withholding of information; and Guilt Induction, the use of behaviours such as emotional blackmail, coercion or other forms of pressure so as to induce guilt or other similar negative emotions (e.g., shame) in the victim. This differentiation between differing types of indirect aggression would appear to mirror in some ways the ‘rationally-appearing aggression’ and ‘social manipulation’ distinction identified in adult samples (Björkqvist et al., 1992).

Though little direct validation has as of yet been carried out on the scale, it displays strong psychometric properties. All three subscales were found to have good internal consistency (Cronbach alphas of .82, .84 and .81 respectively). Some support of its construct validity has been found, including negative correlations with measures of empathy and significant, but moderate, positive correlations with measures of direct aggression (Sergeant et al., 2006). No significant sex differences were found for indirect aggression scores, however this is consistent with prior research indicating that there were no significant sex differences in the use of indirect aggression in adult samples (Archer, 2004; Björkqvist et al., 1994). Nonetheless, the IAS appears to be the most promising of the various self-report measures in its assessment of adult indirect aggression. Furthermore, it has previously been used in research looking at the relationship between psychopathy and indirect aggression, thus allowing for effective comparisons (Coyne & Thomas, 2008).

#### **3.2.4. Conclusion**

Despite many of the fundamental difficulties in assessing both psychopathy and indirect aggression using self-report measures, it is clear there are a number of theoretical and, above all, practical reasons for doing so. With regard to psychopathy self-report measures: Levenson's self-report psychopathy scale fails to tap into the core psychopathic personality features, whilst although displaying construct validity, the SRP appears to display considerable issues with its factor structure, which at best only utilises approximately half of the scale's items. The PPI-R displays arguably the best construct validity among all the psychopathy scales, and the most consistent factor structure. The choice would appear to be less clear-cut with the indirect aggression assessment scales, however on balance the Indirect Aggression Scale would appear to display considerable advantages over the RCRQ, not least being developed exclusively for use with adult samples.

## CHAPTER 4

### 4. Study 1: An investigation of the relationship of psychopathy with indirect aggression<sup>1</sup>

#### 4.1. Introduction

As previously reviewed (see section 2.6), psychopathy has long been associated with increased levels of violence and aggression, particularly in male inmates. However, not all aggression takes the form of direct violence or threats, with a significant proportion of aggression used by adults consisting of indirect aggression both in the community (Archer & Coyne, 2005; Björkqvist et al., 1994) and in prison (Ireland, 1999).

Despite this, very few studies have examined the relationship between psychopathy and increased levels of indirect aggression, certainly within adult populations. Only four studies have thus far considered this relationship in any depth within an adult, non-criminal population (Coyne & Thomas, 2008; Miller & Lynam, 2003; Ostrov & Houston, 2008; Schmeelk et al., 2008). Though these studies would appear to support a relationship between psychopathy and indirect aggression, a number of these suffer from a number of methodological issues (see 2.6.3) which render their results questionable.

A number of these studies considered the impact of factor scores on this relationship, however, the results from these were conflicting at best. Coyne and Thomas (2008) indicated that use of indirect aggression was predominantly associated with factor 1 scores (assessed using the Primary Psychopathy scale of the LSRP). In contrast, research using the PPI-R had indicated that indirect aggression is predominantly associated with factor 2 scores, assessed by the Impulsive Antisociality scale (Ostrov & Houston, 2008; Schmeelk et al., 2008). Arguably these conflicting findings may be due to methodological differences between the two studies and in particular differences in the psychopathy self-report scales used. However, these studies utilised only a two-factor psychopathy structure, which, recent research indicates, may not adequately capture the construct (Cooke & Michie,

---

<sup>1</sup> Significant parts of this chapter have been published in Warren & Clabour (2009) in *Aggressive Behavior*

2001). As such, this first study seeks to not only replicate prior findings indicating a relationship between psychopathy and indirect aggression but also investigate this relationship more in-depth in relation to a three-factor model of psychopathy.

A university sample was chosen for use in this study for a number of reasons. On a practical note, they are easily accessible and as such the majority of measures, including the PPI, have been developed and validated on this sample. Similarly, most indirect aggression research conducted on adult populations has used students (e.g., Loudin, Loukas, & Robinson, 2003; Werner & Crick, 1999) thus allowing for more valid comparisons with prior research. Secondly, both self- and peer-reported indirect aggression has been found to be unrelated to academic performance (Xie et al., 2002). Furthermore, the personality and affective dimensions of psychopathy operate independently of intelligence (Hall et al., 2004; Sullivan et al., 2006). As such, the distribution of such traits among a student population would be expected to be similar to that within the general population. Certainly, given the current policy of the British government to widen university attendance, there are increasing levels of diversity now represented in student social backgrounds. Finally, the nature of the student community is such that it leads to the development of numerous high density and well established social networks, an environment highly conducive to the use of indirect aggression (Archer, 2004; Archer & Coyne, 2005).

This study seeks primarily to confirm the existence of an association between psychopathy and increased levels of indirect aggression. It will also seek to investigate the role of individual factors in this, prior to further consideration of possible sex effects and influence of other moderators or mediators of the relationship. On this basis it was hypothesised that indirect aggression would be found to correlate significantly with total psychopathy scores. Given the conflicting results from prior research into the role of the psychopathy factors it is difficult to draw any firm predictions from these studies, however given the use of the PPI-R in this study, it could be expected that results would at least partly replicate prior findings using this scale and show a significant correlation between indirect aggression and impulsive antisociality. However, it could also be expected that the relationship between the three-factor model of psychopathy and indirect aggression may replicate aspects of that

seen between the three psychopathy factors and direct aggression. Therefore, significant positive correlations are expected with coldheartedness as well.

- Hypothesis 1a: There will be a significant relationship between psychopathy and indirect aggression
- Hypothesis 1b: Indirect aggression will be significantly correlated with the impulsive antisociality and coldheartedness factors only.

## **4.2. Method**

### **4.2.1. Participants**

The study used 103 participants, comprising an opportunity sample of 84 females and 19 males, all of whom were psychology students in their first year at a northern British university. Participants were given the option to participate after a core module lecture and they completed the study as part of their 'subject hours', a course requirement whereby they must complete a pre-determined amount of time as participants in departmental experiments. The mean age for participants was 18.65 years ( $sd = .79$ ). Seventy-nine percent of participants were of White ethnicity, 10.8% were Chinese, 3.9% Black, 2.9% were Asian, 2% were of Japanese origin and 1% were mixed race. Eighty-five percent of participants were native English speakers. On the basis of the PPI validity scales, five participants' data were removed from further analysis (see section 4.2.3) and one was removed due to missing data, resulting in a final sample of 97 (81 females and 16 males) with a mean age of 18.66 years ( $sd = .77$ ). Four of the six participants whose data were removed were non-native English speakers.

### **4.2.2. Measures**

#### **4.2.2.1. Psychopathic Personality Inventory - revised (PPI-R; Lilienfeld & Widows, 2005)**

The PPI-R has been described in depth in the previous section and as such will only briefly be described here (see 3.1.3). It is a 154-item scale designed to measure psychopathic traits in a non-criminal population. Participants are asked to indicate for each item on a 4-point

likert scale how *'false or true'* the statement is about them, scored from 1 (very false) to 4 (very true). As a number of items on the scale are part of the validity scales and not represented in the total psychopathy score, the PPI-R score range is between 131 and 524. The scale measures psychopathy on eight subscales, grouped into a three-factor structure (Lilienfeld & Widows, 2005):

Factor 1: Fearless dominance:

- Social influence (18 items; range 18 - 72): perception of self as socially confident and charming; e.g., “When I meet people, I can often make them interested in me with just one smile” and “I have a talent for getting people to talk to me”
- Fearlessness (14 items; range 14 - 56): risk-taking behaviour and lack of anticipatory fear; e.g., “When my life gets boring, I like to take chances” and “It might be exciting to be on a plane that was about to crash but somehow landed safely”
- Stress immunity (13 items; range 13 - 52): low-anxiety, tendency to remain calm under pressure; e.g., “I don’t let everyday hassles get on my nerves” and “I function well under stress”

Factor 2: Impulsive antisociality:

- Machiavellian egocentricity (20 items; range 20 - 80): ruthless manipulation and narcissistic interpersonal functioning; e.g., “I get mad if I don’t receive special favours I deserve” and “If I want to, I can get people to do what I want without them ever knowing”.
- Rebellious nonconformity (16 items; range 16 - 64): disregard of social norms and boredom susceptibility; e.g., “I have always seen myself as something of a rebel” and “I’ve never cared about society’s “values of right and wrong”
- Blame externalisation (15 items; range 15 - 60): rationalization of misbehaviour and assigning blame to others for own problems; e.g., “If I’d had fewer bad breaks in life, I’d be more successful” and “I’ve been the victim of a lot of bad luck”
- Carefree nonplanfulness (19 items; range 19 - 76): lack of long-term goals and tendency to act without planning or forethought; e.g., “A lot of times, I repeat the same bad



decision” and “When people lend me something, I try to get it back to them quickly (reverse scored)”

Factor 3: Coldheartedness:

- Coldheartedness (16 items; range 16 - 64): lack of empathy or deep attachment/affect; e.g., “A lot of times, I worry when a friend is having personal problems (reverse scored)” and “I often feel guilty about small things (reverse scored)”

The PPI-R additionally contains three validity scales: the deviant responding scale (10 items), the virtuous responding scale (13 items), and the inconsistent responding scale (15 or 40 item pairs), designed to measure malingering, socially desirable responding and inattentive or random responding respectively.

#### **4.2.2.2. Indirect aggression scale (IAS; Forrest et al., 2005)**

Designed specifically to measure aggression within adult populations, the IAS items were developed from qualitative interview responses given by male and female adult participants of various ages regarding their personal experiences of indirect aggression, both as a victim and an aggressor (see 3.2.3). Indirect aggression was described to participants as “behaviour where they were hurt (or hurt another person) in more covert and manipulative ways” (Forrest et al., 2005). The scale consists of 25 items rated on a 5-point likert scale as to how often the respondent had used each of these behaviours in the last 12 months (from 1, *never*, to 5, *regularly*), resulting in a scale range of 25 to 125 (see Appendix 4.1 for full scale). These items were in turn divided into three sub-scales:

- Malicious humour: the use of humour to harm the victim. This included the use of verbally aggressive behaviours that might otherwise be considered overtly aggressive, but utilised in such a way that they appeared to be said in fun (9 items, range 9 - 45);
- Social exclusionary behaviours: aggressive behaviours relying on social manipulation, deception and withholding of information so as to socially exclude the victim (10 items, range 10 - 50);

- **Guilt induction:** the use of behaviours such as emotional blackmail, coercion or other forms of pressure so as to induce guilt or other similar negative emotions (e.g. shame) in the victim (6 items, range 6 - 30);

All three subscales were found to have good internal consistency (Cronbach alphas of .82, .84 and .81 respectively) as well as all items displaying item-to-total correlations falling between .25 and .75, as recommended by Pedhazur and Schmelkin (1991).

### **4.2.3. Procedure**

Ethical approval was gained from the Department of Psychology Ethics Committee prior to the commencement of the study. Written instructions were included with the scales, giving brief explanations of the scales and what they were designed to measure. However, for both ethical reasons and in an effort to minimize response bias, at no point was psychopathy referred to, with the PPI-R instead described as a ‘measure of personality and interpersonal styles’. The IAS was still described as a measure of indirect aggression, since it was believed this would not significantly affect social desirability given the high face validity of the scale.

The data from one participant were removed during data entry as over 25% of PPI-R item responses were missing. Another participant was missing data from two items whereas five more participants were missing data from one item each. For the latter six participants, since the data was only missing from the PPI-R scale, the missing data were replaced using item means, as recommended by Lilienfeld and Widows (2005).

Examination of the inconsistent responding scales indicated that one participant scored in the ‘highly atypical’ response range, and as such his data was removed. Eight participants scored in the ‘atypical’ range on the inconsistent responding subscale; however, this does not necessarily invalidate their responses, since in a normal population, five percent of respondents would be expected to answer atypically. Nonetheless, this is worrying, since with a normal distribution, only half as many protocols would be expected to score this highly. As such, consideration was also given to the deviant responding scales. Lilienfeld and Widows (2005) indicate that a T-score over 65 (1.5 standard deviations above the

mean) indicates abnormal responding. Again, this does not necessarily invalidate their responses as it may represent genuine participant psychopathology. Therefore, it was deemed that the combination of ‘atypical’ inconsistent responding scores and deviant responding scores over 65 would be indicative either of lack of attention during completion or poor item comprehension. Whereas high scores on only one of the scales was more likely to represent genuine individual differences. A further four participants conformed to these criteria and as such their data were removed from further analyses.

Preliminary examination of the data indicated that it was positively skewed, with the majority of responses clustered around the low end of both scales. This is however to be expected in a community sample, whereby the majority of participants would be likely to have relatively low levels of both psychopathy and aggression. Log transformation of the data provided insufficient improvement to the distribution to allow the use of parametric tests to be carried out. As such the non-parametric Spearman’s rank correlation was used for all correlational analysis of the data.

### 4.3. Results

#### 4.3.1. IAS reliability

Table 4.1

*Scale Means, Standard Deviations and Cronbach’s Alphas for the Indirect Aggression Scales*

	Mean	Std Dev	Alpha
Indirect aggression total	41.59	10.50	.89
Malicious humour	15.94	5.58	.85
Social exclusionary behaviours	14.47	3.81	.79
Guilt induction	11.18	3.39	.77

The IAS demonstrated a Cronbach’s alpha of .88, the social exclusionary behaviours, malicious humour and guilt induction sub-scales revealed alphas of .79, .85 and .77 respectively (see Table 4.1). It is notable that the mean scores on the IAS scales, both total and sub-scales were close to the low end of the scale range. Indeed, examination of the

scale distributions would appear to indicate that the scale suffered from floor effects, with most participants' scores being at or close to the minimum value.

#### 4.3.2. PPI-R reliability

Table 4.2 gives the means, standard deviations and Cronbach's alphas for psychopathy totals, factor and sub-scale scores.

Table 4.2

*Scale Mean, Standard Deviations and Cronbach's Alphas for the Psychopathy Scales*

	Mean	Std Dev	Alpha
Total psychopathy	267.07	32.16	.91
Coldheartedness	28.26	5.68	.77
Fearless dominance	102.62	19.26	.91
Social influence	42.07	8.89	.87
Fearlessness	31.18	8.44	.86
Stress immunity	29.36	7.34	.86
Impulsive antisociality	136.20	20.17	.89
Machiavellian egocentricity	40.11	7.83	.82
Rebellious nonconformity	31.97	6.92	.78
Blame externalisation	28.61	7.57	.87
Carefree nonplanfulness	35.51	6.74	.75

The PPI-R in this sample was found to have an internal consistency of .91 (see Table 4.2). Sub-scale alphas were between .75 for carefree nonplanfulness and .87 for blame externalisation and social influence, indicating that the individual sub-scales displayed good internal consistency. The factor alphas were .77 for coldheartedness, .91 for fearless dominance and .89 for impulsive antisociality, indicating that these too had a good internal reliability.

Replicating previous research, the fearless dominance and impulsive antisociality factors were not found to be significantly correlated,  $r = .18$ ,  $p > .05$ . However, coldheartedness

was found to be significantly, but moderately, correlated with both fearless dominance,  $r = .22$ ,  $p < .05$ , and impulsive antisociality,  $r = .29$ ,  $p < .01$ .

### 4.3.3. Psychopathy and indirect aggression

As the data were found to be non-normally distributed, the correlations between indirect aggression scores and psychopathy were measured using Spearman's correlation coefficient, as shown in Table 4.3.

Table 4.3

*Correlation Coefficients Between PPI Total, Factor and Sub-scale Scores and IAS Total and Sub-scale scores*

	Indirect Aggression			
	Total	Social Exclusionary Behaviours	Malicious Humour	Guilt Induction
Psychopathy Total	.48**	.26*	.52**	.32*
Coldheartedness	.20*	.10	.24*	.15
Fearless Dominance	.24*	.00	.34**	.11
Social Influence	.31*	.12	.36**	.19*
Fearlessness	.20*	.07	.19	.11
Stress Immunity	.04	-.15	.20*	.02
Impulsive Antisociality	.43**	.35**	.38**	.31*
Machiavellian Egocentricity	.41**	.32*	.33**	.34**
Rebellious Nonconformity	.31*	.21*	.33**	.17
Blame Externalisation	.22*	.30*	.15	.23*
Carefree Nonplanfulness	.17	.13	.20*	.07

\*  $< .05$

\*\*  $< .001$

As expected, significant positive correlations were found between psychopathy total scores and indirect aggression total, as well as with all three factor scores. Significant correlations were also found for both psychopathy total and impulsive antisociality scores with all three

indirect aggression subscales (see Table 4.3). Fearless dominance and coldheartedness, on the other hand, were found to correlate significantly only with malicious humour.

In relation to sub-scales, indirect aggression total scores were found to correlate with all PPI-R subscales except carefree nonplanfulness and stress immunity. Similarly, malicious humour was related to all PPI-R sub-scales except fearlessness and blame externalisation. In contrast, guilt induction was only significantly correlated with machiavellian egocentricity, social influence and blame externalisation. Similarly social exclusionary behaviour was only correlated with machiavellian egocentricity, rebellious nonconformity and blame externalisation.

#### **4.4. Discussion**

The results indicate a strong positive correlation between psychopathy and indirect aggression, particularly for the malicious humour sub-scale, supporting hypothesis 1a. Examination of factor scores would appear to indicate that this relationship is mostly governed by impulsive antisociality scores and in particular the machiavellian egocentricity sub-scale, in partial support of hypothesis 1b. Significant correlations were however also observed with the rebellious nonconformity and blame externalisation sub-scales from this factor, as well as significant positive correlations apparent with both fearless dominance and the coldheartedness factors.

Differential relationships were also observed in terms of indirect aggression sub-scales, with malicious humour displaying the strongest relationship with psychopathy. Furthermore, this was the only sub-scale significantly correlated with the fearless dominance factor, in particular the social influence sub-scale, and with the coldheartedness factor. Guilt induction and social exclusionary behaviours, however, only appear to be significantly correlated with the impulsive antisociality scales, in particular the machiavellian egocentricity sub-scale.

These findings support the initial hypothesis that psychopathy would display a significant relationship with the use of indirect aggression. These findings bear distinct similarities to the relations found between the PPI psychopathy sub-scales and measures of direct aggression (Patrick et al., 2006; Sandoval et al., 2000) with strong correlations between

indirect aggression and the machiavellian egocentricity, blame externalisation and rebellious nonconformity sub-scales. As such, it is arguable that the observed correlation may be a result of the shared variance between the two forms of aggression rather than any independent relationship between psychopathy and indirect aggression use. Nonetheless, a number of differences are evident, such as the observed correlations with sub-scales from the fearless dominance factor, which were not observed with measures of direct aggression. These findings led to a revision of the earlier hypothesis so that should direct aggression be controlled for, psychopathy would nonetheless display a significant correlation with the use of indirect aggression, a hypothesis which will be tested in the following chapter.

Both direct (Sandoval et al., 2000) and indirect aggression do appear to be strongly related to machiavellian egocentricity implying that the ruthless and manipulative interpersonal style of the psychopath plays a significant role in their use of both forms of aggression. Furthermore, negative associations between this sub-scale and measures of affective empathy (Sandoval et al., 2000) supports the influence of low empathy levels on the usage of indirect aggression (Björkqvist et al., 2000). This lends support to the hypothesis that the relationship between psychopathy and aggression in general, and indirect aggression in particular, will be mediated by affective empathy deficits. Although, the low correlations between indirect aggression and the coldheartedness sub-scale do raise some questions in this regard. It is arguable, looking at some of the items on the coldheartedness sub-scale (see section 4.2.2.1) that this sub-scale assesses more general affective deficits rather than just low affective empathy. As such, it is important to investigate this hypothesis using mediation analysis on an independent measure of empathic responding. This will be reported in the following chapter (Chapter 5).

The pattern of associations between factor and sub-scales of psychopathy and the different types of indirect aggression are somewhat counter to expectations. Based on prior research (Schmeelk et al., 2008) there was not expected to be a significant correlation between indirect aggression and fearless dominance. However malicious humour was found to display a significant correlation with this factor and guilt induction was found to display a moderate, but significant, correlation with the social influence sub-scale. This may reflect the nature of malicious humour as a form of social aggression that is indirect only in as

much as its behaviours are constructed to appear as ‘just for fun’ despite their harmful intentions. For example, items involving practical jokes or imitating the victim could be construed as part of ‘friendly banter’ and indeed, arguably, may be presented as such if challenged. The psychopath’s overt charm and social skills would, as such, be attributes required to effectively utilise this form of aggression. It is possible that social exclusionary behaviours, and to a lesser extent guilt induction, may be more reliant on more subtle social manipulation through other means than overt charm, such as deception, emotional blackmail or coercion. These traits may not, as such, be captured by the social influence scale, which measures more overt social charm and social confidence, as can be seen from the example items presented in Chapter 3.

In contrast, all three indirect aggression sub-scales were found to be significantly related to impulsive antisociality generally and the machiavellian egocentricity sub-scale in particular. Despite loading onto the impulsive antisociality factor the machiavellian egocentricity sub-scale is designed to tap into both the psychopath’s narcissistic ruthlessness and their willingness to engage in interpersonal manipulation. Not only is the latter a central feature of indirect aggression use, but the former trait is liable to be well-served by the increased social dominance and social network centrality found to be related to increased use of indirect aggression (Xie et al., 2002). The mixed findings in relation to the social influence sub-scale as such do not discount a significant role of social skills in the use of indirect aggression among psychopaths. However it does seem to indicate that different aspects of social skills may be relevant to the different forms of indirect aggression. Malicious humour would appear to be predominantly related to more overt social dominance, in contrast social exclusionary behaviours may be more related to subtle social manipulation, with guilt induction falling somewhere in between. A further avenue of research, as such, would be to consider the possible moderating effect of different aspects of social skills on the correlation between psychopathy and indirect aggression. This will be examined in Chapter 7.

The results from the preliminary study suggest both the PPI-R and the IAS have good psychometric properties with both displaying strong internal consistency and adequate inter-item and item-to-total correlations. This is of particular importance for the IAS scale, since unlike the PPI-R, it has yet to undergo rigorous evaluation. However, the IAS did



show a significant positive skew and, in particular, clear floor effects which are liable to have attenuated any existent correlations. The instructions given to participants may also have had an effect, specifically that participants were asked to comment on the frequency of specific aggressive acts over the past 12 months. Certainly, Archer (2004) found in a meta-analytic review that measures of aggression measuring specific behaviours generated smaller effect sizes than those measuring aggressive tendencies. Arguably, participants may find it difficult to recall specific incidents, certainly within a limited time-frame, which may result in reduced levels of reported aggression. Indeed, when Coyne and Thomas used the scale without the time-based instructions the results showed considerably reduced skew compared to their original administration, indicating the issue may be with the instructions, not the items themselves (Coyne & Thomas, 2008). One solution to this may be to reword the IAS so that, similarly to the Aggression Questionnaire (AQ; Buss & Perry, 1992), it questions whether the behaviour is characteristic of the person rather than a questioning of its specific incidences. This manipulation would help both removed the floor effects apparent in the current study and make the scale more comparable to the AQ by assessing characteristics, not specific behaviours. Future use of the IAS in this thesis therefore adopted revised instructions similar to Coyne and Thomas (2008).

It is arguable that the current sample lacks generalisability, consisting predominantly of female students. In particular, the differences found between the relationship of direct and indirect aggression with psychopathy may be due to sample differences. For example, the relationship between direct aggression and psychopathy has been almost exclusively studied using male inmates. As a result, comparisons with prior research are liable to be confounded due to sex differences in the manifestation of aggression rather than specific differences between direct and indirect aggression. Specifically, it has been found that males and females preferentially use different forms of aggression (Hess & Hagen, 2006), which may make generalising the current results to a predominantly male sample somewhat questionable. Furthermore, there is evidence from prior research that there are sex differences at the factor level in the relationship between psychopathy and indirect aggression (Ostrov & Houston, 2008). As such, the following chapters will seek to control for this sex difference in the use of indirect aggression by using a more evenly sex distributed sample, as well as investigate the possible sex differences in the relationship between psychopathy and indirect aggression.

In summary, the current study has served to confirm the hypothesis that there is a significant relationship between psychopathy and indirect aggression, and furthermore that this appears to be primarily related to impulsive antisociality. Nonetheless, this study does raise a number of further questions which further chapters within this thesis will seek to investigate. Although there appear to be significant differences in the pattern of correlations between psychopathy and indirect compared to direct aggression, this may also be due to differences in the sample used. As such, a first emphasis of further research must be to confirm the association between psychopathy and indirect aggression once the shared variance with direct aggression has been controlled for, which will be examined in chapter 5. This chapter has also raised questions as to the underlying PPI-R factors affecting the relationship between psychopathy and indirect aggression. It was theorised (see section 2.7) that empathy deficits may act as a partial mediator between psychopathy and the use of indirect aggression. Although, the results for the current study are consistent with this theory, it is also clear that more explicit mediator analysis is required to test this hypothesis, the results of which will also be reported in Chapter 5. Based on theory and prior research, it is arguable that there may be significant sex differences in the use of indirect aggression among individuals high on psychopathic traits. Therefore further research is required using samples with more even numbers of male and female participants so as to allow a direct comparison, which will be dealt with in Chapter 6. Finally social skills have been hypothesised to play a role in the use of indirect aggression by psychopaths, moderating its usage (see section 2.7). The results from the current study are equivocal on this matter and raise the possibility that different aspects of social skills may be implicated in the use of different forms of indirect aggression. Therefore this too will be further examined in this thesis (Chapter 7).

## CHAPTER 5

### 5. Study 2: An investigation of the effects of empathy and sex on the relationship between psychopathy and indirect aggression <sup>12</sup>

#### 5.1. Introduction

The results of the previous study confirmed the existence of a significant correlation between psychopathic traits and the use of indirect aggression. It also indicated that this was related to all three psychopathy factor scores, though particularly the impulsive antisociality factor. These results also raised a number of new questions regarding the relationship between psychopathy and indirect aggression, which the current study will seek to investigate. Firstly, the current study seeks to confirm the relationship between psychopathy and indirect aggression whilst accounting for the possible confounding effects of direct aggression. Secondly, this study seeks to investigate the hypothesised mediating effects of empathy on this relationship.

Based on the findings from Study 1, the relationship between psychopathy and indirect aggression would appear to be mostly governed by the impulsivity traits of psychopathy, as assessed by the impulsive antisociality factor on the PPI-R, and in particular the machiavellian egocentricity sub-scale. This appears to mirror findings between PPI scores and direct aggression (Patrick et al., 2006; Sandoval et al., 2000) and raises the possibility that the observed relationship between indirect aggression and psychopathy may be due to the shared variance between the two forms of aggression (Patrick et al., 2006; Sandoval et al., 2000). Certainly, measures of direct and indirect aggression have been found to correlate strongly (Richardson & Green, 2003; Vaillancourt et al., 2003). As such, the first aim of the current study is to test this hypothesis by investigating the relationship between psychopathy and indirect aggression whilst controlling for direct aggression. It is hypothesised that, controlling for the shared variance between direct and indirect aggression, significant positive correlations will nonetheless be observable between the

---

<sup>1</sup> Parts of this chapter have been published in Warren & Clabour (2009) in *Aggressive Behavior*

<sup>2</sup> Significant parts of this chapter are also under revision following submission to *Journal of Personality Disorders*.

impulsive antisociality factors and both direct and indirect aggression, whereas the interpersonal aspects of psychopathy, as assessed by the PPI-R fearless dominance factor, will only be correlated with indirect aggression. Based on research using direct aggression (Flight & Forth, 2007), empathy deficits are nonetheless hypothesised as being central to the use of aggression in psychopathy (Porter & Woodworth, 2006). As such, the coldheartedness factor, assessing affective deficits of psychopathy, is hypothesised to similarly display correlations with both forms of aggression.

The second aim of this study was to investigate the possible mediating effect of empathy on the relationship between indirect aggression and psychopathy. A mediation relationship is said to occur when the predictor variable influences the outcome indirectly through its relationship with a mediating variable (Baron & Kenny, 1986). As use of indirect aggression has been associated with lower levels of empathy but increased levels of social intelligence (Björkqvist et al., 2000; Kaukiainen et al., 1999) and psychopathy, and psychopathic aggression has similarly been strongly associated with affective deficits (Blair, 2005; Flight & Forth, 2007), it is hypothesised that empathy deficits will serve to mediate the relationship between psychopathy and indirect aggression. However, it has been found that empathy is not a unitary construct and in fact consists of two distinct processes (Baron-Cohen & Wheelwright, 2004): cognitive empathy, the ability to read and identify other individual's emotional states, and affective empathy, which is defined as a complementary emotional reaction to another's emotional state. As psychopathy has been found to be related to deficits in affective but not cognitive empathy (Blair, 2008), it is hypothesised that this mediation will be due to the affective empathy sub-scale. There is, however, expected to be no association between psychopathy and cognitive empathy. It is, in contrast, anticipated that there will be a positive correlation between cognitive empathy and indirect aggression, since research suggests this form of empathy is more closely related to social intelligence (Björkqvist et al., 2000).

Therefore this chapter seeks to test the following hypothesis:

- Hypothesis 1: That psychopathy will be significantly related to indirect aggression and this will be driven by the coldheartedness and impulsive antisociality factors

- Hypothesis 2: The relationship between psychopathy and indirect aggression will remain once the shared variance with direct aggression has been controlled for
- Hypothesis 3: The relationship between psychopathy and indirect aggression will be mediated by affective empathy but not cognitive empathy

## **5.2. Method**

### **5.2.1. Participants**

This study used 201 participants, of which 83 were male and 118 female. They were recruited from around campus at a northern British university. Almost all, 94%, were full or part-time students at the university, four were support or research staff and three failed to indicate their occupation. All participants were rewarded for their time either through completion of compulsory subject hours (for psychology students) or payment of £4. The mean age of the participants was 21.91 years ( $SD = 4.77$ ). White participants made up 69.2% of the sample, with 20.7% coming from a South East Asian background, 6.6% Asian, 0.5% reported a Black ethnicity, and 0.5% from an Arab background. A total of 78.3% reported being native English speakers. Twelve participants' data had to be removed; nine due to PPI validity scales, and three due to missing data (see section 5.2.5 Data analysis), resulting in a final sample of 77 males and 112 female participants.

### **5.2.2. Measures**

#### **5.2.2.1. Psychopathic Personality Inventory - Revised (PPI-R; Lilienfeld & Widows, 2005)**

The PPI-R used in this study is identical to that used in the previous study therefore it will not be described here. For more details on this scale see the previous chapter or section 3.1.3.

#### **5.2.2.2. Indirect aggression scale (IAS; Forrest et al., 2005)**

The IAS scale used in this study was a modified version of that described in the previous study. The results of Study 1 (see Chapter 4) indicated issues with floor effects, with the data presenting a strong positive skew. It was theorised this could, in part, be due to the

response format for the questions, whereby participants were asked to state how often they had used each behaviour against another in a specific time-period (12 months). Arguably, participants may have had difficulty recalling specific incidents of behaviours, certainly within a fixed time period, and as such may report lower levels of the behaviour.

However, if participants are asked if a specific behaviour is characteristic of them they only have to judge if they think they *would* do it, even if they are unable to recall a specific incidence. As such the scale was modified so that the response format was similar to that of the Buss-Perry aggression questionnaire, with participants asked to:

“indicate for each item how characteristic of you it would be to use this behaviour against someone else, on a scale of 1 to 5, with 1 as ‘extremely uncharacteristic of me’ and 5 as ‘extremely characteristic of me’.”

Individual items were modified to read in the present tense, but were otherwise unchanged from the previous study (see Appendix 5.1 for the modified version).

#### **5.2.2.3. The empathy quotient (EQ; Baron-Cohen & Wheelwright, 2004)**

The EQ was developed as a measure of both cognitive and affective empathy and consists of 60 items in total, comprising 40 empathy related and 20 unrelated filler items.

Respondents are asked to indicate whether they strongly agree, slightly agree, slightly disagree or strongly disagree with each item. Although, when scoring, both ‘strongly disagree’ and ‘slightly disagree’ responses are to be scored as zero, with ‘slightly agree’ scored as one and ‘strongly agree’ as two (or the other way round for reverse scored items), as such, scores are essentially given on a 3-point scale. This scoring procedure was that recommended by Baron-Cohen (Baron-Cohen & Wheelwright, 2004). Successive factor analyses have indicated that three factors can be extracted from the scale: cognitive empathy, emotional reactivity and social skills (Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004; Muncer & Ling, 2006). This factor analysis was used in the current study to generate the three sub-scale scores (see Appendix 5.2 for full scale):

- Cognitive empathy (9 items): measures participants’ ability at reading others’ emotions , (e.g., “I am good at predicting how someone will feel”);

- Emotional reactivity (9 items): measures participants' affective empathy, their emotional reaction to others' emotions (e.g., "Seeing people cry does not really upset me" [reverse scored]);
- Social skills (5 items): measures participants' ability to deal with social situations (e.g., "I often find it difficult to judge if something is rude or polite" [reverse scored]).

The total scale displays good internal consistency of .88, the cognitive and affective sub-scales display an acceptable internal consistency of .84 and .76 respectively. The internal consistency for the social skills sub-scale was considerably lower at .57 (Muncer & Ling, 2006) and it is questionable exactly what this scale is assessing. As such the current study will only use the cognitive empathy and emotional reactivity sub-scales. The scale has been shown to display good construct validity with positive correlations with the interpersonal reactivity index (Lawrence et al., 2004), as well as theoretically consistent external correlates (Baron-Cohen & Wheelwright, 2004; Sergeant et al., 2006).

#### **5.2.2.4. Buss-Perry aggression questionnaire (AQ; Buss & Perry, 1992)**

The aggression questionnaire was developed in response to psychometric issues with the Buss-Durkee Hostility Inventory (see Appendix 5.3 for full scale). It consists of 29 items, divided into four factors (although only the physical aggression and verbal aggression sub-scales will be used within this study):

- Physical aggression (9 items); measuring a tendency towards using direct physical violence;
- Verbal aggression (5 items); measuring a tendency towards direct verbal aggression and argumentativeness;
- Anger (7 items); assessing respondent's perceived anger during aggression;
- Hostility (8 items); assessing the level to which respondents view the world as hostile and threatening.

The AQ has been found to have good internal consistency, with alpha values of between .72 and .85 for the sub-scales (Tremblay & Ewart, 2005), and good test-retest reliabilities between .67-.88 over a seven month period (Harris, 1997). This scale has been found to display good construct validity, with theoretically expected sex differences (Buss & Perry,

1992) and correlations with external variables (Harris, 1997; Sergeant et al., 2006; Tremblay & Ewart, 2005).

#### **5.2.2.5. Balanced inventory of desirable responding (BIDR; Paulhus, 1984)**

The BIDR was developed to assess both deliberate attempts to present the self in a socially desirable way and unconscious positive biases in self-reports. The most frequently used version of the BIDR scale is version 6, comprising 40 items in total, 20 for each scale, half of which are reverse scored (see Appendix 5.4). Measurement can be done on a 5 or 7-point scale, using either dichotomous scoring of the extremes or continuous scoring. Although a dichotomous scoring procedure is recommended by Paulhus (Paulhus 1984), research evidence appears to indicate that continuous scores display both greater internal consistency and better convergent validity (Stöber, Dette, & Musch, 2002). The scale has been found to display good convergent validity correlating significantly with other social desirability measures (Paulhus, 1984). The scale also displayed expected performance under specific response instructions (Stöber et al., 2002) and theoretically consistent correlations with personality measures (Pauls & Stemmler, 2003), further supporting the scales validity.

#### **5.2.3. Procedure**

Participants completed the forms individually, located in a quiet room so as not to be disturbed. First participants were given a brief description of the study, including assurances on the anonymous nature of their responses. They were then asked to sign a consent form prior to receiving the questionnaires. So as to both minimise socially desirable responding and avoid possible anxiety effects of being assessed for psychopathy, this term was not used in at any point in the study. Participants completed a demographics form first then the five questionnaires. These were presented in a counter-balanced order using a latin squares design to control for any possible order effects. To further ensure anonymity of the response, the questionnaires were distributed with an A4 envelope and participants were instructed to seal their responses inside this prior to returning them to the researcher.



#### **5.2.4. Missing data**

Three participant's data were removed, as an error in data collection resulted in their failure to provide responses on the BIDR. Within the remaining data, although a number of participants were missing item responses, no single participant was missing more than 2% of their total data. Furthermore, for each individual with missing data no single scale or sub-scale was missing more than 20% of its total data, although each scale presented with at least one case of missing data. As such, it was deemed valid to replace the missing data using a maximum likelihood process as recommended by Allison (2002). This was done using the EM algorithm supplied by the SPSS 14.0 statistical package.

#### **5.2.5. Data analysis**

Data were removed following the same procedure as that used in the previous study (see section 4.2.3). Five participants (2.5%) were found to score in the 'highly atypical' range on the Inconsistent Responding scale and as such their data was removed as recommended by Lilienfeld and Widows (2005). A further four participants' data were removed on the basis of having inconsistent responding in the 'atypical' range and a Deviant Responding score above 65. This resulted in the total removal of data generated by nine participants on the basis of the PPI-R validity scales.

Examination of the histogram plots and z-score conversions of skewness and kurtosis, indicated that total indirect aggression, and its sub-scales, as well as the physical aggression, anger, hostility sub-scales of the AQ and the PPI-R sub-scale Blame Externalisation were all significantly positively skewed. As such, data from these scales were transformed using a log transformation, as recommended by Field (2005). Whilst these scales were found to display a number of outliers these were no longer apparent after transforming the data.

### **5.3. Results**

#### **5.3.1. Descriptive statistics**

Table 5.1 gives the means and standard deviations for direct and indirect aggression, psychopathy and socially desirable responding, both for the whole group and by sex.

Table 5.1

*Means and Standard Deviations for Psychopathy, Direct Aggression, Indirect Aggression and Socially Desirable Responding.*

	Mean	Std Dev
Psychopathy total	280.28	33.15
Coldheartedness	30.60	6.48
Fearless dominance	108.55	19.04
Impulsive antisociality	141.13	20.39
Indirect aggression total	48.57	14.37
Social exclusionary behaviour	18.03	6.78
Malicious humour	17.25	5.91
Guilt induction	13.30	4.42
Physical aggression	18.26	6.26
Verbal aggression	14.32	4.02
Socially desirable responding	154.79	23.01

It would appear that participants in the current study scored higher on psychopathy than in the previous study, which may be the result of increased number of males in this sample. Participants also appear to have higher scores on indirect aggression which is to be expected given the changes to help deal with the floor effects observed in the prior study. Supporting the reliability of the new version of the scale, the total scale was found to have a Cronbach alpha coefficient of .91, whilst the Cronbach alpha coefficients for the sub-scales were .87 for social exclusionary behaviours, .81 for malicious humour and .77 for guilt induction.

### **5.3.2. Scale validity**

To support the validity of the revised Indirect Aggression Scale an exploratory factor analysis was conducted, using a direct oblimin rotation as the sub-scales have previously been found to be correlated, to see if it replicated the factor structure of the original scale. A coherent three-factor structure was replicated with all but three items loading onto the correct scales (see Table 5.2).

Table 5.2

*Factor Loadings for the Indirect Aggression Scale*

	Social Exclusionary Behaviours	Malicious Humour	Guilt Induction
7) Exclude them from a group	.84		
5) Purposefully leave them out of activities	.81		
6) Make other people not talk to them	.80		
21) Omit them from conversation on purpose	.76		
17) Make them feel that they don't fit in	.76		.41
25) Turn other people against them	.66	.51	.45
4) Withhold information from them that the rest of the group is let in on	.61		
19) Stop talking to them	.55		
22) Make fun of them in public		.73	
18) Intentionally embarrass them around others	.51	.73	
12) Imitate them in front of others		.69	
24) Criticise them in public		.67	.40
15) Do something to try and make them look stupid	.49	.62	.50
14) Play a nasty practical joke on them		.60	
23) Call them names		.60	
10) Use private in-jokes to exclude them	.41	.60	
9) Make negative comments about their physical appearance		.54	
13) Spread rumours about them	.42	.45	
3) Try to influence them by making them feel guilty			.74
8) Use their feelings to coerce them			.72
16) Pretend to be hurt and/or angry with them to make them feel bad about him/her-self	.42		.69
11) Use emotional blackmail on them		.41	.57
20) Put undue pressure on them	.53		.55
1) Use my relationship with them to try and get them to change a decision			.49
2) Use sarcasm to insult them		.42	.47

Note: item loading <.03 were suppressed to increase clarity of the resultant factor structure

The items “Use private in-jokes to exclude them” and “Spread rumours about them” though both loading onto the socially exclusionary behaviours scale, as in the original, were found to load more strongly onto the malicious humour scale in the current version. Similarly “Use sarcasm to insult them” was found to cross-load onto both guilt induction and malicious humour in the current version, with stronger loadings onto the former scale despite originally loading onto the latter. However, the differences in loading between the scales were negligible at best. Furthermore, examination of the original factor loadings from the scale would appear to indicate that a large number of items cross-loaded to a similar degree on the original scale. As such, issues with cross-loading may be a product of the original scale more than an issue with the revisions made in this study. Due to acceptable comparability of the factor structures, and to allow adequate comparison of results, the following analysis will continue to use the original factor structure as the basis for scoring items.

Indeed, when tested for internal consistency it was found that all three sub-scales displayed good internal reliability, with alphas scores of .87 for Social Exclusionary Behaviour, .81 for Malicious Humour and .77 for Guilt Induction. Similarly the total scale displayed good internal reliability with an alpha value of .91, although such a high value can on occasion indicate a lack of discrimination within a scale.

### **5.3.3. Socially desirable responding**

At the first stage of analysis, Pearson product moment correlations were carried out between the indirect aggression scales and the measures of direct aggression, psychopathy, empathy and socially desirable responding (Table 5.3).

Table 5.3

*Correlations of Indirect Aggression, Direct Aggression, Psychopathy and Empathy with Socially Desirable Responding*

	Socially Desirable Responding
Indirect aggression total	-.27**
Social exclusionary behaviours	-.16*
Guilt induction	-.29**
Malicious humour	-.25**
Physical aggression	-.16*
Verbal aggression	.01
Psychopathy total	-.14
Fearless Dominance	.21*
Social influence	.21*
Fearlessness	-.09
Stress immunity	.38**
Impulsive Antisociality	-.42**
Machiavellian egocentricity	-.36**
Blame externalisation	-.23**
Rebellious nonconformity	-.16*
Carefree nonplanfulness	-.41**
Coldheartedness	.02
Empathy Total	.16*
Cognitive Empathy	.09
Emotional Reactivity	.07

\* significant at .05 level

\*\* significant at .01 level

As expected it was found that both indirect and direct aggression were significantly negatively related to socially desirable responding. This is unsurprising given the socially undesirable nature of these behaviours. Similarly, it is not overly surprising that empathy scores were significantly correlated with socially desirable responding, although this was only found for total scores, not cognitive empathy or emotional reactivity. Of particular interest are the results for psychopathy. Specifically, although impulsive antisociality was negatively correlated with socially desirable responding, coldheartedness did not display

any relationship with socially desirable responding whilst fearless dominance was actually positively correlated. This latter finding may reflect that being socially dominant and confident, as assessed by social influence, and having low anxiety, as assessed by stress immunity, are indeed perceived as positive traits within society.

It has been argued that the social desirability scales may reflect in part genuine underlying differences in personality as well as biases in responding (Pauls & Stemmler, 2003). However, these findings do suggest that the data may nonetheless be somewhat distorted by the effects of response styles. To control for this, the correlations of psychopathy with the aggression and empathy scales will be reported having first partialled out any effect of socially desirable responding.

#### **5.3.4. Empathy**

The construct validity of the empathy quotient (Baron-Cohen & Wheelwright, 2004) was further supported by the finding of strong negative correlations between both empathy total and emotional reactivity scores and total psychopathy scores. However, this was not the case with cognitive empathy. This is consistent with research indicating that psychopathy is related to affective but not cognitive empathy deficits (Blair, 2005). Although, all psychopathy factors were found to be significantly negatively correlated with emotional reactivity, the strongest correlation was with coldheartedness. The relationship between these variables is expected given that the coldheartedness sub-scale measures the psychopath's lack of affective empathy. This relationship appears to be particularly driven by items relating to a callous disregard for other people's feelings and well-being, in particular a failure to form attachments with others.

Table 5.4

*Correlations of Psychopathy and Indirect Aggression with Empathy*

	Empathy total	Cognitive empathy	Emotional reactivity
Psychopathy total	-.32**	-.08	-.44**
Fearless dominance	-.03	.18*	-.20**
Impulsive antisociality	-.36**	-.01	-.31**
Coldheartedness	-.51**	-.09	-.70**
Indirect aggression total	-.36**	-.09	-.32**
Social exclusionary behaviours	-.34**	-.19**	-.23**
Guilt induction	-.22**	-.04	-.21**
Malicious humour	-.31**	.00	-.34**

\* significant at .05 level

\*\* significant at .01 level

All correlation coefficients reported after controlling for socially desirable responding.

In accordance with our hypothesis, empathy was found to be significantly negatively correlated with indirect aggression and its sub-scales (see Table 5.4). More specifically, the correlation between aggression and empathy appears to be predominantly due to emotional reactivity with significant negative correlations between this scale and all indirect aggression sub-scales. However, cognitive empathy was found to correlate negatively with social exclusionary behaviours. This is somewhat surprising since it was hypothesised that the effective manipulation of others required by indirect aggression would be related to increased levels of cognitive empathy, given this type of empathy's theorised links with social intelligence (Björkqvist et al., 2000). The implications of this finding will be discussed in more depth further on.

### 5.3.5. Psychopathy and aggression

Replicating the results from Study 1, psychopathy and indirect aggression were found to be significantly correlated, with the strongest correlations evident between indirect aggression and impulsive antisociality (see Table 5.5).

Table 5.5

*Correlations between Psychopathy and Indirect and Direct Aggression*

	Indirect aggression total	Social exclusionary behaviours	Guilt induction	Malicious humour
Psychopathy total	.32**	.19*	.16*	.29**
Coldheartedness	.28**	.21**	.17*	.31**
Fearless dominance	.08	.02	.03	.15*
Social influence	.07	.03	.04	.11
Fearlessness	.15*	.10	.08	.17*
Stress immunity	-.05	-.10	-.07	.03
Impulsive antisociality	.39**	.32**	.28**	.37**
Machiavellian egocentricity	.48**	.46**	.41**	.32**
Carefree nonplanfulness	.07	.01	.00	.16*
Rebellious nonconformity	.18*	.10	.07	.26**
Blame externalisation	.26**	.24**	.22**	.21**
Physical aggression	.36**	.27**	.27**	.35**
Verbal aggression	.36**	.21**	.31**	.38**

\* significant at .05 level

\*\* significant at .01 level

All correlation coefficients reported after controlling for Socially desirable responding

Indirect aggression was also found to be significantly correlated with coldheartedness. In contrast to Study 1, however, no significant correlation was found between fearless dominance and total indirect aggression, although there was a significant correlation with malicious humour. This somewhat contradicts what was found in study 1 and the implications of these conflicting findings will be discussed in depth further on (see 5.4.1). Examination of the psychopathy sub-scales indicates specifically that the relationship between psychopathy and indirect aggression appears to be generated by machiavellian egocentricity and blame externalisation, as well as coldheartedness. These relationships are theoretically consistent, given that coldheartedness relates to a lack of empathy and machiavellian egocentricity captures the psychopath's ruthless manipulation of others.



As would be expected, there was a significant correlation between indirect aggression total and both physical and verbal aggression. Given the significant correlations observed between direct and indirect aggression, it is arguable that the relationship between indirect aggression and psychopathy may be due to increased levels of direct aggression and violence observed in psychopaths. As such, to test the unique relationship between indirect aggression and psychopathy, a series of regression analyses were conducted.

### **5.3.6. Regression analysis**

First, the unique relationship between psychopathy and total indirect aggression was tested using regression analysis by controlling for the relationship with direct aggression. A composite direct aggression score, consisting of the mean of the physical and verbal aggression sub-scales ( $\alpha = .82$ ), was entered into the first stage, along with total socially desirable responding (total scores on the BIDR), and the psychopathy factor scores fearless dominance, impulsive antisociality and coldheartedness into the second, with indirect aggression total as the dependant variable. The first stage was found to account for 25% of the variance,  $R^2 = .25$ ,  $F(2,186) = 31.09$ ,  $p < .001$ . The introduction of the psychopathy factor scores resulted in a significant R-squared change,  $\Delta R^2 = .06$ ,  $F(3, 183) = 4.94$ ,  $p < .01$ , indicating that psychopathy uniquely predicts the use of indirect aggression even once the shared variance with direct aggression has been controlled for. Replicating the findings from the correlation analysis, coldheartedness,  $\beta = .16$ ,  $t(5, 183) = 2.47$ ,  $p < .05$ , and impulsive antisociality,  $\beta = .24$ ,  $t(5, 183) = 2.84$ ,  $p < .01$ , were found to be significant predictors, but fearless dominance,  $\beta = -.10$ ,  $t(5, 183) = -1.44$ ,  $p > .05$ , was not.

Furthermore, once the psychopathy factors had been entered into the regression, there was no longer found to be a significant predictive effect of socially desirable responding,  $\beta = -.12$ ,  $t(5, 183) = -1.69$ ,  $p > .05$ .

Given the different correlations observed between psychopathy and the individual indirect aggression sub-scales, this regression model was replicated for each of the indirect aggression sub-scales.

For social exclusionary behaviours the introduction of the psychopathy factors resulted in a significant R-squared change,  $\Delta R^2 = .06$ ,  $F(3, 183) = 4.65$ ,  $p < .01$ , with both coldheartedness,  $\beta = .15$ ,  $t(5, 183) = 2.04$ ,  $p < .05$ , and impulsive antisociality,  $\beta = .27$ ,  $t(5,$

183) = 2.98,  $p < .01$ , found to be significant predictors, but not fearless dominance,  $\beta = -.13$ ,  $t(5, 183) = -1.78$ ,  $p > .05$ .

Malicious humour was similarly significantly predicted by both the coldheartedness,  $\beta = .18$ ,  $t(5, 183) = 2.71$ ,  $p < .01$ , and impulsive antisociality,  $\beta = .18$ ,  $t(5, 183) = 2.13$ ,  $p < .05$ , factors, but not fearless dominance,  $\beta = -.03$ ,  $t(5, 183) = -.435$ ,  $p > .05$ . The introduction of the psychopathy factors also resulted in a significant R-squared change,  $\Delta R^2 = .05$ ,  $F(3, 183) = 4.35$ ,  $p < .01$ .

However, the same was not found with guilt induction whereby the introduction of the psychopathy factors did not result in a significant R-squared change,  $\Delta R^2 = .02$ ,  $F(3, 183) = 1.63$ ,  $p > .05$ . Furthermore, none of the psychopathy factors were found to be significant predictors for this sub-scale. A structural equation model was developed and tested to investigate the relationship between the three psychopathy factors and both direct and indirect aggression (see Figure 5.1).

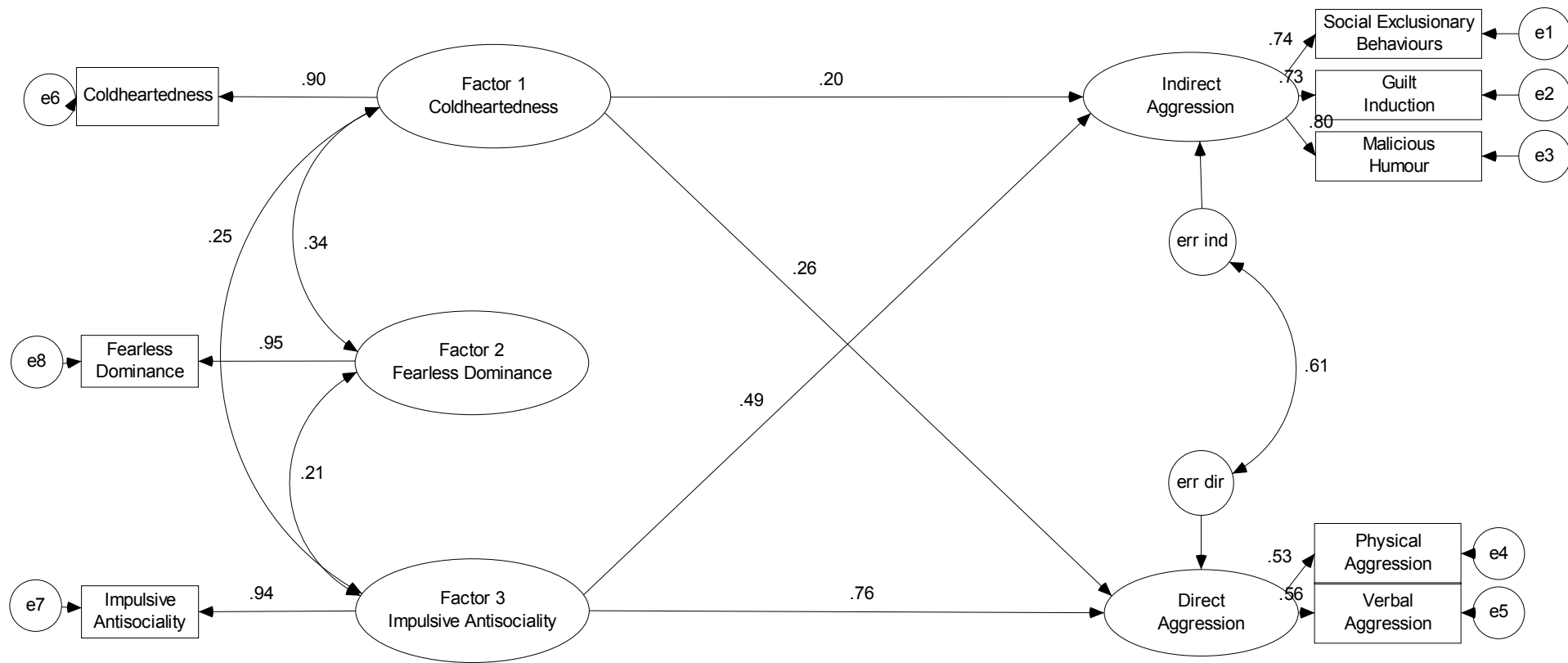


Figure 5.1 – Model of the relationship between the psychopathy factors and both direct and indirect aggression

Although previous research had indicated that fearless dominance and impulsive antisociality are orthogonal, this was not found to be the case in the current data,  $r = .19$ ,  $p < .05$ . As such, correlations were modelled between all the psychopathy factors. Based on theoretical expectations and the regression analysis results, a model was developed linking the coldheartedness and impulsive antisociality factors with direct and indirect aggression. Examination of the chi-square indicated that the model was not significantly different from the observed variables,  $\chi^2(15, N = 189) = 17.02$ ,  $p > .05$ , indicating that it was a good fit to the data. A number of fit indices were used to further test the fit of this model, specifically the comparative fit indices (CFI), the standardized root mean square (SRMR) and the root mean square approximation (RMSEA), as recommended by Hu and Bentler (1995). Generally a model is considered to be an adequate fit if the CFI value is over .90, the SRMR is under .08 and the RMSEA is under .10. To allow a comparison on the basis of parsimony between the models, a parsimony fit index was also included, specifically the PCFI. This allowed for a comparison of parsimony between the two models, with the greater value indicating better parsimony. These fit indices indicated that this model was an adequate-to-good fit to the data, CFI = .99, SRMR = .04, RMSEA = .03, PCFI = .53.

Given that fearless dominance was found to be significantly related to indirect aggression in Study 1, an alternative model was tested including the link between the fearless dominance factor and indirect aggression. Although this model was found to be a good fit to the data,  $\chi^2(15, N = 189) = 11.98$ ,  $p > .05$ , CFI = 1.00, SRMR = .03, RMSEA = .00, PCFI = .50, the relationship between fearless dominance and indirect aggression was significantly negative, not positive,  $r = -.18$ ,  $p < .05$ . Given that this was the reverse of both the findings in Study 1 and what would be theoretically expected, this raised questions over whether this observed relationship was merely an artefact of the data. Given that the first model developed was nonetheless both a very good fit and more parsimonious, as can be seen by the parsimony CFI statistics (PCFI), as well as more in keeping with the theoretically derived predictions, it was decided that the former model (as seen in Figure 5.1) presented the best representation of the relationship between psychopathy and indirect aggression.

The structural equation model indicates that, after accounting for their shared variance, both direct and indirect aggression levels are independently influenced by the presence of psychopathic personality traits. Impulsive antisociality appears to display the largest

influence, and, upon consideration of the unstandardised coefficients, this appears to be equivalent for both direct and indirect aggression. Coldheartedness also appears to demonstrate a significant, albeit smaller, effect on both direct and indirect aggression and examination of the unstandardised regression terms would seem to indicate that this is equivalent for both forms of aggression. To test the equivalence of the relationship between the psychopathy factors and both forms of aggression the model was compared to one whereby the relationship between the impulsive antisociality and coldheartedness factors and each aggression scale was constrained to be equal (such that the relationship between coldheartedness and indirect aggression was constrained to be equal to that between coldheartedness and direct aggression and the relationship between impulsive antisociality and indirect aggression was constrained to be equal with the relationship between impulsive antisociality and direct aggression). This constrained model was not found to display a significantly different fit from the unconstrained model,  $\chi^2(2, N = 189) = .20, p > .05$ , indicating that the relationship between the each of the psychopathy factors and indirect aggression was of the same magnitude as that between each factor and direct aggression

### **5.3.7. Role of empathy**

A mediator analysis was carried out to test whether empathy deficits mediate the relationship between psychopathy and indirect aggression. This relationship was first tested using empathy total scores as the mediator, psychopathy total scores as the independent variable and indirect aggression total as the dependant variable (see Figure 5.2). Using Sobel's z-test, empathy was found to be a significant partial mediator of the relationship between psychopathy and indirect aggression,  $z = 3.25, p < .01$ .

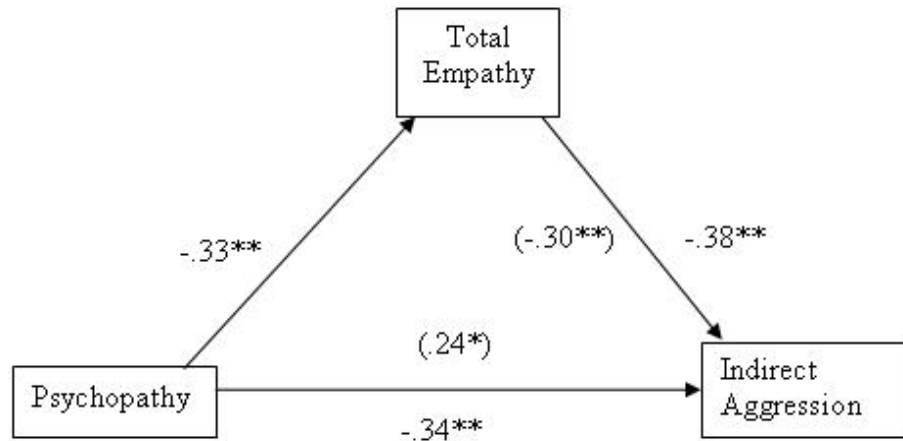
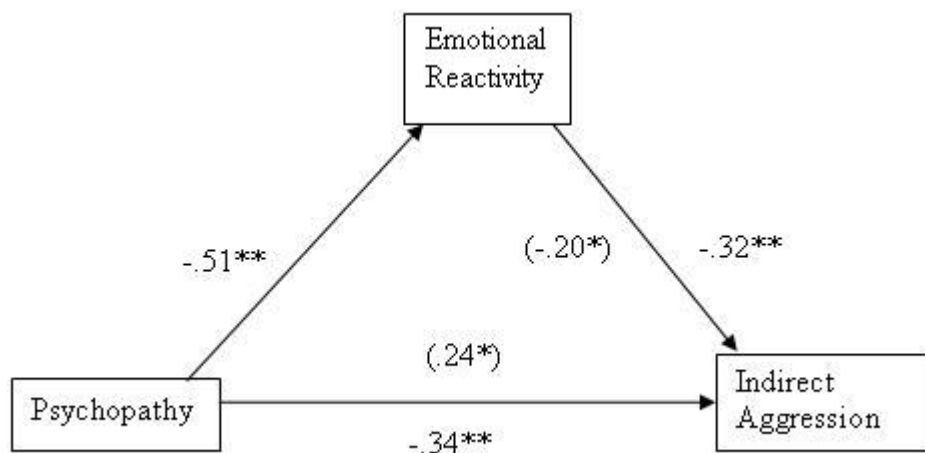


Figure 5.2 – Model of Relationship Between Psychopathy and Indirect Aggression with Empathy as a Mediator

To test the hypothesis that the relationship between indirect aggression and psychopathy was mediated by the affective but not the cognitive component of empathy, these mediation analyses were replicated using the emotional reactivity (measuring affective empathy) and cognitive empathy sub-scales as the mediator variables. As hypothesised, affective empathy was found to be a partial mediator of the relationship between psychopathy and indirect aggression,  $z = 2.42$ ,  $p < .05$  (see Figure 5.3), but cognitive



empathy was not,  $z = -.89$ ,  $p > .05$ .

Figure 5.3 – Model of Relationship Between Psychopathy and Indirect Aggression with Emotional Reactivity as a Mediator

To investigate the individual impact of each of the psychopathy factors, a structural equation model was developed, based off the previously developed model (Figure 5.1) and including the three psychopathy factors, cognitive empathy, affective empathy, direct and indirect aggression (see figure 5.4). The cognitive empathy scale was included as, although not found to play a mediating role, it was significantly correlated with affective empathy as well as both coldheartedness and fearless dominance, therefore it may arguably act as a confounding factor. As affective empathy was found to only be a partial mediator of the relationship between psychopathy and indirect aggression, the model was first developed with direct as well as indirect links between both the impulsive antisociality and coldheartedness factors and both forms of aggression. However, once affective empathy had been accounted for, the direct links between coldheartedness and the two types of aggression were no longer found to be significant and were removed. The final model was found to be a good fit to the data,  $\chi^2(27, N = 189) = 28.69, p > .05, CFI = .99, SRMR = .05, RMSEA = .02$ .

This model would appear to indicate that affective empathy fully mediates the relationship between coldheartedness and both direct and indirect aggression use. This was expected given that coldheartedness assesses psychopath's affective deficits. Of more interest is that it also appears to mediate some, but not all of the relationship between impulsive antisociality and aggression. Finally, it would appear that despite the significant effects, affective empathy nonetheless accounts for a relatively small proportion of the variance between psychopathy more generally, and in particular for impulsive antisociality, and indirect aggression. Furthermore, when the links between affective empathy and both forms of aggression were constrained to be equal and the regression coefficients between impulsive antisociality and both forms of aggression were also constrained to be equal, there was found to be a non-significant increase in fit,  $\chi^2(2, N = 189) = .139, p > .05$ , indicating that the role of affective empathy mediation is the same for both direct and indirect aggression.

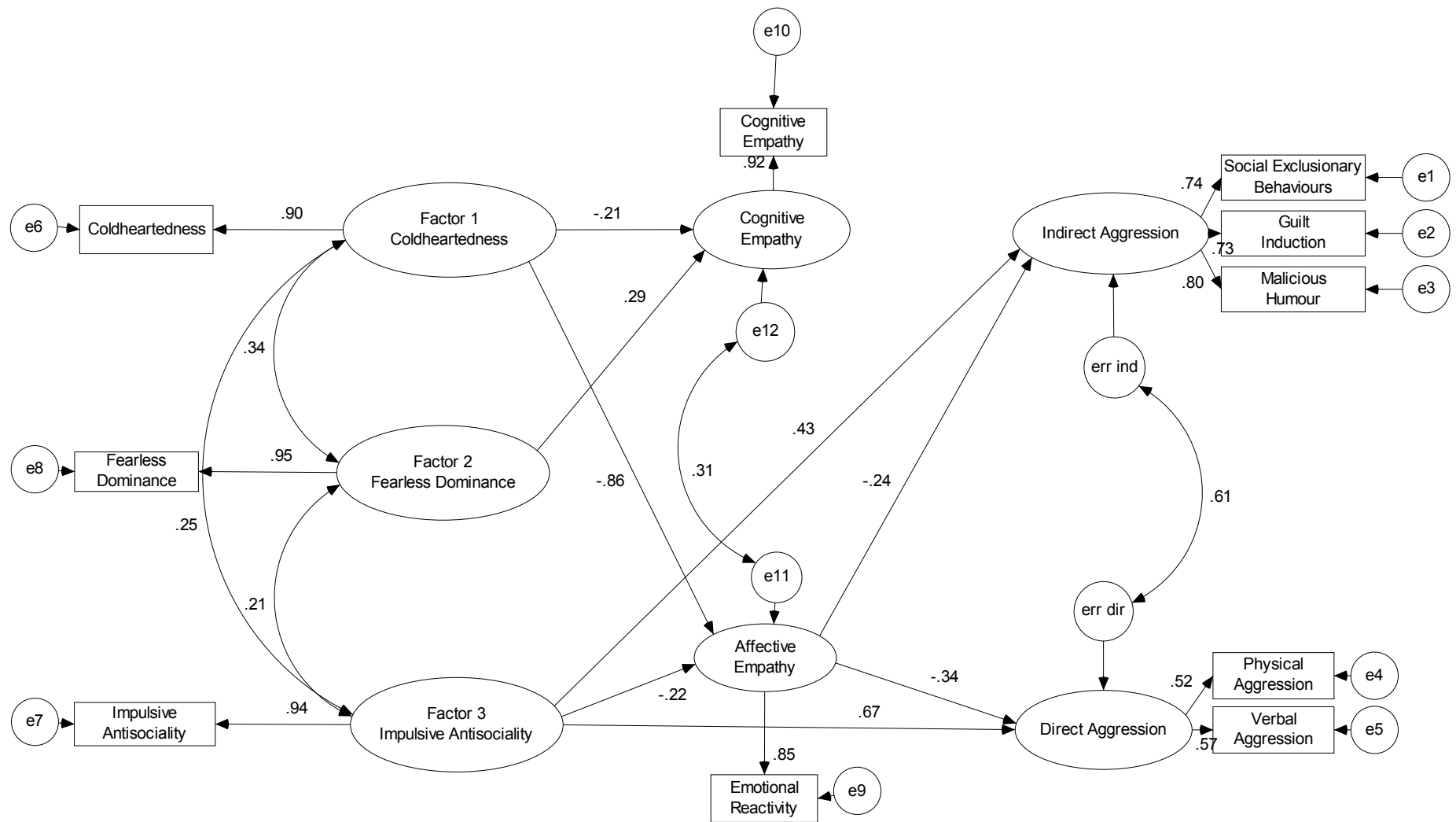


Figure 5.4 – Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression.



## **5.4. Discussion**

Replicating the findings of Study 1 (see Chapter 4), psychopathy was found to be significantly related to indirect aggression and this was found to remain even after controlling for the effects of socially desirable responding and the shared variance with direct aggression, supporting hypothesis 1 and 2. Mediator analyses indicated that, as hypothesised, this relationship appears to be partially mediated by low-levels of empathic responding, and specifically affective empathy but not cognitive empathy, supporting hypothesis 3.

Both the aggression scales and the impulsive antisociality and fearless dominance psychopathy factors were significantly correlated with socially desirable responding. It is, as such, arguable that the observed results may have been a result of their shared variance with the socially desirable responding scales. However, when the analysis were repeated whilst controlling for the effect of social desirability, the relationships remained significant although slightly reduced. Furthermore, once all variables had been entered into the regression analysis, socially desirable responding was no longer found to be a significant predictor. It is clear, as such, that although research must consider possible social desirability effects, in particular extreme scores, socially desirable responding does not account for the observed relationship between psychopathy and indirect aggression.

### **5.4.1. Indirect aggression and psychopathy**

Replicating the findings of Study 1 (see Chapter 4), psychopathy was found to be significantly related to all forms of indirect aggression, although the strongest relationship appeared to be with use of malicious humour. Confirming our previous hypothesis, this relationship was found to remain even after controlling for the shared variance with direct aggression. This indicated that the psychopathic personality traits are independently related to increased use of indirect forms of aggression. As with the previous study, this relationship appears to be predominantly driven by the effects of the impulsive antisociality factor. In particular, this relationship appears to be predominantly driven by the machiavellian egocentricity sub-scale, although significant relationships were also found with coldheartedness and blame externalisation. Unlike the previous study there was

not found to be a positive relationship between the fearless dominance factor and indirect aggression total, although there was a significant correlation with malicious humour.

Indeed, when structural equation modelling was used, it was found that both direct and indirect aggression were both equally related to coldheartedness and impulsive antisociality, even once their shared variance had been controlled for. As such, it would appear to indicate that psychopathy results in a general aggression increase underpinned by both affective psychopathy deficits and impulsive facet elements. That psychopathic personality traits predict equally levels of direct and indirect aggression, as opposed to just direct physical aggression, suggests that direct violence itself is not necessarily a core psychopathic trait, as would be implied by the PCL-R conceptualisation of psychopathy (Hare, 2003). This in turn supports the theory that psychopathy among non-criminal populations may be a moderated manifestation of the disorder (see 1.5.2). This theory hypothesises criminal and non-criminal psychopaths may display equal levels of core psychopathic traits, such as empathy deficits or impulsivity, but the behavioural manifestation of the resultant increased aggression will be moderated by external factors such as sex (Archer & Coyne, 2005), age (Ireland & Monaghan, 2006; Vaillancourt et al., 2007; Walker et al., 2000) and social skills (Kaukiainen et al., 1999). Although, studying the interaction between age and psychopathy in the use of indirect aggression is beyond the scope of this thesis, the effects of both sex and social skills will be considered in Chapters 6 and 7.

The strong relationship found between machiavellian egocentricity and all three indirect aggression sub-scales replicates that observed in Study 1, and detailed examination of the theoretical implications of this relationship can be found in Chapter 4. A strong relationship was also observed between blame externalisation and indirect aggression, although this appears weaker than that seen with direct aggression. Indeed, once both direct aggression and socially desirable responding were controlled for, blame externalisation only remained a significant predictor of social exclusionary behaviours. This would appear to indicate that the psychopath's failure to take responsibility for their actions relates to a general increase in aggression rather than a specific increase in indirect aggression. The significant relationship between indirect aggression and coldheartedness would appear to support the hypothesis that increased levels of indirect aggression in psychopaths is related to their empathy deficits.

That indirect aggression was not found to be related to social influence at all is interesting and in contrast to both the theorised relationship and prior findings (see chapter 4). One possibility is that social influence relates to the communal rather than agentic aspects of social interaction, the psychopath's capacity to come across as charming, charismatic and socially fluent. In contrast, machiavellian egocentricity appears to capture the 'darker' side of the psychopath's social interaction style, specifically their selfish and callous manipulative nature, which may be more relevant to indirect aggression.

This does not explain, however, the conflicting findings between the current study and Study 1. Arguably, this could, in part, be due to differences in the sample used. The current sample had more or less equal number of male and female participants whereas in the prior study the sample consisted of predominantly female participants which may have biased results. However, even looking at only female participants no significant relationship was found (see Chapter 6 for more in-depth analysis of sex differences). Another possibility may be due to methodological differences. In particular, the indirect aggression scale in the prior study asked participants to report specific incidences of indirect aggression. This resulted in considerable floor effects which may have biased results. In contrast, the current study asked participants to report on how characteristic particular behaviours were of them. Although still resulting in a significant positive skew, this produced less floor effects. As such, it is possible that the previously observed relationship may have been an artefact of these floor effects. This does nonetheless point towards a clear need for further research and consideration of the interaction between the social influence and the machiavellian egocentricity sub-scales and the implications of this for the PPI-R factor structure.

#### **5.4.2. Empathy effects**

Supporting both our predictions and prior research (Björkqvist et al., 2000; Sandoval et al., 2000) empathy scores, and in particular affective empathy, were found to be significantly negatively related to both psychopathy and indirect aggression. Mediator analysis supported the role of both empathy total scores and in particular affective empathy in the mediation of the relationship between psychopathy and indirect aggression. However, this was found to only partially mediate this relationship, indicating that other psychopathy related factors may also increase the use of indirect aggression. Indeed, observation at the

factor level indicated that although affective empathy entirely mediates the relationship between coldheartedness and indirect aggression it only partially mediates that between impulsive antisociality and indirect aggression. Arguably, this may be related to the different functions of indirect aggression, with proactive uses of indirect aggression related to affective psychopathy deficits, as represented by the coldheartedness factor and in part the machiavellian egocentricity sub-scale, and thus mediated by affective empathy.

In contrast, more reactive forms of indirect aggression are liable to be related to other aspects of impulsive antisociality, such as impulsivity and failure to take responsibility. However, further research would be required to test this hypothesis which is beyond the scope of the current thesis. The partial mediation of the relationship between impulsive antisociality and aggression however does serve to further highlight possible issues with the factor structure of the PPI-R and in particular overlap in the underlying psychopathy traits assessed by each of the factors.

That affective empathy only accounted for a relatively small proportion of the variance in the relationship between psychopathy and indirect aggression raises questions as to the centrality of affective deficits as the primary underlying psychopathy deficits. Specifically it would seem to contradict that hypothesis that affective deficits form the primary cause of psychopathic personality traits, and in particular the associated aggression use, as argued by the Integrated Emotion Systems theory (Blair et al, 2005). Indeed the strong role of impulsivity in the use of aggression, even within a non-criminal sample, would imply that the impulsivity traits associated with psychopathy may be more central to the disorder than previously suggested by this theory. Furthermore, these findings would appear to refute the hypothesis that the underlying orbito-frontal deficits theorised to underlie the impulsivity deficits observed within psychopaths are necessarily the result of either anti-social lifestyle (Blair et al, 2005) or childhood deprivation. Although in the latter case it should be noted that no data was specifically collected on this factor and there should not be ruled out entirely.

As hypothesised, cognitive empathy was not found to mediate this relationship with no significant correlations found between psychopathy and this form of empathy. However cognitive empathy was found to significantly but negatively predict indirect aggression use. One possible explanation for this finding would be validity issues relating to the

scales themselves. In particular, that self-reported perceptions of ability in these areas of social cognition may be poor reflections of actual ability. Certainly, research into the related area of emotional intelligence (EI) has found that scores on ability-based EI measures are only moderately related to those on self-report measures of the trait.

The negative relationship between indirect aggression and cognitive empathy appears to be entirely due to the socially exclusionary behaviours subscale. This may suggest that use of some social exclusionary behaviours may be related to a failure to perceive the true impact of such actions on others rather than any particular malicious intent. Alternatively, use of socially exclusionary behaviours to push others away may even be a coping strategy given a poor understanding of others and their emotions. However, given the limited research thus far conducted on indirect aggression, it is difficult to draw any significant conclusions with regards to this. Cognitive empathy was not found to be related to psychopathy in the mediator analysis, replicating prior findings that psychopathy is independent of cognitive empathy and theory of mind deficits (Blair, 2005). This would appear to indicate that cognitive empathy independently affects use of indirect aggression in a different manner to the, arguably, more malicious and callous manipulation relating to psychopathy.

### **5.4.3. Limitations and future directions**

One of the primary limitations of the current study is a reliance on self-report measures. These have several disadvantages as they are dependant on participants giving truthful and accurate responses to items. However, socially desirable responding and a lack of insight, a factor particularly associated with psychopathy, may mean that this is not the case. The PPI-R has, however, been well validated (Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005) and is, arguably, the most efficient method for assessing psychopathy among a non-criminal population (see Chapter 3). Similarly, the AQ has received extensive validation as a measure of direct aggression. Although it does suffer somewhat from issues of socially desirable responding, this can be compensated for using a socially desirable responding scale. Furthermore, there was no evidence of a significant effect of socially desirable responding in the regression analysis once all variables had been entered. Despite being a relatively new measurement, the IAS nonetheless presents good indications of its validity (Forrest et al., 2005). Furthermore, arguably, self-report may be

the most valid way of assessing indirect aggression given it's, by definition, covert nature (see Chapter 3).

The assessment of empathy using self-report measures is somewhat more questionable however. Although the EQ was considered to be the most comprehensive and valid self-report measure of empathy available, it is questionable whether self-reported empathic reactions and ability necessarily equate to actual reactions. Certainly, this appears to be the case in relation to psychopathy, whereby subjective reports of experienced affective reactions are frequently dissociated from physiological measures of affective reactivity (Patrick et al., 1993). As such, it is important to replicate these findings using experimentally derived measures tapping into both affective empathy and cognitive empathy or theory of mind (see Chapter 9). Assessing a valid measure of social intelligence or social skills may also help investigate the hypothesis that indirect aggression is related to higher levels of social intelligence as well as lower levels of empathy (Björkqvist et al., 2000).

Another limitation of the current study is the use of a university sample. Although, as previously argued (see section 4.1) it is important to test the relationship between indirect aggression and psychopathy in a community sample the use of a university population is limited in a number of ways. Firstly, there is limited variation in age, with 95% of participants aged between 18 and 25 years old. Given that use of aggression in general, and indirect aggression in particular, has been linked to age this may have biased results (Archer & Coyne, 2005). Secondly, there is somewhat limited variation in IQ since entry into university requires, as a prerequisite, a certain level of intelligence. Given that it has been hypothesised that increased intelligence may be associated with increased use of indirect aggression among psychopaths (Porter & Woodworth, 2006) it is important to investigate a population with more heterogeneous level of intelligence. Finally, there is relatively limited variance in psychopathy among a student population with very few participants scoring very high on this dimension. As such, further studies will seek to replicate this study using a more general community sample, to see if the results generalize to a non-university population (see Chapter 8).

In conclusion, the results of this study support the hypothesis that psychopathy is related to increased use of indirect aggression, even after controlling for the effects of direct

aggression. Indeed, the relation between psychopathy and both direct and indirect aggression appear to be driven by both the impulsive antisociality factor and the coldheartedness factor. This replicates prior findings using the PCL-R (see section 2.5) and suggests that the use of one form of aggression over the other by psychopaths is due to external moderating factors. These results also support the hypothesis that affective empathy, but not cognitive empathy, acts as a mediator of the relationship between psychopathy and indirect aggression. In particular, it suggests that affective empathy entirely mediates the relationship between the coldheartedness factor and indirect aggression, as would be theoretically expected, but also partially mediates the relationship between impulsive anti-sociality and indirect aggression. However, this study has not considered the possible impact of sex differences on these findings, something which will be rectified in the following chapter.

## CHAPTER 6

### 6. Study 3: Sex differences in the relationship between psychopathy and indirect aggression.

#### 6.1. Introduction

The previous chapter showed that the relationship between psychopathy and both direct and indirect aggression is underpinned by similar factors, specifically increased levels of impulsive antisociality and coldheartedness. These results indicate that psychopathy may result in a general increase in aggression use, manifesting itself in both direct and indirect fashions. However, it is arguable that this relationship may be moderated by a number of external factors. In particular, prior research has indicated that use of indirect over direct aggression, or vice versa, is often related to factors such as age (Vaillancourt et al., 2007; Walker et al., 2000), social skills (Kaukiainen et al., 1999) and sex (Archer & Coyne, 2005). The current chapter seeks to analyse the data from Study 2 on the basis of sex differences, considering how sex might directly moderate the relationship between psychopathy and indirect aggression.

Sex differences in both the level and type of aggression have been consistently found within the literature (Archer, 2004; see section 2.5). During childhood and adolescence females have generally been found to display significantly lower levels of direct and in particular physical aggression, but significantly higher levels of indirect aggression (Archer, 2004). This has led to claims that sex differences in aggression are qualitative not quantitative with both males and females equally liable to utilise aggressive tactics but manifesting these in different forms. However, by adulthood, males have been found to display equal levels of indirect aggression use as females (Archer, 2004), although they are also still found to display significantly higher levels of direct aggression (Archer & Coyne, 2005). Furthermore, even in adulthood males preferentially use more direct forms of aggression whereas females will preferentially utilise indirect aggression (Hess & Hagen, 2006). It has been hypothesised that these sex differences may also be applicable to the behavioural manifestation of psychopathy in females (Cale & Lilienfeld, 2002b), with female psychopathy more liable to manifest in indirect aggression. Specifically, this would serve to explain the equivocal findings that have been found with regards to female psychopathy and violence (Forth et al., 1996; Salekin et al., 1998; Vitale et al., 2002), as



female psychopaths would be more liable to manifest increased aggression indirectly (see section 2.5.3).

There have been mixed findings with regards to the role of sex in the relationship between psychopathy and indirect aggression. Although there has been some research to support a sex difference in the magnitude of the relationship between psychopathy and indirect aggression (Miller & Lynam, 2003), other studies have been more equivocal in their findings (Penney & Moretti, 2007) and some have failed to find any effect of sex at all (Schmeelk et al., 2008). Despite these somewhat contradictory findings, there remains a good theoretical basis for predicting at least some effect of participant sex on the relationship between psychopathy and the different types of aggression. Furthermore, there is some evidence from previous research that any observed sex differences may be at the factor level, with impulsive antisociality found to be a significant predictor of proactive indirect aggression for females but not males (Ostrov & Houston, 2008).

Therefore, it was hypothesised for the current study:

- Hypothesis 4a: The relationship between psychopathy and indirect aggression will be stronger for female than male participants
- Hypothesis 4b: This difference will be evident at the factor level, with impulsive antisociality hypothesised to play a stronger role in the use of indirect aggression by females compared to males.
- Hypothesis 5: There will be no difference in the total level of indirect aggression use between males and females

## **6.2. Method**

As this third study used the same data as that reported in Study 2 (see Chapter 5) only those details directly relevant to the analysis of sex differences will be reported here.

### **6.2.1. Participants**

The participants in this study comprised the same sample as that reported in Study 2. The male participants ( $n = 83$ ) had a mean age of 22.22 ( $SD = 5.24$ ) and female participants ( $n = 118$ ) had a mean age of 21.52 ( $SD = 4.55$ ). With regards to ethnicity, 80.5% of males self-classified themselves as White, 10.4% as South East Asian, 1.3% as Arab, 1.3% as Black, 3.9% as Asian and 2% as mixed race. For female participants, 67% self-classified as White, 23.2% as South East Asian, 7.1% as Asian and 2.7% as mixed race. Fifteen participants in total (7.9%) self-defined themselves as gay, bisexual or other, of which there were six males and nine females. Analysis of the inconsistent responding and deviant responding scales resulted in the removal of 12 participants' data (six males and six females) resulting in a final sample of 77 males and 112 females.

### **6.2.2. Data analysis**

Examination of the histogram plots and z-score conversions of skewness and kurtosis for both male and female samples indicated that social exclusionary behaviours and physical aggression displayed a positive skew for both male and female participants, although a composite direct aggression score (consisting of the combined scores from the physical and verbal aggression scales) did not. As such, data from these scales were transformed using a log transformation, as recommended by Field (2005). Whilst these scales had previously been found to display a number of outliers these were no longer apparent after transforming the data.

## **6.3. Results**

### **6.3.1. Sex differences in aggression and psychopathy**

To test the underlying sex differences in levels of aggression, psychopathy and empathy between males and females, a series of t-tests were performed. However social exclusionary behaviours and physical aggression were found to violate the assumption of normality and thus for these two scales a Mann-Whitney U test was performed (see table 6.1).

Table 6.1

*Sex Differences in Levels of Aggression, Psychopathy, Empathy and Age*

	Males		Females		p
	Mean	Std dev	Mean	Std dev	
Total indirect aggression	49.76	13.77	47.76	14.77	n.s.
Social exclusionary behaviours	18.13	6.29	17.96	7.13	n.s.
Malicious humour	19.12	6.55	15.96	5.07	<.001
Guilt induction	12.51	3.79	13.84	4.74	<.05
Physical aggression	19.20	7.03	17.61	6.27	n.s.
Verbal aggression	14.64	4.25	14.10	3.86	n.s.
Empathy total	39.15	9.29	44.56	10.31	<.001
Cognitive empathy	10.42	4.06	10.13	3.50	n.s.
Emotional reactivity	8.39	3.80	10.82	3.28	<.001
Psychopathy total	287.81	34.57	275.10	31.26	<.01
Coldheartedness	32.85	6.48	30.32	6.98	<.001
Fearless dominance	111.25	20.48	106.70	17.84	n.s.
Stress immunity	33.06	7.79	30.32	6.98	<.05
Fearlessness	34.10	9.22	31.79	8.52	n.s.
Social influence	44.08	9.44	44.58	9.26	n.s.
Impulsive antisociality	143.71	20.04	139.35	20.53	n.s.
Machiavellian egocentricity	43.05	8.77	43.01	7.98	n.s.
Rebellious nonconformity	35.62	7.57	33.90	8.02	n.s.
Blame externalisation	28.08	6.68	26.98	6.40	n.s.
Carefree nonplanfulness	36.96	6.66	35.45	7.32	n.s.
Age	22.22	5.24	21.52	4.55	n.s.

A number of differences were found between males and females, with males scoring significantly higher on malicious humour and coldheartedness whereas females were found to score significantly higher on total empathy and emotional reactivity. However, interestingly and in contrast to expectations, there were not found to be significant sex differences in the use of direct aggression.

### **6.3.2. Sex differences in the relationship between psychopathy and indirect aggression**

In order to investigate sex differences in the relationship between psychopathy and indirect aggression, the correlations between male and female participants' use of indirect aggression and their levels of psychopathy were examined, as shown in table 6.2. The differences between the two sexes' correlation coefficients for each of these relationships were tested using the Fisher r-to-z score transformations.

Table 6.2

*Correlations Between Indirect Aggression and Psychopathy For Male and Female Participants*

	IAS Total			IAS Social Exclusionary Behaviours			IAS Guilt Induction			IAS Malicious Humour		
	Male	Female	Sig	Male	Female	Sig	Male	Female	Sig	Male	Female	Sig
Psychopathy Total	.30**	.32**	n.s.	.10	.32**	n.s.	.22	.25**	n.s.	.39**	.26**	n.s.
Coldheartedness	.43**	.16	<.05	.29*	.17	n.s.	.32**	.17	n.s.	.44**	.10	<.05
Fearless Dominance	.11	.05	n.s.	-.06	.07	n.s.	.07	.04	n.s.	.23*	.03	n.s.
Impulsive Antisociality	.30**	.42**	n.s.	.15	.41**	<.05	.24*	.31**	n.s.	.34**	.37**	n.s.

All correlation coefficients are given after controlling for effect of socially desirable responding.

Sig = significance of the absolute difference between the correlations (one-tailed tests)

\* significant at .05 level

\*\* significant at .01 level

Replicating the findings of the combined male and female scores, total indirect aggression was significantly correlated with total psychopathy scores, for both male and female participants. This was particularly found to be the case for impulsive antisociality. However, in contrast to hypotheses 4, total indirect aggression was not found to have a stronger relationship with psychopathy for female participants. The picture was somewhat different when the indirect aggression sub-scale scores were examined however as male psychopathy was found to correlate significantly with malicious humour only. In contrast, female psychopathy was found to be significantly correlated with all three indirect aggression sub-scales. However, the difference in the magnitude of these correlations was not found to be significant.

With regards to the psychopathy factor scores, it is notable that, as predicted, females but not males displayed a significant correlation between impulsive antisociality and social exclusionary behaviours, a difference which significant at the one-tailed, but not two-tailed, .05 level with a z-score of 1.94. However, with total indirect aggression, guilt induction and social exclusionary behaviours both males and females displayed a significant, albeit in the males case reduced, correlation with impulsive antisociality. In contrast, male, but not female, participants were found to display a significant relationship between coldheartedness and indirect aggression. Indeed, this difference was found to be significant for total indirect aggression and malicious humour scores.

### **6.3.3. Regression analysis**

To further test sex differences in the relationship between psychopathy and indirect aggression, a series of regression analyses for each sex were run, with indirect aggression total scores as the dependant variable. As with the previous regression analysis, the shared variance with direct aggression and the effects of socially desirable responding were controlled by entering a composite direct aggression score and total socially desirable responding in the first step and entering the three psychopathy factor scores in the second step.

For male participants, the addition of the psychopathy factors accounted for a further 12.6% of the variance,  $\Delta R^2 = .13$ ,  $F(3, 71) = 4.67$ ,  $p < .01$ , and resulted in a significant total

model accounting for a total of 36.2% of variance in indirect aggression. With all the variables entered into the regression model, out of the psychopathy factors only coldheartedness remained a significant predictor,  $\beta = .36$ ,  $t(5, 71) = 3.33$ ,  $p < .01$ . For female participants in contrast, direct aggression and socially desirable responding appeared to predict a considerable amount of the variance in total indirect aggression scores, with  $R^2 = .28$ ,  $F(2, 109) = 21.66$ ,  $p < .001$  for the first step. Furthermore, the introduction of the psychopathy factors did not result in a significant increase in the variance explained,  $\Delta R^2 = .03$ ,  $F(3, 106) = 1.55$ ,  $p > .05$ . However, impulsive antisociality was found to be a significant predictor of total indirect aggression scores,  $\beta = .22$ ,  $t(5, 106) = 2.02$ ,  $p < .05$  for female participants. Furthermore, unlike with males, direct aggression, but not socially desirable responding, remained a significant predictor even once the psychopathy factors had been accounted for,  $\beta = .37$ ,  $t(5, 106) = 3.68$ ,  $p < .001$ .

These findings would appear to indicate two things. Firstly, that once the influence of direct aggression is accounted for, female indirect aggression is predominantly predicted by the psychopath's increased impulsivity and antisocial nature, whereas for the male psychopaths it appears to be predominantly related to a lack of empathy. The second implication that may be drawn is that psychopathy appears to have significantly less of an impact in predicting female use of indirect aggression than for males. This is distinctly in contrast to what was theoretically expected and does raise some questions as to the role of aggression in female manifestations of psychopathy. To further investigate these sex differences, first the empathy mediation analyses were replicated for each sex separately. Then the fit of the previously developed structural equation model of these relationships (see Chapter 5) was tested for structural differences between the two groups.

#### **6.3.4. Sex analysis of empathy effects**

The non-significant relationship found between coldheartedness and indirect aggression in females would appear to indicate that affective deficits are relevant only to male, but not female, psychopathic use of indirect aggression. To test the effect of affective empathy over cognitive empathy, the mediator analysis was replicated using the emotional reactivity and cognitive empathy sub-scales separately for each sex. Psychopathy was found to significantly predict emotional reactivity for both male as well as female participants.

Indeed, for males emotional reactivity was found to fully mediate the relationship between psychopathy and indirect aggression and this was found to be significant at the .05 level,  $z = 2.52$ ,  $p < .05$  (see Figure 6.1). For females however emotional reactivity was found not to significantly predict indirect aggression once psychopathy was entered into the regression, as such emotional reactivity was not found to be significant mediator of the relationship between psychopathy and indirect aggression,  $z = 1.10$ ,  $p > .05$ .

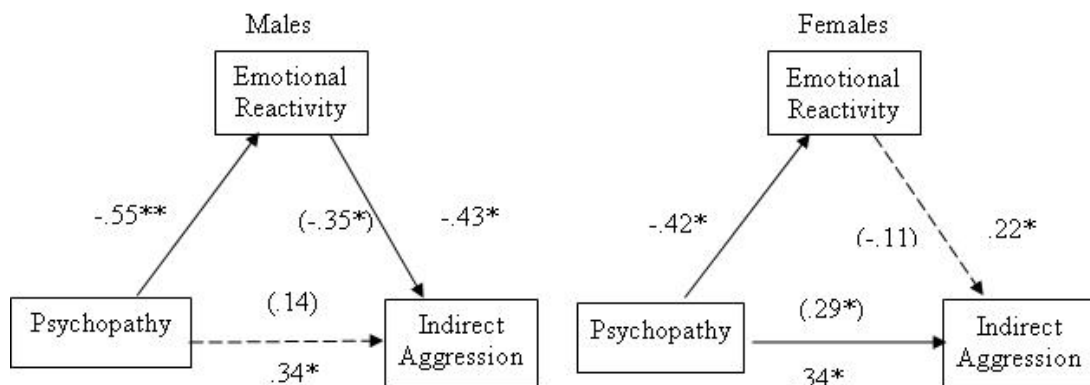
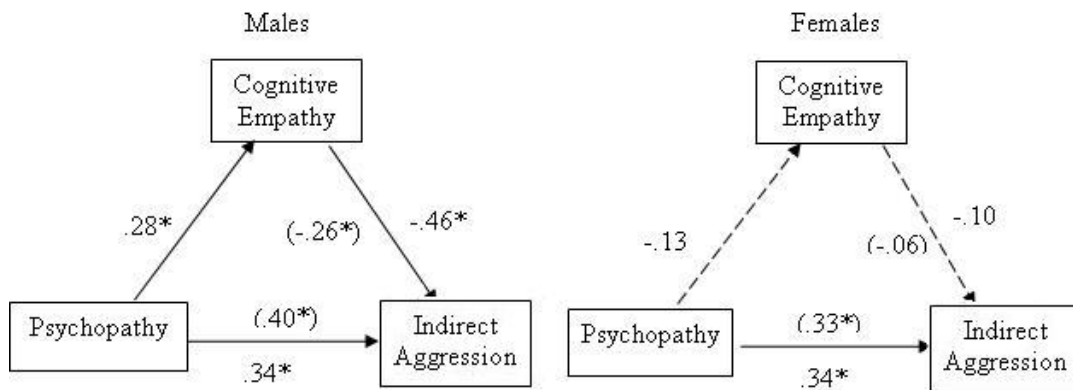


Figure 6.1 – Model of Relationship between Psychopathy and Indirect Aggression with Emotional Reactivity as a Mediator For Male and Female Participants ( $\beta$  values after controlling for the other variables presented in brackets).

As previously mentioned, cognitive empathy was found to be significantly positively predicted by psychopathy for male but not female participants. Cognitive empathy was also found to significantly negatively predict indirect aggression for males but not females, even after controlling for psychopathy. However, psychopathy was still found to be significant predictor of indirect aggression and indeed a stronger predictor than if psychopathy was entered into the equation alone (see Figure 6.2). These results would appear to indicate that the increased cognitive empathy associated with male psychopathy may serve to attenuate rather than increase the relationship between psychopathy and indirect aggression in this population, although this effect was not significant,  $z = -1.72$ ,  $p > .05$ . For female participants, the addition of cognitive empathy did little to change the predictive power of psychopathy on indirect aggression,  $z = .57$ ,  $p > .05$ , indicating that for female psychopaths cognitive empathy plays little role in the prediction of their use of indirect aggression.





Figure

6.2 – Model of Relationship Between Psychopathy and Indirect Aggression with Cognitive Empathy as a Mediator For Male and Female Participants ( $\beta$  values after controlling for the other variables presented in brackets).

### 6.3.5. Structural equation model replication

The empathy mediation structural equation model developed in Chapter 5 (see Figure 5.4) was tested to see if it was applicable across the sexes. Firstly the baseline model was tested for each sex individually. For males, the model was at first found to be a poor fit to the data,  $\chi^2(27, N = 77) = 49.44, p < .01, CFI = .89, SRMR = .08, RMSEA = .11$ . However, examination of the modification indices indicated that this may be due to shared variance between the residuals of social exclusionary behaviours and cognitive empathy. Once these two residuals were allowed to correlate freely, the model was found to be an excellent fit to the data,  $\chi^2(26, N = 77) = 27.47, p > .05, CFI = .99, SRMR = .08, RMSEA = .03$  (see Figure 6.3). It is notable that although this model is a good fit to the data, there are several non-significant regression weights. In particular for males, neither coldheartedness nor fearless dominance were found to significantly predict cognitive empathy, nor was affective empathy a significant predictor of direct aggression although it did significantly predict indirect aggression. Interestingly, impulsive antisociality was only found to be a significant predictor of affective empathy at the .10 level. It should be noted however that there is a relatively small sample of males in this study which may serve to attenuate the power of this analysis.

For female participants, this model was found to be an excellent fit to the data (Figure 6.4),  $\chi^2(27, N = 112) = 26.97, p > .05, CFI = .99, SRMR = .05, RMSEA = .00$ . However, again, a number of regression weights were not found to reach significance. In particular, fearless dominance was not found to significantly predict cognitive empathy and, more

significantly, affective empathy was not found to significantly predict indirect aggression. This latter result supports what was previously found with the empathy mediation analysis. Although there appear to be significant differences in the structure of the relationships between psychopathy, empathy and aggression in males and females, the question remains as to whether these differences are significant. To test to structural invariance of these relationships, a multigroup analysis was carried out. When tested together, the baseline unconstrained model for the two groups was found to be a very good fit to the data,  $\chi^2$  (52, N = 189) = 54.21,  $p > .05$ , CFI = .99, SRMR = .07, RMSEA = .02. Furthermore, constraining the structural regression weights between the latent variables to be equal between the two groups resulted in a non-significant reduction in fit,  $\chi^2$  (8, N = 189) = 10.56,  $p > .05$ . This is indicative that despite these differences the structure of the relationships between the two sexes this difference was not significant.

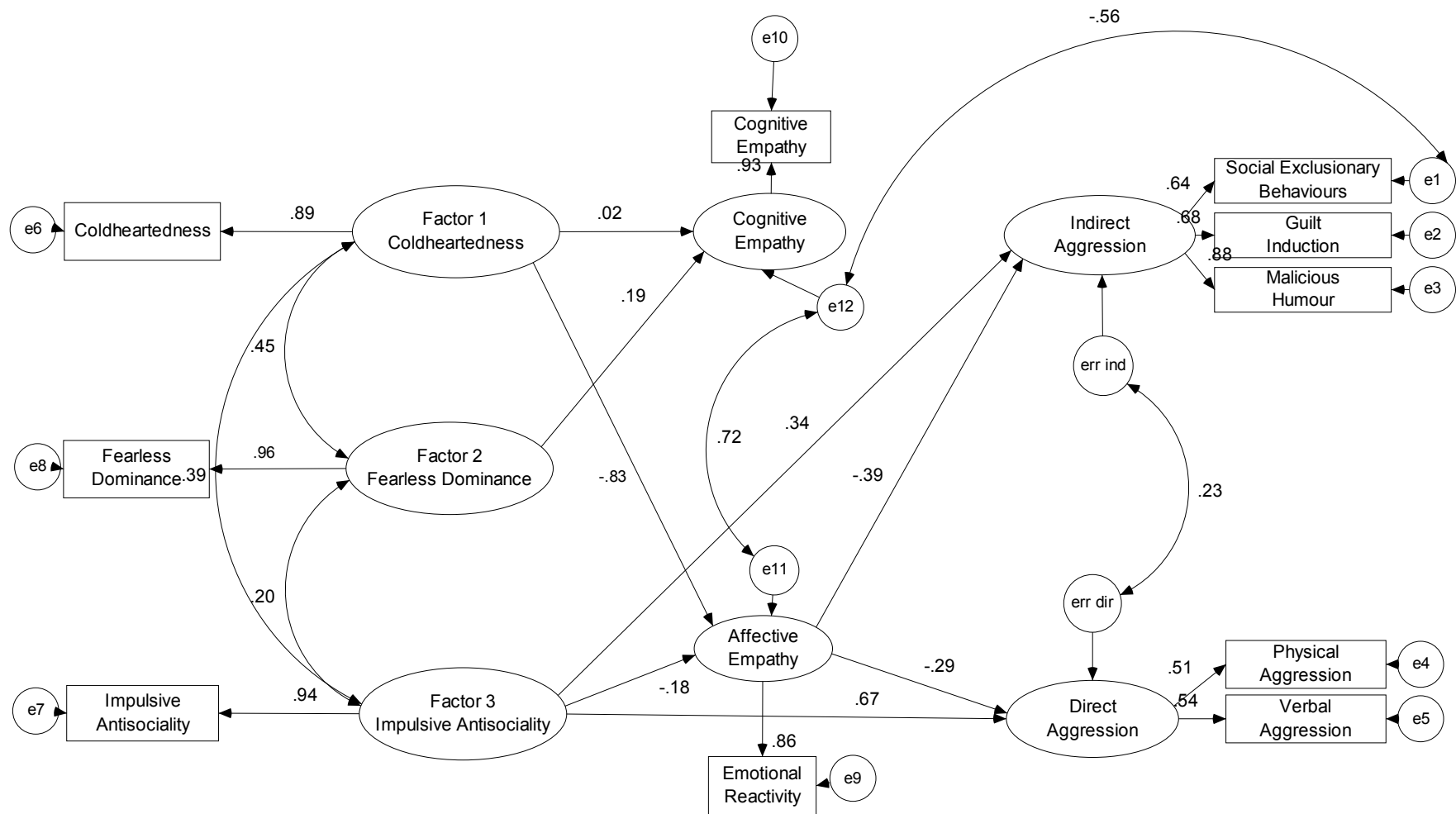


Figure 6.3 – Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression for male participants.

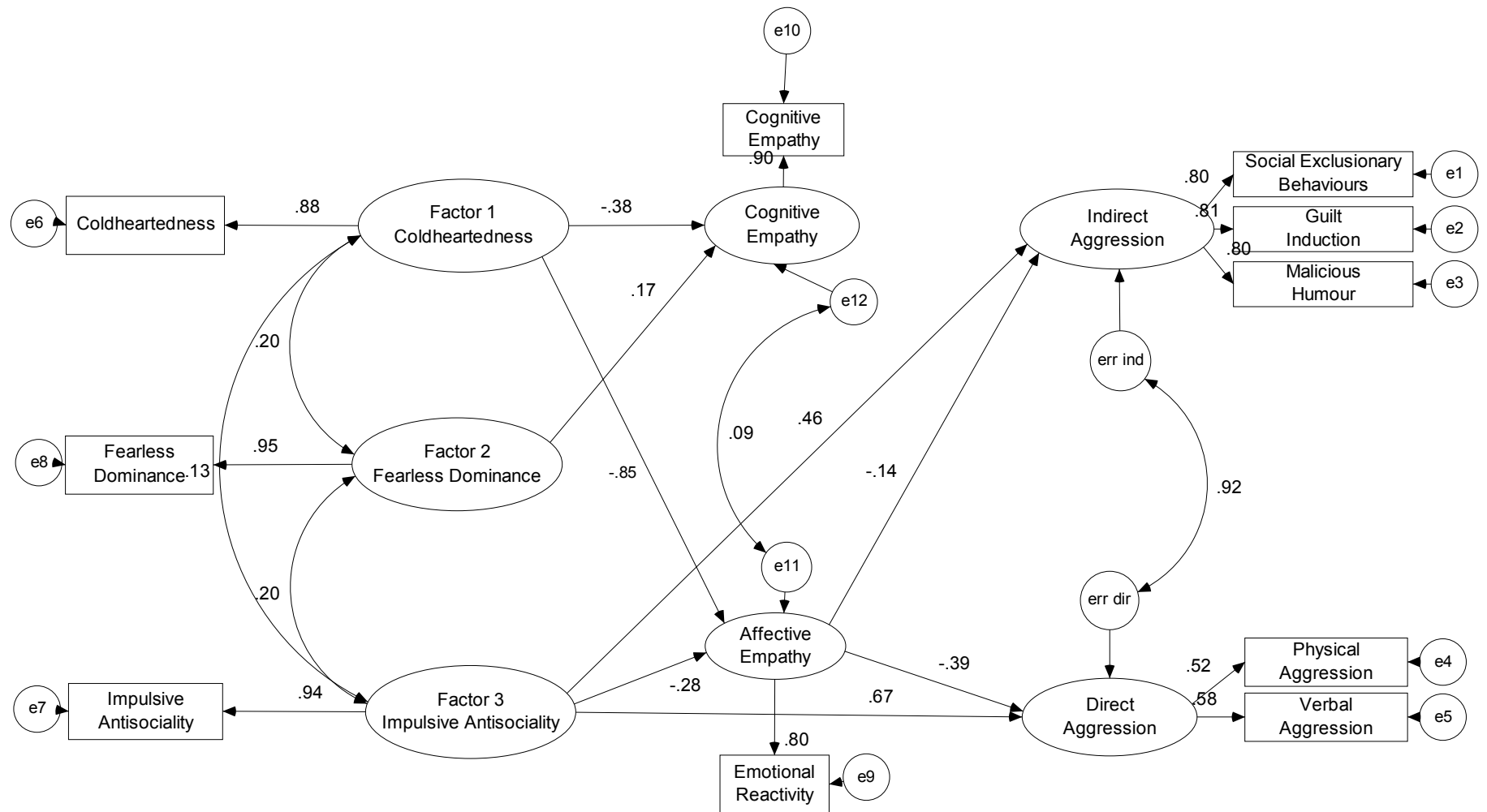


Figure 6.4 – Mediation effect of empathy in the relationship between the psychopathy factors and indirect aggression for female participants.

## **6.4. Discussion**

### **6.4.1. Sex differences in psychopathy and aggression scores**

Significant sex differences were found in total psychopathy scores between males and females, with males found to display significantly higher scores. This supports similar sex differences found using both the PPI (Uzieblo et al., 2007) and the PCL-R (Grann, 2000). However, examination at the factor level indicates that, unlike prior research, significant differences were only evident in the coldheartedness factor. It is arguable that this may be due to cross-cultural differences, with previous research considering sex differences between the PPI factors performed on a Dutch-speaking Belgian sample (Uzieblo et al., 2007). However, similar results have been observed in north American samples and using different measures (Forth et al., 1996; Grann, 2000), indicative that sex differences in psychopathy are cross-cultural. The current findings nonetheless raise questions as to the extent of sex differences in psychopathic personality traits in community samples.

Results of the analysis of sex differences in aggression also raise some interesting questions. Significant sex differences were found for the indirect aggression sub-scales, although not total levels of indirect aggression, partially contradicting hypothesis 5. Males were found to use significantly more malicious humour than females, in contrast females scored significantly higher on measures of guilt induction. This supports prior research indicating that males and females display equivalent levels of indirect aggression by adulthood (Archer, 2004), but nonetheless display a qualitative difference in the exact form taken (Björkqvist et al., 1992). Results for direct aggression are somewhat more conflicting. In contrast to prior research (Archer, 2004), neither physical nor verbal aggression scores were found to display significant sex differences.

The analysis reported herein indicated however clear sex differences in empathy scores, with female participants scoring significantly higher on both total and emotional reactivity. This replicates prior research with both the EQ (Baron-Cohen & Wheelwright, 2004; Lawrence et al., 2004) and other measures of empathic responding (Davis, 1994; Hogan, 1969). This finding is also consistent with the significantly lower scores of coldheartedness found among female participants. Indeed, it has been argued that a higher base-rate of empathic responding may account for reduced evidence of affective deficits

among female psychopaths (Melvin, 2005). However, in contrast to prior research (Lawrence et al., 2004), there was not found to be a significant sex difference on the basis of cognitive empathy. It is arguable that in prior research with the EQ a higher proportion of female participants were mental health professionals, in particular psychiatrists and psychiatric nurses, compared to male participants. Such professionals may be expected to display higher levels of cognitive empathy than the general population which may have biased results with regards to sex differences in cognitive empathy (Lawrence et al., 2004).

#### **6.4.2. Sex differences in the relationship between psychopathy and indirect aggression**

Contrary to hypothesis 4a the overall relationship between psychopathy and total indirect aggression was not stronger for females compared to males. However, there did appear to be a sex difference in the type of indirect aggression used. Once socially desirable responding had been accounted for male psychopathy was only found to be significantly related to the malicious humour sub-scale. In contrast, female psychopathy was significantly related to all three indirect aggression sub-scales. These results are consistent with previous research describing male indirect aggression as only indirect in that the behaviour can be explained as non-aggressive when confronted, in this case by claiming that the behaviours were meant in jest (Björkqvist et al., 1994). Female psychopathy in contrast was significantly correlated with all forms of indirect aggression, and in particular social exclusionary behaviours, which is also consistent with findings that female forms of indirect aggression will include a level of “social manipulation” (Björkqvist et al., 1994). As such, it would appear that the hypothesis is partially supported. Differences were found in the relation of psychopathy to different forms of aggression on the basis of sex and these appeared to be related to differences in the preferential form of aggression each sex uses. Although, the lack of overall difference in the relationship between psychopathy and indirect aggression between males and females does however raise questions as to the theory that observed gender differences in aggression use are due to a failure to capture female aggression effectively (Cale and Lillienfeld, 2004b).

Supporting hypothesis 4b, there were found to be sex differences in the correlations between individual psychopathy factors and indirect aggression use. Specifically, significant correlations were apparent between indirect aggression and coldheartedness for

males but not for females whereas for impulsive antisociality stronger correlations were apparent with female indirect aggression, a difference which showed a trend towards significance for social exclusionary behaviours. The data reported here would appear to suggest that use of indirect aggression among male participants is particularly related to psychopathic emotional deficits. Furthermore, since affective deficits in psychopathy have been primarily associated with the use of instrumental aggression (Flight & Forth, 2007), it is arguable that male psychopaths may predominantly use indirect aggression instrumentally to achieve a specific aim or goal. This would appear to be supported through use of regression analysis indicating that once the effects of direct aggression had been accounted for, indirect aggression was primarily predicted by the coldheartedness psychopathy factor. Furthermore, even after the effects of direct aggression had been controlled for, psychopathy predicted a large proportion of the variance in indirect aggression supporting that different aspects of psychopathy predict the use of indirect aggression in males.

For females however, once the effects of direct aggression have been accounted for, psychopathy was found to only predict a non-significant 3% of the variance in indirect aggression use. This would appear to suggest that once any shared variance with the use of direct aggression has been accounted for, psychopathy is a poor predictor of the use of indirect aggression. Furthermore, the variance that is predicted by psychopathy appears to be due to the effects of impulsive antisociality, not coldheartedness as with males. This may indicate that, in females, psychopathy related use of indirect aggression is more reactive than proactive. These findings are, however, in contrast to previous research that found female indirect aggression to be significantly related to the affective factor of psychopathy only (Odgers et al., 2005). Although Odgers and colleagues did specifically use incarcerated adolescent females, as such these differences may be accounted for by age, and most of this variance was found to be accounted for by early maternal abuse. Furthermore, research by Ostrov and Hanson on a university student sample was indicative that impulsive antisociality was, for females but not males, significant related to proactive as well as reactive indirect aggression use (Ostrov & Houston, 2008). Therefore it is arguable that the observed sex differences may be more related to sex differences underlying the PPI-R factors themselves rather than differences in the functions of aggression used. Although the PPI-R has been well validated on both male and female

samples (Lilienfeld & Widows, 2005) it is clear that further research is required into sex differences within this scale to resolve this.

It is arguable that these results are due to differences not only in the preferred aggression type by sex but also differences in the cost-benefit ratio of the different forms of aggression. It has been found that even among college samples, males will report a preference for responding using physical aggression (Hess & Hagen, 2006). Therefore increases in aggression due to the impulsivity facets of psychopathy are likely to manifest themselves in more direct forms, as individuals with high levels of psychopathic impulsivity are unlikely to give consideration to the relative benefits or losses. In contrast, more planned, proactive, use of aggression among high-functioning psychopaths may give consideration to the relative risk-cost ratio of each type of aggression, with indirect aggression displaying greater benefits for fewer risks (Ireland et al., 2007; Porter & Woodworth, 2006). However, it would be expected on the basis of this hypothesised interaction that for females that indirect aggression use would be related to both impulsive and empathic aspects of psychopathy, since it is both the preferential form of aggression for females (Hess & Hagen, 2006) and the one presenting the best cost-benefit ratio within a high-functioning population. However, this was not found to be the case, with empathy deficits significantly related only to female use of direct aggression but not indirect forms of aggression (see next section).

#### **6.4.3. Sex differences in the empathy mediator analysis**

Emotional reactivity was found to mediate almost all of the variance between psychopathy and indirect aggression in male participants (as shown in Figure 6.1). This is indicative that psychopathy related increased use of indirect aggression is entirely due to deficits in empathy in male community groups. This would support the previously stated hypothesis that the use of indirect aggression may be predominantly proactive among high psychopathy males. However, emotional reactivity was found to be entirely unrelated to the use of indirect aggression among female participants. This, combined with results from the regression analyses is indicative that that psychopathy related use of indirect aggression among females is predominantly reactive in nature. This finding was supported by replications of the structural equation model which indicated that affective empathy was



not a significant predictor of indirect aggression, although impulsive antisociality was. However, it is notable that, although impulsive antisociality was significantly related to affective empathy for females, the empathy mediation between this factor and indirect aggression was not significant. This therefore runs counter to what might be hypothesised from the result of Ostrov and Hanson (2008), specifically that impulsive antisociality plays a stronger role assessing empathy deficits in females and firmly indicates that affective empathy deficits are not related to the use of indirect aggression in females. In contrast however, affective empathy was a significant predictor, and mediator variable, in relation to direct aggression (as shown in Figure 6.4), possibly indicating that females may use direct forms of aggression more proactively than indirect. However, this perceived interaction between the function and form of aggression in relation to psychopathy and sex is somewhat speculative and requires further research to model this relationship effectively.

The mediation analysis using cognitive empathy however resulted in somewhat more complex results. Specifically, the higher levels of cognitive empathy observed with male psychopathy appears to attenuate rather than mediate the relationship between psychopathy and indirect aggression (as shown in Figure 6.2). Based on the correlation analysis, this would in particular appear to be related to social exclusionary behaviours, particularly as the structural equation model of the relationship between psychopathy, empathy and aggression only fit once social exclusionary behaviours and cognitive empathy were allowed to freely correlate. It is possible this sex difference relates to differences between typical male and female social groups. Specifically, girls tend to operate in close-knit social groups, with those individuals skilled at indirect aggression and in particular spreading rumours and social exclusion are perceived as having higher social status (Owens et al., 2000). In contrast, for male social groupings, status has been related to more direct forms of confrontation either through use of direct verbal aggression or more indirect malicious humour (Benson & Archer, 2002). As such, arguably use of socially exclusionary behaviours may be less effective in male psychopathic dominance or instrumental manipulation of others.

The structural equation model developed to illustrate the relationship between psychopathy, empathy and aggression was found to be a good fit for both sexes (see

Figures 6.3 and 6.4). Examination of the regression weights for each sex would appear to further support the concept that males and females may use different forms of aggression for different functions. Particularly it was found that for females affective empathy was a significant mediator for direct but not indirect aggression. In contrast for males, the opposite was true, with affective empathy significantly predicting indirect but not direct aggression. However, these differences were not significant, and when the two groups were constrained to be equal there was not found to be a significant reduction in fit. It is important to note, however, that this model was based of the total group scores for this sample, therefore it is arguable that this is not necessarily a valid test of sex differences in this sample. Therefore, it is important to test the validity of this model by replicating it on an independent sample group of males and females (see Chapter 8)

It is arguable that these results are due to differences not only in the preferred aggression type between males and females but also differences in the cost-benefit ratio of the different forms of aggression. It has been found that even among college samples, males will report a preference for responding using physical aggression (Hess & Hagen, 2006). Therefore increases in aggression due to the impulsivity facets of psychopathy are likely to manifest themselves in more direct forms, as individuals with high levels of psychopathic impulsivity are unlikely to give consideration to the relative benefits or losses. In contrast, more planned, proactive, use of aggression among high-functioning psychopaths may give consideration to the relative risk-cost ratio of each type of aggression, with indirect aggression arguably displaying greater benefits for fewer risks (Ireland et al., 2007; Porter & Woodworth, 2006). However, it would be expected on the basis of this hypothesised sex interaction that for females indirect aggression would be related to both impulsive and empathic aspects of psychopathy, since it is both the preferential form of aggression for females (Hess & Hagen, 2006) and the one presenting the best cost-benefit ratio within a high-functioning population. However, this was not found to be the case, with empathy deficits significantly related only to females use of direct aggression not indirect forms of aggression.

Another possible explanation may be with regards to the sexual-selection theory of gender differences in aggression (Campbell, 1995). Specifically the more prominent relationship between affective deficits among female participants and direct aggression use may in part

reflect the effect these deficits have on psychopaths parenting. Specifically, female psychopaths, similarly to male psychopaths, have been described as having little attachment to their offspring, considering them more as status symbols or tools (Hare, 1999). Therefore, female psychopaths, like males, may use a more ‘cheater’ reproductive strategy, with less consideration of the long-term reproductive risks of direct aggression use and greater consideration of the short-term benefits such a strategy may bring. This more direct use of aggression may be particularly effective given a playing field whereby most female rivals will be utilising more indirect forms of aggression. However, there is, as of yet, less research looking the reproductive strategies of female psychopaths compared to comparative research with males, therefore the current theory remains somewhat speculative. Furthermore, this does not explain the strong relationship between psychopathic affective deficits and indirect aggression in male psychopaths. Nor does this explain the lack of any gender differences in the relationship between the more impulsive aspects of psychopathy and direct aggression as would be expected on the basis of sexual selection theory.

The major limitations of the current study have been covered in the previous chapter (see section 5.4.3). Relevant to the sex analysis specifically, it must be noted that there were not an even number of male and female participants. It is clear the findings from this study need to be tested using a larger community sample with a more even gender distribution so as to test the generalisability of the conclusions drawn.

#### **6.4.4. Conclusions and future directions**

The current study supported the differences in association between psychopathy and indirect aggression due to sex. There was evidence that psychopathy was differentially related to the form of indirect aggression used on the basis of sex. Furthermore, indirect aggression was differentially related to the psychopathy sub-scales dependant on sex and as a result appeared to fulfil a different function. Specifically, indirect aggression use by males with high scores on psychopathic traits appeared to be related to their affective empathy deficits and was fully mediated by scores on affective empathy scales, which would appear to suggest a more proactive use of aggression. In contrast, for females indirect aggression use was entirely related to the impulsive antisociality factor and

appeared more reactive in nature. However, use of direct aggression was predicted by affective empathy deficits. This study also found that psychopathy was a poor predictor of the use of indirect aggression in women once the effects of direct aggression were controlled for. This would appear to indicate that psychopathic personality traits play less of a role in the level of indirect aggression use among females compared to males. Alternatively, it is arguable that this may be indicative that the PPI-R does not adequately assess female forms of psychopathy. Certainly, it was developed predominantly on male samples (Lilienfeld & Andrews, 1996) and based on male conceptualisations of the disorder. Nonetheless, the PPI-R has generally been found to be valid among female samples, although they do score consistently lower (Lilienfeld & Widows, 2005). This is clearly an area which requires significant further study which is beyond the remit of this thesis.

The current study indicates some clear paths for further research, some of which will be addressed further on in this thesis; others however are beyond the scope of the current research. Firstly, it is clear these findings need to be tested with a larger and more general community sample. This will help account for any possible confounding impact of age and education level and also to allow further analysis of sex differences using advanced statistical techniques such as path analysis (see Chapter 8). It would also be of interest to see if these findings generalised to an offender population, given their higher levels of direct aggression use, although this is beyond the scope of this thesis. The current study also serves to highlight some of the issues surrounding the use of self-report measures to capture empathic responding. As such tests of possible empathic mediation effects should be examined using more objective empathy measures (see Chapter 9). Finally, although this study appears to highlight an interaction between function and form in indirect aggression use among males and females, there was no direct test of the aggression function used. As such it is important to test the theoretical explanations formed using more direct measures of proactive compared to reactive aggression.

## CHAPTER 7

### 7. Study 4: Moderation of effects of social skills on the relationship between psychopathy and indirect aggression

#### 7.1. Introduction

It has been hypothesised that indirect aggression is due to low levels of empathy combined with high levels of social intelligence or social skills (Björkqvist et al., 2000). Social skills in this case are defined as being able to analyze and recognise individual's social behaviour and to produce the correct social expression and behaviour to achieve ones social goals (Björkqvist et al., 2000). Given the socially manipulative nature of indirect aggression, it is arguable that its use necessitates some level of social skill (Archer & Coyne, 2005). There are a number of studies providing indirect support for this, with increased indirect aggression being related to both increased popularity among girls (Rose, Swenson, & Waller, 2004; Xie et al., 2002) and increased network density (Green, Richardson, & Lago, 1996b; Walker et al., 2000; Xie et al., 2002). Furthermore, indirect aggression has been found to correlate with peer estimations of social intelligence (Kaukiainen et al., 1999) but only once empathy had been controlled for. However, other research, in particular with younger children, has found that indirect aggression use can nonetheless be related to peer rejection (Crick & Grotpeter, 1995) and other research has indicated that indirectly aggressive individuals are rarely liked by peers, even if they are considered popular (Henington et al., 1998). These findings would appear to indicate that although indirectly aggressive individuals may be highly socially skilled, their actions nonetheless result in a level of social rejection.

The concept of the psychopath as superficially charming and socially skilled was part of Cleckley's psychopathy conceptualisation (Cleckley, 1988). Indeed, two of the items from the PCL-R are specifically "superficial charm" and "conning and manipulative behaviour" (Hare, 1991; Hare, 2003) which would imply some level of understanding and use of social skills. However, research evidence has generally found psychopathy to be unrelated to social cognition tasks (Rogers, Viding, Blair, Frith, & Happe, 2006) or Theory of Mind skills (Richell et al., 2003). Although there have been no studies as of yet explicitly looking at the relationship between psychopathy and social skills, psychopathy has

however been found to be independent of scores on theory of mind and other cognitive perspective taking tasks (Richell et al., 2003) an important associate to social skills (Langdon, Repacholi, & Slaughter, 2003).

Based on Björkqvist's assertion that indirect aggression is related to low empathy and high social intelligence (Björkqvist et al., 2000), it is arguable that psychopaths high on social skills will display higher levels of indirect aggression. Indirect aggression presents a lower risk-benefit ratio comparative to other forms of aggression (Archer & Coyne, 2005; Ireland et al., 2007), allowing for the achievement of the aims of aggression with less chance for serious repercussions. As such, psychopaths possessing the appropriate skills to make use of indirect forms of aggression may be more likely to use indirect over direct aggression, certainly if the aggression use is proactive in nature and directed towards the achievement of a specific goal. In contrast, psychopaths with low social skills may be less likely to use indirect forms of aggression as they would lack the skills required to do so effectively. Therefore to achieve their goals, they would be more likely to use direct forms of aggression.

The current study seeks to test this assertion using self-report measures of psychopathy, indirect aggression and social skills on a non-criminal population. It is hypothesised that social skills will moderate the relationship between psychopathy and indirect aggression use found in the prior studies (see Chapter 4 and 5). Based on prior research (Kaukiainen et al., 1999), it is expected that indirect aggression will be moderately correlated with social skills, in particular those related to dimensions of expressivity or control. In contrast, psychopathy total scores are not hypothesised to be correlated with social skills, although it is arguable that a correlation may be observable with the factor scores. In particular, fearless dominance might be expected to be positively related to social skills due to the social influence sub-scales and its relation to the more socially dominant aspects of psychopathy, although it is notable that this factor was not found to be a significant predictor of indirect aggression in our previous studies.

Therefore this chapter seeks to test the following hypothesis:

- Hypothesis 6a: The relationship between psychopathy and indirect aggression will be moderated by social skills
- Hypothesis 6b: Social skills will also show a significant correlation with indirect aggression use but not psychopathy.

## **7.2. Method**

### **7.2.1. Participants**

The study used 107 participants, comprising an opportunity sample of 91 females and 16 males, all of whom were psychology students in their first year at a northern British university. Participants were given the option to participate after a core module lecture and they completed the study as part of their ‘subject hours’. The mean age for participants was 18.93 years ( $sd = 2.07$ ). Seventy-seven percent of participants were of White ethnicity, 18.9% were South East Asian, .9% Black, 2.8% were mixed race. Seventy-six percent of participants were native English speakers. On the basis of the PPI-R validity scales, 10 participants’ data were removed from further analysis, resulting in a final sample of 97 (83 females and 14 males) with a mean age of 18.70 years ( $sd = 1.08$ ).

### **7.2.2. Measures**

The Psychopathic Personality Inventory - Revised (PPI-R; Lilienfeld & Widows, 2005) and the revised version of the Indirect Aggression Scale (IAS; Forrest et al., 2005; revisions described in Chapter 5) were used to assess psychopathy and indirect aggression. These scales were identical to those used in Chapters 5 and 6 and as such shall not be reported in detail here.

#### **7.2.2.1. Social Skills Inventory**

The Social Skills Inventory (Riggio, 1989) was developed to measure general social competency in relation to social communication skills. The scale consists of 90 items covering the two mediums of social communication: non-verbal (labelled emotional) and verbal (social). Within these mediums, these subscales assess skill at sending

(expressivity), skill at receiving (sensitivity) and skill at regulating social communication (control). Participants are asked to indicate how well each of the items describes them on a scale from 1 (Not at all like me) to 5 (Exactly like me). As a result the social skills inventory consists of six subscales, each with 15 items and a response range of 15 to 75 (see Appendix 7.1):

- Emotional expressivity: Skill at nonverbal communication of emotions, attitudes, dominance and interpersonal orientation and ability at expressing felt emotional states. E.g., “I am able to liven up a dull party”;
- Emotional sensitivity: Skill at receiving and interpreting the nonverbal communications and subtle emotional cues of others. E.g., “I sometimes cry at sad movies”;
- Emotional control: Skill at regulating emotional and nonverbal displaying, including the masking and conveyance of particular emotional cues on demand. E.g., “I am easily able to make myself look happy one minute and sad the next”;
- Social expressivity: Skill at verbal expression and verbal fluency. E.g., “When telling a story, I usually use a lot of gestures to help get the point across”.
- Social sensitivity: Skill at interpreting the verbal communication of others and social norms governing social behaviour. E.g., “Sometimes I think that I take things other people say to me personally”.
- Social control: Skill at role-playing and social self-presentation. E.g., “I am usually very good at leading group discussions.”

These sub-scales then form two over-arching factors based on the method of communication, specifically social, for verbal social skills, and emotional, for non-verbal social skills.

These scales have been found to have excellent test-retest reliabilities ranging between .81 and .96 for the sub-scales over a two-week period. Alpha coefficients for the subscales ranged between .64 and .89 in student samples (Riggio, 2004). In the current study alpha coefficients were .88 for total scores and between .65 for the emotional control sub-scale and .86 for the social expressivity scale.



### **7.2.3. Procedure**

Ethical approval was gained from the Department of Psychology Ethics Committee prior to the commencement of the study. Participants were distributed the scales in blank envelopes and, to preserve their anonymity, participants were requested to return their answers sealed in the envelopes separately from their consent forms. Written instructions were included with the scales, giving brief explanations of the scales and what they were designed to measure. However, in an effort to minimise response bias, at no point was psychopathy referred to, with the PPI-R instead described as a ‘measure of personality and interpersonal styles’.

### **7.2.4. Missing data**

A number of participants were missing item responses. However, no single participant was missing more than 2% of their total data. Furthermore, for each individual with missing data no single scale or sub-scale was missing more than 20% of its total data. As such, it was deemed valid to replace the missing data using a maximum likelihood process as recommended by Allison (2002). This was done using the EM algorithm supplied by the SPSS 14.0 statistical package.

### **7.2.5. Data analysis**

Using a similar technique to previous studies, three participants’ data were removed due to a combination of ‘atypical’ inconsistent responding scores and deviant responding T scores over 65, 2 males and 1 female. However, further examination of the deviant responding scores indicated that, unlike previous studies, there were still seven participants with very high scores (over three standard deviations) on the deviant responding scale. Furthermore six of these were non-native English speakers. As it was considered this may indicate an issue with comprehension of the scale, it was deemed safest to also remove the data from these seven participants, all females. This resulted in a total of 10 participants’ data being removed, 2 males and 8 females.

Preliminary examination of the data indicated that the indirect aggression scales were positively skewed and displayed a number of outliers. This was corrected by replacing the

outlier variables with a value equivalent to a score 3.29 standard deviations above the mean, as recommended by Field (2005).

### 7.3. Results

As the indirect aggression scales were found to be positively skewed, Spearman's rank correlation was used, although for later regression analysis the indirect aggression scales were subject to a log transformation to correct for the skew. In contrast to what was hypothesised, total indirect aggression was not found to be correlated with SSI total scores or any of its sub-scales (see Table 7.1).

Table 7.1

*Correlations Between Social Skills and Indirect Aggression Scores*

	Indirect Aggression			
	Total	Guilt Induction	Social Exclusionary Behaviours	Malicious Humour
<b>Social Skills</b>				
Total	.07	.22*	-.05	-.01
Emotional Expressivity	.16	.25*	.06	.12
Emotional Sensitivity	.07	.15	-.05	.06
Emotional Control	.11	.16	.03	.04
Social Expressivity	.05	.16	-.06	.04
Social Sensitivity	.08	.07	.14	.03
Social Control	-.11	.03	-.19	-.19

\*  $p < .05$

Guilt induction was found to be positively correlated with both emotional expressivity and total social skills but none of the other social skills scales. In contrast, both the social exclusionary behaviours and malicious humour sub-scales were found to show a trend towards a negative correlation with social control although this was only at the .10 level.

Table 7.2

*Correlation Between Social Skills and Psychopathy*

	Psychopathy			
	Total	Coldheartedness	Fearless Dominance	Impulsive Antisociality
<b>Social Skills</b>				
Total	.18	-.33**	.46**	-.08
Emotional Expressivity	.13	-.07	.17	.11
Emotional Sensitivity	.16	-.36**	.33**	.06
Emotional Control	.40**	.16	.44**	.22*
Social Expressivity	.17	-.29**	.48**	-.07
Social Sensitivity	-.21*	-.27**	-.36**	.07
Social Control	.07	-.15	.48**	-.24*

\* $<.05$ \*\* $<.01$ 

Since both the PPI-R and the SSI were found to be normally distributed, a series of Pearson's Product moment correlations were carried out. As hypothesised, total psychopathy was found to be unrelated to total scores on the SSI, although this was not the case with the social skills sub-scales. Total psychopathy was found to be positively related to levels of emotional control but negatively related to social sensitivity (See Table 7.2). As might be theoretically expected, divergent correlations were found with the psychopathy factor scores. Coldheartedness was found to be negatively correlated with both total social skills and the emotional sensitivity, social expressivity and social sensitivity sub-scales. In contrast, fearless dominance was found to be positively correlated with total social skills and all social skills sub-scales except emotional expressivity and social sensitivity, displaying a negative correlation with the latter. Finally, impulsive antisociality was found to negatively correlate with the social control subscale and positively with emotional control but was unrelated to the other social skill sub-scales.

Although the lack of relationship between social skills and indirect aggression is unexpected, it is not entirely surprising given that previous research has indicated that the relationship may only be evident once the effects of empathy had been controlled for.

However, this does not discount the role of social skills in moderating the relationship between psychopathy and indirect aggression, as it is possible for a variable to act as a moderator without necessarily displaying an independent effect on the outcome. Indeed Björkqvist hypothesised that indirect aggression would result from a combination of high social skills and low empathy rather than just high social skills on its own (Björkqvist et al., 2000).

### **7.3.1. Moderator analysis**

A moderator analysis was carried out to test the hypothesis that social skills would moderate the relationship between psychopathy and indirect aggression. Total scores for psychopathy and social skills were first standardized, as recommended by Aiken and West (1991) and then entered into the first step and an interaction variable, generated by multiplying the two standardized scores, was entered into the second stage.

As with previous studies, psychopathy was found to be a strong predictor of indirect aggression use,  $\beta = .54$ ,  $t(3, 93) = 6.16$ ,  $p < .001$ , social skills, however, was not,  $\beta = .03$ ,  $t(3, 93) = .37$ ,  $p > .05$ . The interaction term however failed to produce a significant  $R^2$  increase when introduced,  $\Delta R^2 = .01$ ,  $F(1, 93) = 1.92$ ,  $p > .05$ , indicating that this did not act as a significant moderator of the relationship between psychopathy and social skills (see Figure 7.1).

The picture was different when the SSI factor scores were examined by repeating the moderator analysis using the social and emotion sub-scales. The introduction of the psychopathy x social interaction term did not result in a significant  $R^2$  change when introduced to the regression model containing psychopathy total and the social sub-scale,  $\Delta R^2 = .00$ ,  $F(1, 93) = .212$ ,  $p > .05$ . This would appear to suggest that verbal social skills play no role in moderating the relationship between psychopathy and indirect aggression. Similarly, no significant interaction effect was found for the social sensitivity,  $\Delta R^2 = .00$ ,  $F(1, 93) = .109$ ,  $p > .05$ , social expressivity,  $\Delta R^2 = .00$ ,  $F(1, 93) = .481$ ,  $p > .05$ , or social control,  $\Delta R^2 = .00$ ,  $F(1, 93) = .027$ ,  $p > .05$ , sub-scales.

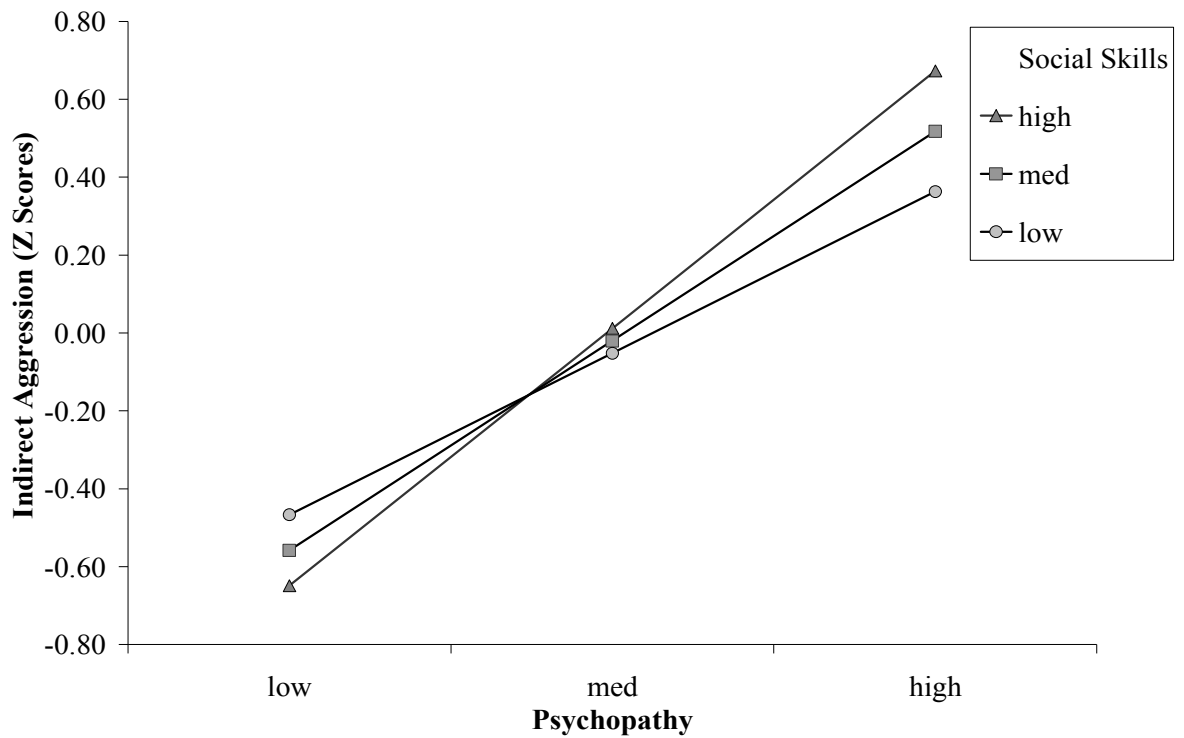


Figure 7.1 - Moderator effect of Social Skills Total on the relationship between psychopathy and indirect aggression,  $p > .05$

In contrast, a repeat of the moderation analysis using the emotion sub-scale indicated that the introduction of the psychopathy x emotion interaction term resulted in a modest but significant  $R^2$  change,  $\Delta R^2 = .04$ ,  $F(1, 93) = 5.62$ ,  $p < .05$ . These results would appear to suggest that it is non-verbal social skills which play a significant role in moderating the interaction between psychopathy and indirect aggression (see Figure 7.2).

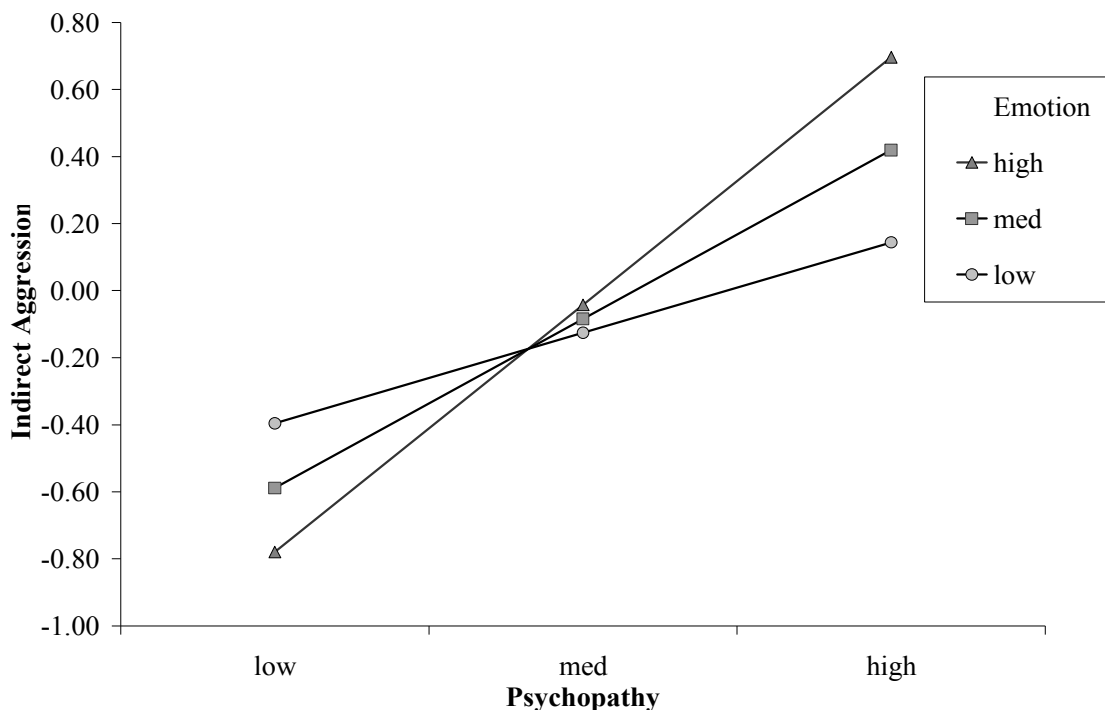


Figure 7.2 – Moderation of the relationship between psychopathy and indirect aggression by the Emotion social skills sub-scale,  $p < .05$

Given the evidence that the sub-scales display differential correlations, the individual emotion subscales, emotional sensitivity, emotional expressivity and emotional control were all examined independently to determine their individual moderator effect on the relationship. Although neither emotional expressivity,  $\Delta R^2 = .01$ ,  $F(1, 93) = 1.10$ ,  $p > .05$ , nor emotional sensitivity,  $\Delta R^2 = .01$ ,  $F(1, 93) = 1.08$ ,  $p > .05$ , interaction terms reached significance, emotional control was found to be a significant moderator,  $\Delta R^2 = .03$ ,  $F(1, 93) = 4.38$ ,  $p < .05$ . This would seem to indicate that it is the emotional control sub-scale which is driving the moderation of the relationship between psychopathy and indirect aggression by the emotion scale. However, closer consideration of the moderating effects of emotion control (see Figure 7.3) would appear to indicate that although it displays a strong moderating effect at low levels of psychopathy it has little effect with regards to individuals high on psychopathic personality traits. Therefore, it would appear there is an additive influence of the other emotion social skills sub-scales over and above what is apparent from each of these individually.

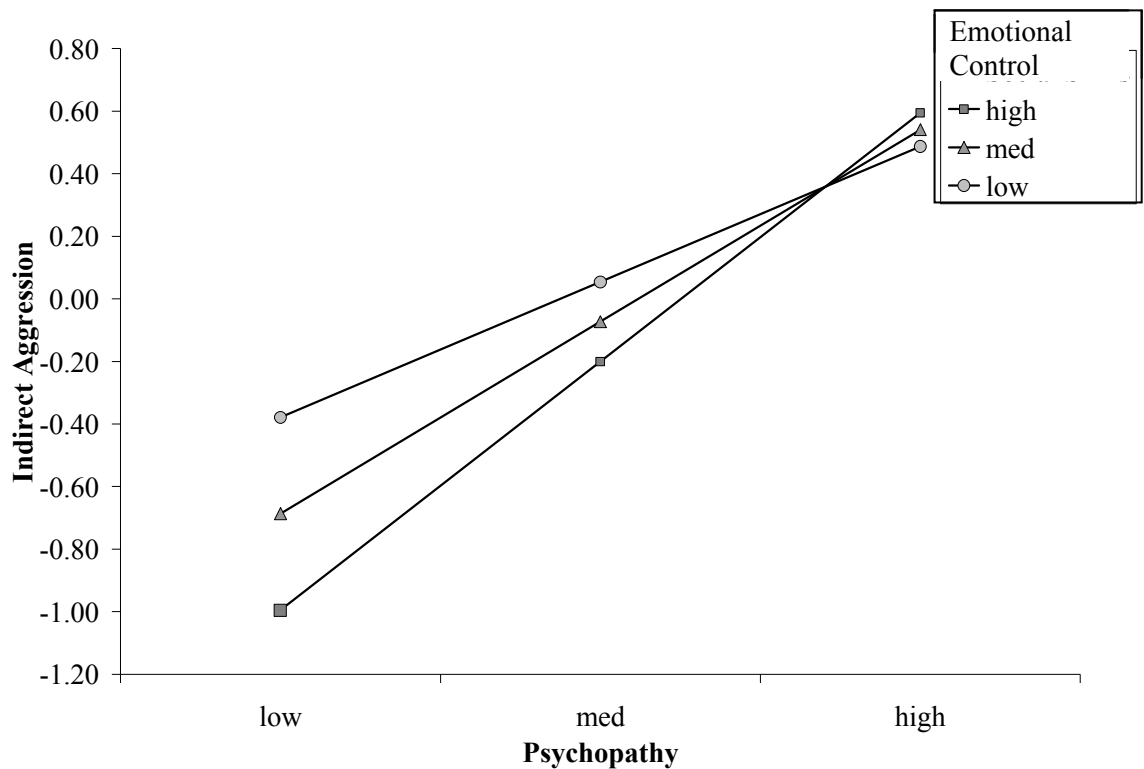


Figure 7.3 – The moderating effect of the emotional control sub-scale on the relationship between psychopathy and indirect aggression use.

The moderating effect of non-verbal social skills was also examined for each of the psychopathy factors individually. It was found that the interaction term was significant for both impulsive antisociality,  $\Delta R^2 = .03$ ,  $F(1, 93) = 5.75$ ,  $p < .05$ , and fearless dominance,  $\Delta R^2 = .07$ ,  $F(1, 93) = 7.58$ ,  $p < .01$ , but not for coldheartedness,  $\Delta R^2 = .01$ ,  $F(1, 93) = .712$ ,  $p > .05$ . Indeed, it appeared that once the effect of coldheartedness had been controlled for, non-verbal social skills had a significant positive effect on indirect aggression use,  $R = .30$ ,  $t(2, 94) = 3.19$ .

#### 7.4. Discussion

These results indicate that neither total indirect aggression use nor total psychopathy were correlated with total social skills, offering only partial support for hypothesis 6b, although there was some evidence of correlations between the psychopathy factors and the social skill sub-scales. In particular there appeared to be negative correlations between coldheartedness and a number of social skill sub-scales and positive correlations with fearless dominance. Although total social skills were not found to be a significant

moderator of the relationship between psychopathy and indirect aggression, there was found to be a significant moderating effect of the emotion but not social factor, and in particular the emotion control sub-scale, thus partially supporting hypothesis 6a.

That indirect aggression was not found to be correlated with social skills is troubling for Björkqvist's hypothesis (Björkqvist et al., 2000), but is not necessarily contradictory to the prior research evidence, reported earlier in this chapter (Kaukiainen et al., 1999). Social skills and social intelligence have been associated with aspects of empathy, and in particular cognitive empathy/theory of mind (Langdon et al., 2003), which is in turn negatively related to the use of indirect aggression. Prior research has found that the relationship between social skills and indirect aggression only becomes apparent once the shared variance with empathy has been controlled for (Kaukiainen et al., 1999). Nonetheless, a number of significant correlations are observable with the indirect aggression sub-scales. Guilt induction was found to be significantly positively correlated with emotional expression. This fits theoretically with the nature of this form of indirect aggression since effective manipulation of others emotions would require the ability to effectively communicate one's own nonverbal expressions.

As had been hypothesised there was found to be no significant correlation between total psychopathy and total scores on the social skills inventory. However, a positive correlation was found between psychopathy total scores and emotional control and negative correlations between psychopathy and social sensitivity. The positive relationship with emotional control makes a level of theoretical sense. Psychopaths have often been described as emotionally detached and able to effectively represent emotional expressions without necessarily feeling the underlying emotion (Cleckley, 1988; Hare, 1999), which would suggest a level of control over their emotional expressions. This would be a highly adaptive trait for non-criminal psychopaths to learn as it would allow them to present a more convincing "mask of sanity" and aide them in their manipulations of others. The negative correlation with social sensitivity may be due to this skill being related to sensitivity and compliance with social norms regarding interactions. Examination of the factor scores would appear to indicate that coldheartedness is negatively related to certain aspects of social skills but fearless dominance is positively related to social skill levels. Specifically, coldheartedness was found to be negatively related to emotional sensitivity,



hardly surprising since this sub-scale appears to assess aspects of cognitive empathy, as well as social expressivity and social sensitivity. These latter two relationships may be due to individuals scoring highly on coldheartedness assessing, in part, deficits in forming emotional bonds with others. In contrast, fearless dominance was positively related to all the scales except social sensitivity and emotional expressivity. This is as would be expected since this scale assesses both social influence and dominance and lack of social anxiety. Indeed it may be more surprising that there was found to be a negative relationship with social sensitivity, however, as mentioned before, this may be due to a psychopathic tendency to ignore social norms in interactions, as captured by the rebellious nonconformity sub-scale. There was also found to be a strong negative relationship between impulsive antisociality and social control. Arguably, this may be due to the more communal aspects of this sub-scale whereas impulsive antisociality assesses a pathological egocentricity and an agentic dominance and manipulation of others.

In contrast to our principle hypothesis, total scores on the SSI were not found to significantly moderate the relationship between psychopathy and indirect aggression. However, when the division was made between verbal and non-verbal social skills, the social and emotion factors respectively, significant moderator effects were found. Specifically the relationship between psychopathy and indirect aggression was found to be significantly moderated by levels of non-verbal social skill, with participants scoring high on the emotion scale and psychopathy found to display higher levels of indirect aggression than those scoring low on the emotion scale but high on psychopathy. In contrast for those scoring low on psychopathy, high emotion scorers displayed less indirect aggression than those scoring low on this variable. As such, it can be concluded that the effect of non-verbal social skills on the use of indirect aggression differs depending on whether they are low psychopathy scorers compared to high psychopathy scorers.

Given the strong association between psychopathy and low empathy, this would appear to offer support for the Björkqvist hypothesis that indirect aggression is the result of low levels of empathy and high levels of social skills (Björkqvist et al., 2000). Although a clear moderation effect wasn't found when looking specifically at the coldheartedness factor, which does raise some questions on this. Arguably this may reflect previous findings that social skills display a strong positive relationship with indirect aggression once empathy

has been controlled for (Kaukiainen et al., 1999). Given the strong negative relationship between coldheartedness and measures of empathy (see Chapter 5), it may be that this reflects this main effect of non-verbal social skills once empathy had been controlled for. In contrast, significant moderation effects were found with both the fearless dominance and impulsive antisociality factors, supporting the findings with total psychopathy scores.

These findings would also appear to go some way towards supporting the risk-reward theory of gender differences in aggression. Specifically, this theory argues that individuals would be more likely to use indirect aggression as it carries less risks and has increased rewards (see 2.5.1 for more details). It also argues that females use more indirect aggression than males during adolescence due to developing social skills earlier (Björkqvist, 1994). The current findings, that those high on social skills and high on psychopathy display higher levels of indirect aggression would appear to support this. High social skills will arguably lead to increased rewards due to being able to more effectively use indirect aggression. In addition, given the low empathy and in particular their low levels of social attachment associated with psychopathic traits, high scorers are unlikely to consider this form of aggression as having as many costs, be these in terms of guilt due to causing others harm or the consequences of social exclusion. In contrast those high on social skills but with lower levels of psychopathic traits may place more emphasis on their social relationships and thus consider indirect aggression use to have too many costs associated with it for its rewards, despite having the skills to effectively use this form of aggression.

These results also serve to support the theory the non-criminal psychopathy is a moderated manifestation of psychopathic personality traits. This theory posits that criminal and non-criminal psychopaths possess the same underlying personality pathology. However, it is argued that due to moderating factors such as IQ, socio-economic status, education or, indeed, social skills, non-criminal psychopaths will manifest these underlying personality traits in a manner other than criminal behaviour (see 1.5.2 for more details). The current findings would appear to support this theory, with those high on psychopathy and high on social skills using more indirect aggression than those high on psychopathy and low on social skills. However, this study did not test look at the relationship between social skills and direct aggression. Specifically whether, as would be hypothesised on the basis of this

theory, that high social skills would result in a decrease in aggression use as well as an increase in indirect aggression use among high psychopathy scorers or if the increased level of indirect aggression observed merely serves to provide high psychopathy scorers with another tool with which to aggress.

It is interesting that it is non-verbal, not verbal, social skills that act as a moderator in the relationship between psychopathy and indirect aggression. Analyses were conducted with the emotion sub-scales to see which aspects of non-verbal social skills were driving this relationship. Emotional control was the only sub-scale found to present a significant moderating effect. That this should be the case is theoretically consistent with the concept of indirect aggression. The ability to control one's own expressions is a skill of considerable use when attempting to harm others through social means. However, examination of the exact pattern of moderation would appear to imply that emotional control only has an effect on the use of indirect aggression at low-levels of psychopathy. For low-psychopathy scorers it would appear that increased emotion control reduces the level of indirect aggression use, perhaps instead reflecting a more skilled use of non-aggressive assertiveness over indirect aggression. However at high levels of psychopathy it has little effect. This would appear to nonetheless indicate that there is an effect of the other emotion sub-scales; as the emotion scale also increased the use of indirect aggression at high levels of psychopathy. What is more surprising is the lack of a moderating effect of verbal social skills. This would appear to imply that use of indirect aggression in high scoring psychopaths is not necessarily about what they say but more about how they say it. This fits with descriptions of malicious humour, which appears indirect in its manner of presentation (as a joke) rather than in the acts themselves (Forrest et al., 2005). Similarly, guilt induction may be reliant on saying one thing (e.g., "its fine" after not getting one's own way) whilst making it clear that the truth is something different, thus eliciting negative emotions of guilt or sadness in the other party.

The current sample used for the research reported in this chapter does, however, raise a number of problems. Firstly, there was a significant female bias in the sample, with only 16 males present. Given the sex differences found between males and females with regards to empathy mediation of the relationship between psychopathy and indirect aggression, as observed in Chapter 6, it is questionable whether these results can be generalised to the

whole population or if they are only applicable to a female student sample. Arguably students are liable to be a high functioning population, with higher levels of social skills, especially those students who are choosing to study psychology. As such there is the question of whether these findings are generalisable to a general population.

In conclusion, the current study partially supports the lack of relationship between psychopathy and social skills, at least within a community sample. However, the support for a positive relationship between social skills and indirect aggression was not found. Social skills, more specifically non-verbal social skills, were found to be a significant moderator of the relationship between psychopathy and indirect aggression, as expected. Participants displaying high psychopathy and high non-verbal social skills were found to use more indirect aggression than those with high psychopathy and low non-verbal social skills. The inverse, however, was found for low psychopathy, with low non-verbal social skills associated with higher levels of indirect aggression. This would appear to offer partial support for the Björkqvist hypothesis (Björkqvist et al., 2000) that indirect aggression is due to low empathy and high social skills, but it is clear further research is required.

Chapter 8 will, as such, seek to replicate these findings with a wider community sample presenting a more even gender balance. This further research will also seek to further test the relationship between indirect aggression and social skills by including a measure of empathy to control for confounding effects resulting from shared variance between these two variables. Measures of direct aggression will also be included to consider the relationship between this variable and participant's social skills to determine whether this moderation effect is unique to indirect forms of aggressive behaviour use.

## CHAPTER 8

### **8. Study 5: The relationship of psychopathy and indirect aggression within a wider community sample**

#### **8.1. Introduction**

The studies presented so far within this thesis have developed an in-depth view of the relationship between psychopathy and indirect aggression, focusing on the role of empathy, sex and social skills in this relationship. One significant flaw within this research, however, has been the reliance on student samples, which may be poorly representative of the wider population for a number of reasons. Firstly, age has been found to affect levels of both PPI-R assessed psychopathy (Lilienfeld & Widows, 2005) and indirect aggression (Forrest et al., 2005; Ireland, 2002). Secondly, students arguably display homogenous social networks, often socialising only with other students, who will display similar ages and backgrounds. This in turn may affect the forms of social interactions they engage in, in particular their use of social skills and indirect aggression. Finally, it is arguable that some of our research may display a particular bias through the use of psychology students. There is liable to be a level of self-selection bias based on course choice which may affect our results in unforeseen ways. As such, it was considered vital for the final study to expand our research to a wider community population.

To achieve this aim we used an online version of our data battery which participants were instructed to complete and submit electronically. There has been considerable research regarding the validity of online forms of data collection, particularly with regards to social desirability biases. Although mixed, results have generally indicated that online studies display little difference in socially desirable responding compared to paper assessments (Booth-Kewley, Edwards, & Rosenfeld, 1992). Furthermore, a number of review studies looking at online data collection have concluded that the samples produced are no less motivated or maladjusted compared to student counter-parts and may even be more representative of the general population than traditional study populations (Gosling, Vazire, Srivastava, & John, 2004). Although some issues have been highlighted with regards to increased inattentive responding (Johnson, 2005), arguably the use of both the deviant responding and inconsistent responding sub-scales of the PPI-R may help control

for this in the current study. Indeed there has already been an online study using the PPI-R which supported the relative validity of this scale using an electronic format (Sandler, 2007). As such, it was decided that online data collection would be the most practical method of accessing a diverse, but high functioning, population for this study. There was particular interest in accessing a high functioning population due the theorised role indirect aggression may play in successful psychopathic populations (see 2.6.3).

The aim of this study was primarily to replicate the previous studies conducted in a more general population. The studies detailed in the previous chapters found a positive association between psychopathy and indirect aggression, however, these studies used only student samples, which raises questions as to the applicability of the finding to a wider population. As such, it is hypothesised that, replicating the prior studies in this thesis, there will be a significant positive relationship between psychopathy and indirect aggression and that this will remain even after controlling for the effects of direct aggression. Furthermore, it is hypothesised that impulsive antisociality and coldheartedness, but not fearless dominance, will be significant predictors in this relationship. It is also hypothesised that this relationship will be especially prominent with the social exclusionary behaviours and malicious humour indirect aggression sub-scales but not guilt induction. So as to test the speculated role of proactive and reactive forms of indirect aggression (see Chapters 5 & 6), the indirect aggression scale was administered to participants twice, once with 'proactive' response instructions and once with 'reactive' response instructions. It was hypothesised that the impulsive antisociality factor would play a greater role in the use of reactive indirect aggression but that coldheartedness would be more relevant for proactive indirect aggression.

Based on the results from Study 2 (Chapter 5) it is also hypothesised that affective empathy will show a significant partial mediation effect of this relationship, but this will not be apparent for cognitive empathy. Following from the results seen in Study 4 (Chapter 7), it is expected that a moderation effect will be apparent for non-verbal social skills and in particular the emotion control sub-scale. Finally, based on our results from Study 3 (Chapter 6), it is hypothesised that there will be prominent sex differences in these relationships. In particular it is hypothesised that, for females, only the impulsive antisociality predictor will be significant and that affective empathy will not play a

mediating role. In contrast for males it is hypothesised that coldheartedness will be the primary predictor and that affective empathy will have a strong mediation effect. Sex differences were not considered in our prior studies with regard to social skills moderation. However, for males their use of indirect aggression appears more proactive and goal-orientated. Therefore their ability to effectively use indirect aggression, as dictated by their levels non-verbal social skills, may play a greater role in their choice of aggression strategy. On this basis, it is hypothesised that a stronger moderation effect will be observed for males than females.

Therefore this study will seek to test the following hypothesis:

- Hypothesis 1: There will be a positive correlation between psychopathy and indirect aggression and this will be driven by the affective and impulsivity factors
- Hypothesis 2: The relationship between psychopathy and indirect aggression will remain even once direct aggression has been controlled for.
- Hypothesis 3a: The relationship between psychopathy and indirect aggression will be mediated by levels of affective empathy but not cognitive empathy
- Hypothesis 3b: There will be a gender difference in the affective empathy mediation of the relationship between psychopathy and indirect aggression, with a significant empathy mediation effective for males but not females.
- Hypothesis 6: There will be a significant moderation effect of social skills on the relationship between psychopathy and indirect aggression.

## **8.2. Method**

### **8.2.1. Participants**

Two hundred and four participants submitted complete and valid data sets, of these 112 reported their gender as female (54.9%), 85 reported as male (41.7%) and six failed to report their gender (2.9%). The mean age of the sample was 32.02 years ( $SD = 11.43$ , range 18 - 62), 89.2% of the sample reported their ethnicity as White, 2.5% Asian, 1.5% Black, 1.5% Chinese and 1.5% Mixed. In terms of nationality, 59.1% of the sample were of British nationality, 22.2% were of other European nationalities and 13.8% were of North American nationality. The sample also showed considerable variety in educational attainment, with 48.8% reaching university level education (both BSc and Diploma level), 19.7% having attained higher degrees, 17.7% having A-Levels or equivalent, 6.4% having GCSEs and only 5.4% with no qualifications at all. Two participants' data had to be removed due to responses on the validity scales (see 8.2.5 Data Analysis) leaving a final sample of 201 participants, with 83 males, mean age 28.40 ( $SD = 9.28$ , range 18 - 60), and 112 females, mean age 35.01 ( $SD = 12.06$ , range 18 - 62).

As participants were free to enter their occupation, this resulted in close to 200 separate occupational entries. These were then categorised based on the UK Standard Classification of Industrial Activities (2007), into seven occupational categories that best covered the range of occupations reported as well as two additional categories for 'student' and 'unemployed' participants, as well as an 'other' category for those in employment not fitting into any of the above categories. Students accounted for 42% of participants, admin/support workers for 33%, specialised professionals (lawyers, accountants, managers etc) for 31%, information/communication workers (including IT) for 23%, health care/social work for 16%, education (including university staff) for 14%, public sector workers (including military) 8%, retail workers for 7%, 10% classified as 'other' and 10% were unemployed.

### **8.2.2. Materials**

This study used the PPI-R to assess psychopathic traits and the Buss – Perry AQ to assess direct aggression in a similar form to that detailed in previous chapters. The EQ was



administered as a measure of empathy; however the filler items were removed so as to ease the response burden on participants, such that only the 40 empathy-related items were used. The SSI was also used to measure social skills, however to reduce to item burden on participants, only the emotion sub-scale of the SSI was included in the test battery.

In an attempt to assess both proactive and reactive indirect aggression, the IAS was administered twice, with two different versions of the participant instructions: resulting in the IAS-proactive and the IAS-reactive versions of the scale. For the IAS-proactive participants were instructed to “Please indicate for each of the following behaviours whether they are characteristic of you to use against others to get what you want”. For the IAS-reactive the instructions told participants to “Please indicate for each of the following behaviours whether they are characteristic of you to use against others when you feel angry, hurt, or provoked”. The two scales were otherwise identical in terms of item content, each with 25 items rated by participants from 1 “*Extremely uncharacteristic of me*” to 5 “*Extremely characteristic of me*”, resulting in a scale range of 25 to 125.

The scales were presented using a web-based response system such that under each item there was a list of the appropriate response options (four or five depending on the response options present in the original version of the scale), of which participants could choose one. The responses were then treated identically to the paper versions of the scales, resulting in the same response coding and ranges described in previous chapters (see Chapter 4, 5 & 7). Due to limitations of the online response system, the order of the scales could not be counter-balanced. However, the order of the scales used was randomly determined prior to the compilation of the test battery, resulting in the order of: PPI-R, EQ, IAS Proactive, AQ, SSI, IAS Reactive. Prior to completion of the scales, demographic information was also collected, including age, nationality, ethnicity, education level and occupation.

### **8.2.3. Procedure**

This data administration was first piloted using a small group of five university post-graduate students (three males, two females) to test for ease of comprehension and administration time. Pilot participants took between 40 to 50 minutes to complete the data

battery in total and reported the instructions as clear and user-friendly. Although the scale was reported as long, response was not reported as being overly arduous by pilot participants and as such the length was deemed overall to be acceptable.

Participants were approached for recruitment from a number of web-based discussion forums, listings of online psychology research and social/business related lists. Participants were requested to take part in a study on “personality and social behaviour” and were offered as a reward the possibility of winning a £50 Amazon gift voucher. It was requested that all participants were over 18 (and participants were not allowed to continue if they entered an age under this) and of European nationality. It was not possible to restrict this latter criteria automatically, given the limitations of the technology, resulting in approximately 20% of participants having nationalities from outside the EU. After a first page giving a brief explanation of the study and what would be expected from the participants, participants were first given an ID number to enter into each page. This allowed all responded pages to be kept together and enable participants to return to the test battery at a later date if they were unable to complete all aspects of the battery in one sitting. Participants were then asked to complete the demographics questions then each of the scales in turn, in the order given. All scales used only one page, other than the PPI-R which was spread over three pages for ease of reading. At the end of the test battery participants were thanked for their time and given appropriate contact details should they wish to make further enquiries with regards to the study. After each of the two waves of data collection were completed a second thank you e-mail was sent out to the participants within that data collection wave, which also gave a short summary of the aims of the research project, including the general personality traits measures. However, in accordance with the advice of the ethics committee and to avoid generating any undue anxiety, the term ‘psychopathy’ was not used to describe these traits, instead the personality traits were described on a factor and sub-scale level, such as emotional detachment, fearlessness, low anxiety, impulsiveness and nonconformity.

#### **8.2.4. Missing Data**

Although 376 participants were originally recruited, 172 datasets had to be discarded, 65 due computer error in the response and 107 due to incomplete datasets. The computer error

resulted in some missing items invalidating an entire response page, as it could not be determined which item was specifically missing from the data set. This system error unfortunately did not become apparent during the piloting and as such could not be dealt with prior to data collection. The further 107 which were discarded due to incomplete data sets resulted from participants dropping out of the study half way through and thus failing to submit completed datasets. This resulted in an overall attrition rate of 46%, although when observed more closely this was 17% random attrition due to computer error and only 28% non-random attrition, which was considered acceptable given the length of the scale involved. Observation of the demographic variables would appear to indicate that these missing data sets did not differ from the completed ones and thus we were satisfied that the remaining datasets would not constitute a biased sample.

In a number of datasets the missing items were clearly identifiable and in none of these did the missing items represent more than 1% of total items or more than 20% of an individual scale. As such, it was deemed valid to replace the missing data using a maximum likelihood process as recommended by Allison (2002). This was done using the EM algorithm supplied by the SPSS 14.0 statistical package.

#### **8.2.5. Data Analysis**

Using a similar procedure to previous studies, examination of the inconsistent and deviant responding scales indicated that two participant's data should be removed due to invalid responding. However, unlike with Study 4 (Chapter 7) further examination of the deviant responding scores indicated that the remaining data sets did not display scores over 3 standard deviations from the mean and thus those two data sets were the only ones removed from the study.

Preliminary examination of the data indicated that the indirect aggression scales were positively skewed and displayed a number of outliers. This was corrected by replacing the outlier variables with a value 3.29 standard deviations above the mean, as recommended by Field (2005). To correct for the positive skew, the indirect aggression scales were also log-transformed, as also recommended by Field.

### 8.3. Results

Although separate instructions were implemented to capture proactive and reactive forms of indirect aggression, observation of the results would appear to indicate that this manipulation was not successful. Proactive and reactive indirect aggression total scores were found to correlate strongly,  $r = .81$ ,  $p < .001$ , and the individual indirect aggression scales were found to correlate similarly highly between the two versions of the scale with  $r = .76$ ,  $p < .001$ , for socially exclusionary behaviours,  $r = .80$ ,  $p < .001$ , for malicious humour and  $r = .82$ ,  $p < .001$ , for guilt induction. Although previous studies have previously found high levels of correlations between proactive and reactive aggression forms, factor analysis has nonetheless indicated a two factor structure. However this was not the case here, as use of factor analysis indicated a three, not two, factor structure was most appropriate with items from the proactive and reactive sub-scales loading each onto their respective general indirect aggression sub-scales, such that items from proactive guilt induction loaded onto the same scale as those from reactive guilt induction and so on (see Appendix 8.1). As a result this manipulation was deemed to have not succeeded and the two scales were collapsed together by averaging the results of the two versions of the scale to create a single indirect aggression scale. This new combined scale was highly reliable, with a Cronbach's alpha of .94 for the total scale, .89 for malicious humour, .92 for social exclusionary behaviours and .87 for guilt induction.

Table 8.1 gives the demographics for each of the variables for total scores and by sex (significance of difference given).

Table 8.1

*Means and Standard Deviations for Total Group and Both Males and Female*

	Total		Male		Female		p
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	
Psychopathy Total	281.28	35.21	295.34	3.93	270.42	31.07	<.01
Coldheartedness	31.81	7.08	34.39	7.42	29.94	6.23	<.01
Fearless Dominance	108.01	19.69	113.68	19.27	104.04	19.52	<.01
Impulsive Antisociality	141.44	22.69	147.26	24.67	134.45	19.49	<.01
Indirect Aggression Total	48.65	16.61	53.82	17.27	44.66	14.96	<.01
Social Exclusionary Behaviour	19.02	7.56	20.73	7.52	17.50	7.11	<.01
Malicious Humour	16.43	6.71	19.26	7.19	14.39	5.60	<.01
Guilt Induction	13.21	5.07	13.84	5.31	12.77	4.88	n.s.
Direct Physical Aggression	19.14	8.23	21.45	8.80	17.45	7.60	<.01
Direct Verbal Aggression	16.73	4.74	17.18	4.42	14.64	4.72	<.01
Empathy Total	40.25	12.61	34.23	11.38	45.01	11.67	<.01
Cognitive Empathy	9.16	4.56	8.24	4.41	9.94	4.58	<.01
Emotional Reactivity	8.93	4.08	6.93	3.75	10.54	3.64	<.01
Social Skills – Emotion	134.87	16.99	133.31	17.17	136.48	19.90	n.s.
Emotion Control	44.47	9.89	48.77	8.73	41.31	9.56	<.01
Emotion Sensitivity	45.35	10.03	42.13	9.56	47.93	9.71	<.01
Emotion Expressivity	45.05	8.89	47.24	9.30	47.24	8.11	<.01

Replicating results from previous research, males were found to have significantly higher levels of psychopathy and direct aggression, whilst females were found to be significantly higher on empathy. With regards to social skills, males were found to score higher on emotion control whilst females scored higher on measure of emotional sensitivity and emotional expressivity. In contrast to prior research (Archer, 2004; Forrest et al., 2005), males were also found to have significantly higher levels of indirect aggression for all forms of indirect aggression except guilt induction. Looking at the participant demographics it was also apparent that males and females displayed dramatically differing mean ages. The significance of this age difference was similarly tested using a t-test and

was also found to be significantly different, with male participants being, on average, younger than female participants,  $t(2, 193) = -4.33, p < .001$  which may account for some of the observed sex differences. As such, to avoid possible confounding effects of age, further analysis were conducted after controlling for participants' reported age.

Total and factor scores on the psychopathic personality inventory were also compared based on occupational categories (see Table 8.2).

Table 8.2

*Means (and Standard Deviation) for Psychopathy Total and Factor Scores by Occupational Category.*

	Psychopathy Total	Coldheartedness	Fearless Dominance	Impulsive Antisociality
Administrative /Support	267.69 (34.55)	29.97 (6.41)	104.09 (21.28)	133.63 (21.39)
Information/ Communication	286.36 (34.44)	32.52 (6.29)	109.76 (15.63)	144.08 (23.95)
Education	272.30 (23.31)	33.30 (7.08)	102.28 (14.95)	136.72 (14.47)
Health Care/ Social Work	266.39 (28.97)	27.90 (5.21)	110.87 (18.98)	127.62 (17.87)
Specialised Professional	292.51 (31.38)	32.67 (6.99)	117.43 (19.23)	142.41 (20.01)
Public Sector (inc Military)	287.32 (41.26)	32.63 (4.37)	118.12 (30.29)	136.57 (22.71)
Retail	286.88 (41.42)	27.93 (5.62)	102.84 (18.85)	156.11 (25.41)
Other	293.77 (39.39)	35.90 (7.16)	111.67 (26.43)	146.20 (19.28)
Student	284.53 (38.28)	31.88 (7.97)	105.43 (17.67)	147.23 (26.07)
Unemployed	277.25 (29.62)	34.50 (8.54)	97.07 (18.26)	145.68 (14.28)

These scores were entered into a series one-way ANOVAs to test if there was a significant difference in the level of psychopathic personality traits between occupational categories. There was found to be a significant effect of occupation for impulsive antisociality,  $F(9, 184) = 2.12, p < .05$ . Looking over the mean values it would appear that the highest level of impulsive antisociality is observed for retail and the lowest for health care/social work. Gabriel's Post Hoc test was applied as this test manages well with uneven sample sizes, however this did not return any significant contrasts between the different occupational categories. Neither total psychopathy scores,  $F(9, 184) = 1.68, p > .05$ , coldheartedness,  $F(9, 184) = 1.80, p > .05$ , nor fearless dominance,  $F(9, 184) = 1.91, p > .05$ , showed a significant effect at the .05 level.

### **8.3.1. Correlational analysis**

A series of Pearson's  $r$  correlation analyses was run between the psychopathy factors, indirect aggression, direct aggression, empathy and social skills, the results of which are presented in Appendix 8.2. These results were found to replicate the results from Study 2 (Chapter 5) for the most part, with psychopathy, and in particular impulsive antisociality and coldheartedness, displaying a significant correlation with indirect aggression. However, unlike Study 2 fearless dominance was also found to correlate significantly with malicious humour but not any of the other indirect aggression scale. Physical and verbal direct aggression were also found to be correlated with all three psychopathy factors, in contrast to findings in Study 2.

Table 8.3

*Partial Correlations Between Indirect Aggression and Non-verbal Social Skills  
Controlling for the Shared Variance with Total Empathy.*

	Indirect Aggression Total	Social Exclusionary Behaviours	Guilt Induction	Malicious Humour
Social Skills Emotion	.26**	.15*	.25**	.29**
Emotion Control	-.03	-.01	-.08	.01
Emotion Expressivity	.24**	.12	.30**	.22**
Emotion Sensitivity	.26**	.15*	.24**	.28**

\*  $p < .05$

\*\*  $p < .01$

Also replicating our prior results (see Chapter 7) social skills were not found to correlate with indirect aggression, despite their theorised necessity to effective indirect aggression use (Björkqvist et al., 2000). However, as social skills were also found to be significantly correlated with empathy, a series of partial correlations were conducted controlling for the shared variance between social skills and empathy (see Table 8.3). It was found that, after controlling for the shared variance with empathy, total non-verbal social skills and emotion sensitivity scales were significantly related to all forms of indirect aggression. Emotion expressivity was found to be related to all except social exclusionary behaviours whilst emotion control was not found to be significantly related to any of the indirect aggression scales. Indeed the social exclusionary behaviours appears to be only weakly related to non-verbal social skills, whilst guilt induction and malicious humour appear to display much stronger relations, with an emphasis on emotion expressivity for guilt induction and on emotion sensitivity for malicious humour.



### 8.3.2. Psychopathy and indirect aggression

To test the relationship of the psychopathy factors with indirect aggression, a series of regression analysis were carried out by regressing the psychopathy factors onto the indirect aggression scale after controlling for direct aggression and age (see Table 8.4).

Table 8.4

*Regression Analysis of the Relationship Between the Psychopathy Factors and Indirect Aggression Controlling for the Effects of Direct Aggression and Age*

	Indirect Aggression Total
	β
Step 1	
Direct Aggression	.62**
Age	-.14*
Step 2	
Direct Aggression	.40**
Age	-.10
Coldheartedness	-.01
Fearless Dominance	-.08
Impulsive Antisociality	.40**

\*  $p < .05$ ;

\*\*  $p < .01$

Step 1  $R^2 = .38$ ,  $p < .01$ ; Step 2  $\Delta R^2 = .11$ ,  $p < .01$

In contrast to prior findings with the psychopathy factors (reported in Chapter 5) only the impulsive antisociality factor was found to be a significant predictor for total indirect aggression,  $\beta = .37$ ,  $t(5, 195) = 5.97$ ,  $p < .001$ . In contrast, neither coldheartedness,  $\beta = .01$ ,  $t(5, 195) = .21$ ,  $p > .05$ , nor fearless dominance,  $\beta = -.08$ ,  $t(5, 195) = -1.41$ ,  $p > .05$ , were found to be significant predictors of indirect aggression. Also, once the psychopathy factors were entered into the regression, participant age was not found to be a significant predictor of indirect aggression use,  $\beta = -.10$ ,  $t(5, 195) = -1.69$ ,  $p > .05$ , indicating that these results were not due to age differences in the samples used.

To further test the reliability of the relationship between psychopathy and indirect aggression and in particular the empathy mediation effects, the model developed in Study 2 (see Chapter 5) was replicated using the current sample. Given the possible confounding effects of age in the current sample, the variable was also included in the model to control for this (see Figure 8.1). The resultant model was found to be a good fit to the data,  $\chi^2$  (34, N = 201) = 47.53,  $p > .05$ , CFI = .98, RMSEA = .045. It is notable that due to missing data in some of the participants' ages, the SRMR fit statistic could not be calculated for the current sample. These results offer strong support for the previously developed model of the relationship between psychopathy and indirect aggression. Indeed, it is notable that all the regression weights observed in this model were significant at the .05 level, with coldheartedness displaying a significant indirect relationship with indirect aggression via affective empathy.

### **8.3.3. Sex differences**

To test possible sex differences in the relationship between psychopathy and indirect aggression, first a series of correlation analysis between the psychopathy factors and indirect aggression sub-scales were carried out separately for males and females (see Table 8.5).

Table 8.5

*Correlations Between Psychopathy and Indirect Aggression for Male and Female Participants*

	IAS Total			IAS Social Exclusionary Behaviours			IAS Guilt Induction			IAS Malicious Humour		
	Male	Female	Sig	Male	Female	Sig	Male	Female	Sig	Male	Female	Sig
Psychopathy Total	.45**	.42**	n.s.	.30**	.34**	n.s.	.42**	.33**	n.s.	.47**	.46**	n.s.
Coldheartedness	.20	.09	n.s.	.21	.18	n.s.	.07	-.04	n.s.	.21	.07	n.s.
Fearless Dominance	.03	.06	n.s.	-.08	.01	n.s.	.09	.03	n.s.	.11	-.01	n.s.
Impulsive Antisociality	.57**	.58**	n.s.	.44**	.47**	n.s.	.51**	.51**	n.s.	.54**	.57**	n.s.

Sig = significance of the absolute difference between the correlations (one-tailed tests)

\* significant at .05 level

\*\* significant at .01 level

As can be observed, in contrast to the previous research, there was found to be no significant sex differences in the relation between the factor scores and indirect aggression. Indeed, for both males and females the relationship between coldheartedness and indirect aggression was found to be non-significant, whereas that between impulsive antisociality and indirect aggression was found to be of similar strength across the sexes.

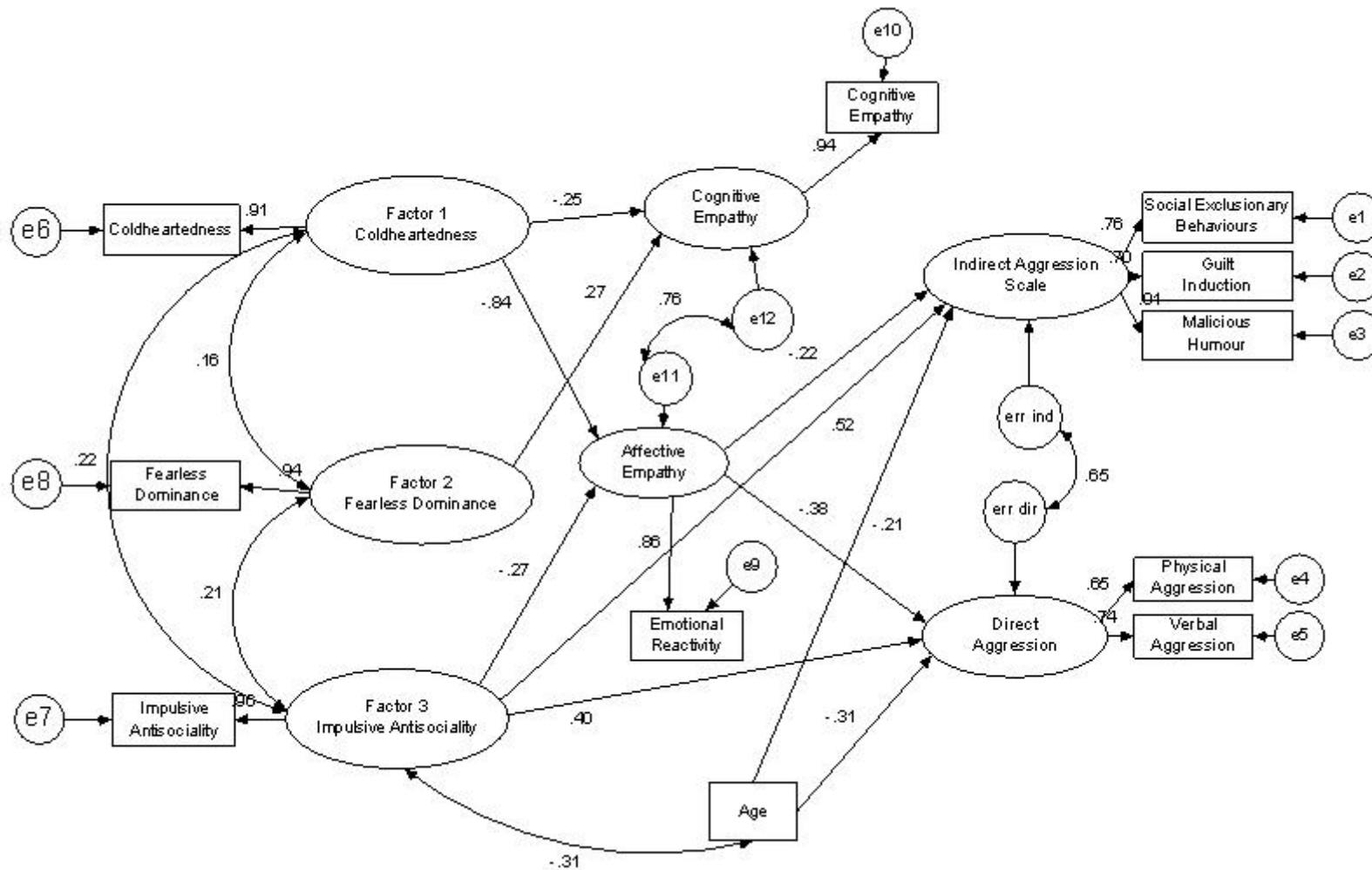


Figure 8.1 – Structural equation model of the relationship between indirect aggression, direct aggression and empathy.

The regression analyses were replicated for each sex, so as to control for the shared variance with direct aggression and age. It was found that in contrast to study 3, the addition of the psychopathy factors accounted for a significant increase in the variance explained for both males,  $R^2 = .12$ ,  $F(3, 77) = 5.51$ ,  $p < .01$ , and females,  $R^2 = .10$ ,  $F(3, 106) = 6.89$ ,  $p < .01$ . Furthermore, for both males and females, only impulsive antisociality was found to be a significant predictor of indirect aggression,  $\beta = .41$ ,  $t(5, 77) = 3.89$ ,  $p < .001$ , and,  $\beta = .36$ ,  $t(5, 106) = 4.51$ ,  $p < .001$ , respectively.

To further test the applicability of the empathy mediation model developed in Study 2, the analysis of this model was replicated for each sex. Again, to control for the shared variance with age, this was included in the model as a control variable. This model was found to be a good fit for males,  $\chi^2(34, N = 83) = 42.37$ ,  $p > .05$ , CFI = .97, RMSEA = .055, SRMR = .065 (see Figure 8.2). However, there were nonetheless found to be non-significant relationships between age and both forms of aggression, between impulsive antisociality and affective empathy and between coldheartedness and cognitive empathy, these latter two relationships replicating findings from the previous analysis of sex differences. However, in contrast to Study 3 (Chapter 6), affective empathy was a significant mediator variable for direct aggression as well as indirect aggression.

This model was similarly found to be a very good fit for female participants,  $\chi^2(34, N = 112) = 35.93$ ,  $p > .05$ , CFI = .998, RMSEA = .015, SRMR = .055 (see Figure 8.3). Replicating results from Study 3, however, affective empathy was not found to be a significant mediator of the relationship between psychopathy and indirect aggression in this model, with the regression between affective empathy and indirect aggression found to be non-significant. However, the relationship between affective empathy and direct aggression was found to be significant, again replicating the findings from Study 3. These findings would appear to suggest that, as with the previous studies, the relationship between psychopathy and indirect aggression is mediated by affective empathy deficits in males but not female

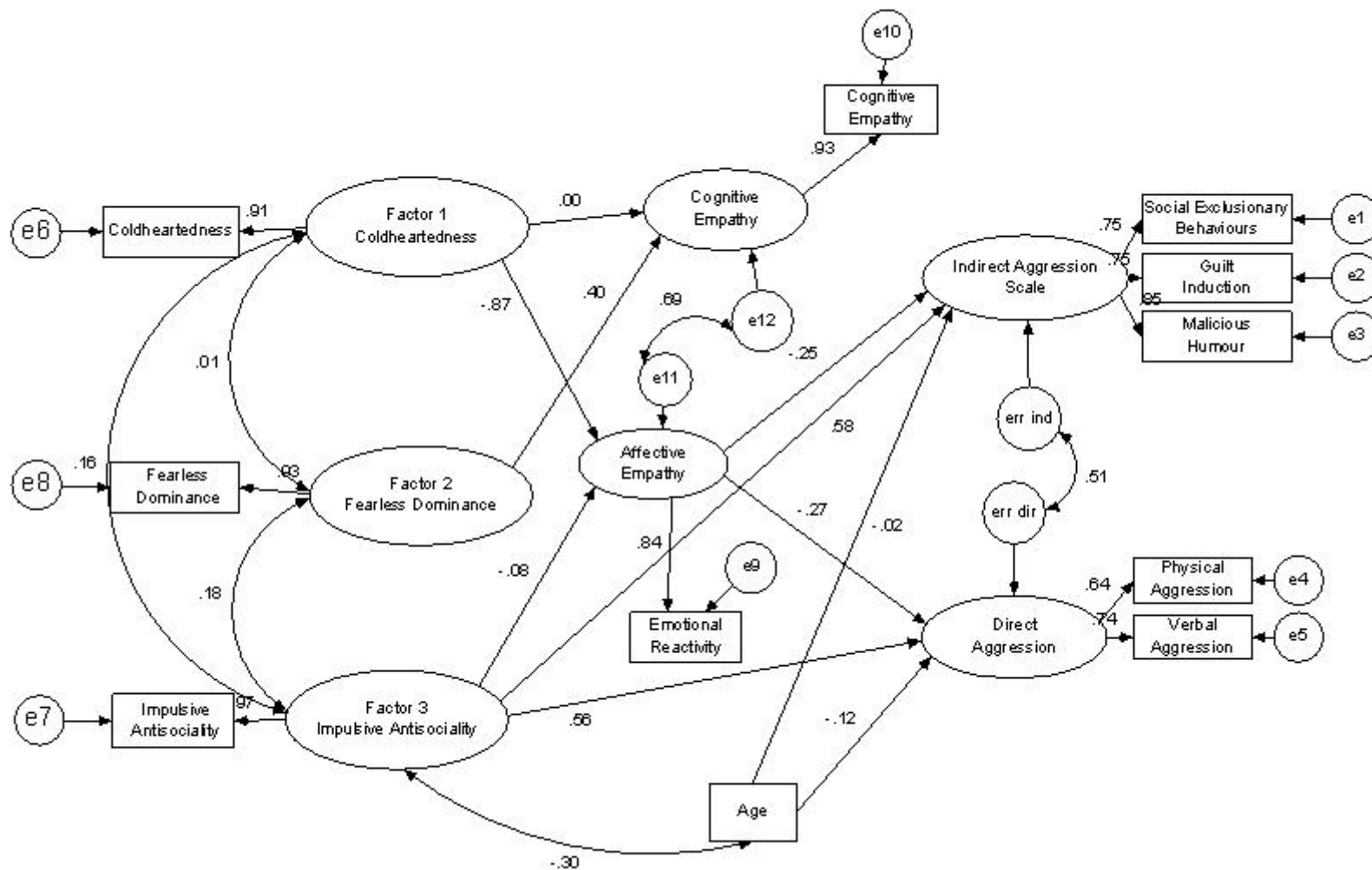


Figure 8.2 – model of the relationship between psychopathy, aggression and empathy for male participants

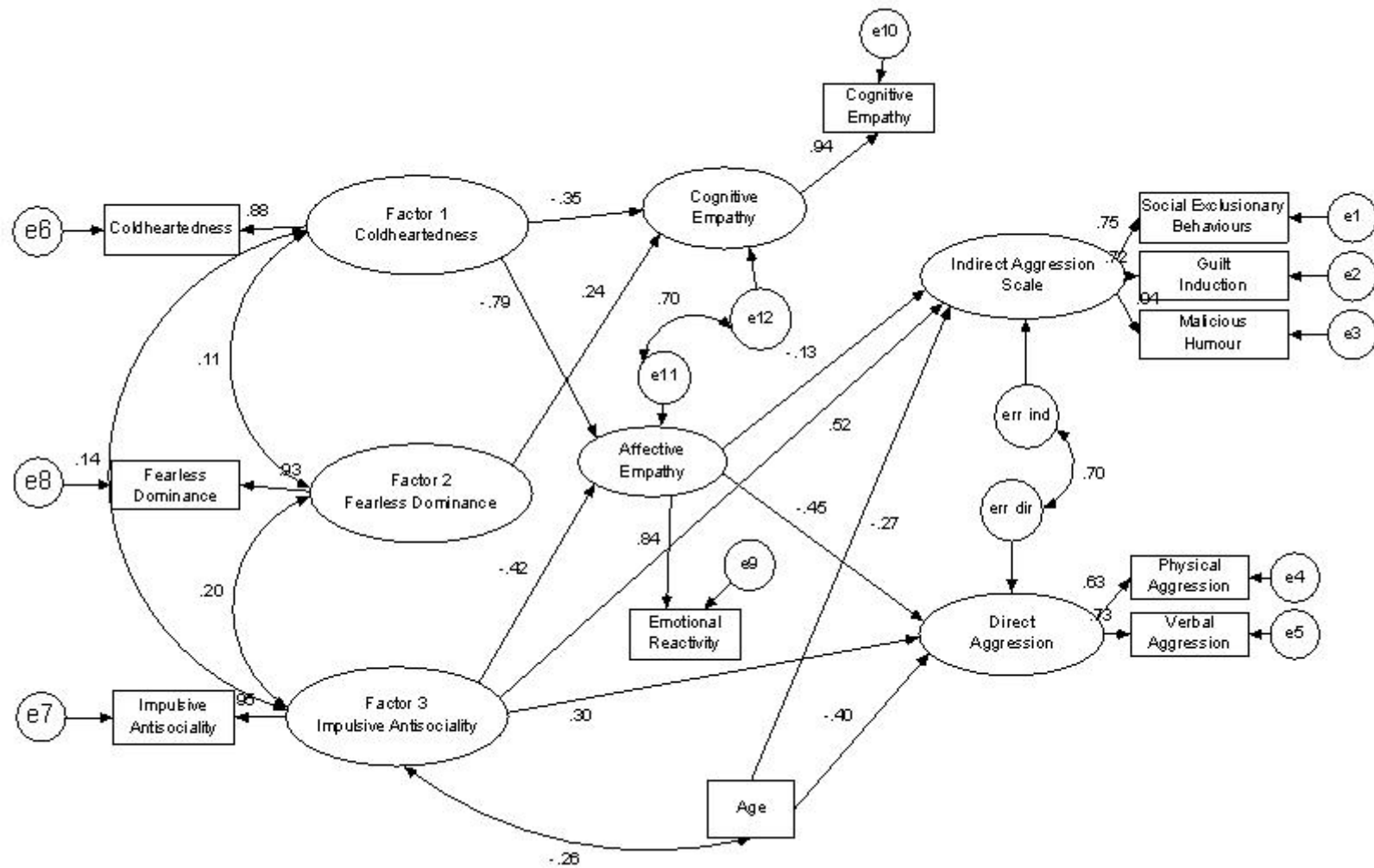


Figure 8.3 – Model of the relationship between psychopathy, aggression and empathy in female participants



However, in the prior study, despite the differences in the significance of the regression weights between males and females, when tested for structural invariance there was not found to be a significant difference between males and females. To test if this was still the case in the current sample, this analysis was replicated. First the model was analysed for each sex simultaneously whilst allowing the regression weights to vary freely, this baseline model was found to be a good fit to the data,  $\chi^2(69, N = 195) = 79.1, p > .05, CFI = .985, RMSEA = .028, SRMR = .063$ . Then the regression weights were constrained to be equal to test the structural invariance between the two sexes. This too showed a moderately good fit to the data,  $\chi^2(79, N = 195) = 98.83, p > .05, CFI = .971, RMSEA = .036, SRMR = .075$ . However, the difference in fit between the two models was found to be significant,  $\chi^2(10, N = 195) = 19.75, p < .05$ , indicating that although despite the good fit of the constrained model, the differences in structure were significant between males and females.

#### **8.3.4. Social skills moderation**

In order to test the moderation effect of non-verbal social skills, a regression analysis was conducted with indirect aggression as the dependent variable. Total psychopathy and non-verbal social skills were entered in the first step and an interaction term between psychopathy and non-verbal social skills was entered in the second step. Although both psychopathy,  $\beta = .56, p < .001$ , and non-verbal social skills,  $\beta = -.20, p < .001$ , were found to be significant predictors, the introduction of the interaction term did not result in a significant change in the variance,  $R^2 = .002, F(1, 197) = .679, p > .05$  (see Figure 8.4).

Given the different moderating effects of the emotion sub-scales found in the prior study, the moderation analyses were replicated for emotion control, emotion expressivity and emotion sensitivity in turn. Results indicated that, as with total non-verbal social skills, for neither emotion control,  $\Delta R^2 = .003, F(1, 197) = .739, p > .05$ , emotion sensitivity,  $\Delta R^2 = .001, F(1, 197) = .237, p > .05$ , or emotion expressivity,  $\Delta R^2 = .001, F(1, 197) = .218, p > .05$ , was there a significant change in the variance for total indirect aggression. It is clear, as such, that in a non-student sample non-verbal social skills do not play a moderating role in the relationship between psychopathy and indirect aggression. Nor was there a significant moderation effect when looking at the factor level, for either impulsive

antisociality,  $\Delta R^2 = .001$ ,  $F(1, 197) = .281$ ,  $p > .05$ , coldheartedness,  $\Delta R^2 = .007$ ,  $F(1, 197) = 1.455$ ,  $p > .05$ , or fearless dominance,  $\Delta R^2 = .018$ ,  $F(1, 197) = 3.666$ ,  $p > .05$ .

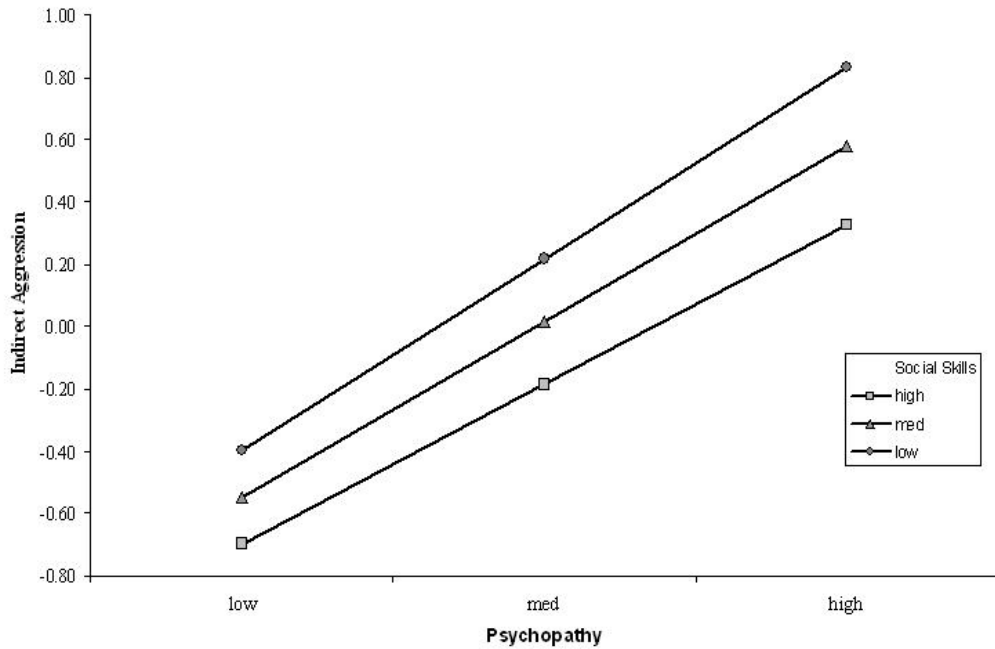


Figure 8.4 – Moderation of the relationship between psychopathy and indirect aggression by the emotion sub-scale of the Social Skills Inventory.

It is arguable that the failure to replicate the social skills moderation effect from Study 4 (Chapter 7) may be due to sex differences in the two samples used. Specifically in Study 4 the sample was predominantly female with very few male participants. In contrast in the current study numbers of male and female participants is more even. Therefore the social skills moderation analysis was replicated on each of the sexes separately. Nonetheless, the addition of the interaction term did not result in a significant  $R^2$  change for either male,  $\Delta R^2 = .014$ ,  $F(1, 78) = 1.49$ ,  $p > .05$ , or female,  $\Delta R^2 = .000$ ,  $F(1, 107) = .04$ ,  $p > .05$ , participants.

#### 8.4. Discussion

Overall, this study succeeded in replicating most of the basic findings from the prior research using students. In particular, it was found that psychopathy was significantly

related to indirect aggression, even after controlling for direct aggression, and that this is predominantly driven by the impulsive antisociality factor, supporting hypotheses 1 and 2. Affective empathy, but not cognitive empathy, was found to be a significant partial mediator of this relationship for the total sample and males but not for females, in support of hypotheses 3a and 3b. However, in contrast to hypothesis 6, the moderation effect of non-verbal social skills was not found to be replicable for either males or females, in contrast to previous studies, arguably due to differences in the sample used.

Of particular interest when examining the demographics of this sample is the significant sex difference observed with almost all variables, with males displaying significantly higher levels of psychopathy, direct aggression, indirect aggression total, malicious humour and social exclusionary behaviours, and emotion control whilst females displayed higher levels of empathy and emotion sensitivity and emotion expressivity. Although a significant difference in both psychopathy and direct aggression does support previous findings from the literature (Archer, 2004; Lilienfeld & Widows, 2005), the level of difference is greater than had previously found. Based on Study 3 and previous research, a significant difference in the male direction was expected for malicious humour, given that males had previously been found to use direct forms of social aggression (Björkqvist et al., 1994). However it was expected to find either no significant difference or a significant difference in the female direction for social exclusionary behaviours and guilt induction which was not the case. Indeed this increased level of indirect aggression in males was unexpected given that previous research would indicate either no sex differences or a sex difference in the opposite direction (Archer, 2004). However, it is also important to note that males and females in this sample displayed significantly different mean ages, with the male sample being much younger than the female sample. Research has previously found that use of both indirect and direct aggression declines with age (Forrest et al., 2005), as does reported levels of psychopathy (Lilienfeld & Widows, 2005). Therefore, it is arguable that the significant differences in these traits between males and females may be at least somewhat accounted for by the differences in age between the two samples. However, this would need to be tested effectively using age-matched samples to determine if this was the case. Nonetheless, age was entered as a control variable into the proceeding regression analysis to account for this possibility. Although the introduction of age into the regression did not appear to change the outcome for either sex, age was a significant predictor of

indirect aggression for females indicating that age is a significant negative predictor in the use of aggression, at least for women. Thus supporting that age differences between the two samples may go some way to explaining these unexpected sex differences.

Also of particular interest are the results from looking at psychopathy scores by occupational category. It is of particular interest to note that there was no significant difference in total psychopathy, coldheartedness or fearless dominance scores between the different occupational groups. There was a significant main effect for the impulsive antisociality factor, however none of the post hoc tests performed were significant. These findings are interesting because they imply that the psychopathic personality traits are evenly distributed across different occupational groups and as such lend support to the concept that those high on psychopathic traits can nonetheless be professionally successful (Babiak & Hare, 2006; Hall & Benning, 2006), supporting previous case study research in such populations (Babiak, 2000). Indeed the specialised professional category, which included lawyers, finance, managers and even CEOs displayed one of the highest levels of psychopathy, although as mentioned this difference was not significant. This is in contrast to recent research disputing the existence of successful psychopaths and arguing that psychopathy is inevitably related to negative life outcomes (Ullrich et al., 2008). Instead this would appear to suggest that psychopathy does not appear to adversely impact on chances of life-success.

These findings would appear to contradict the theory that than non-criminal, and certainly successful, psychopaths represent a sub-clinical version of the disorder (see 1.5.1). Rather this would imply that successful individuals with psychopathic personality traits present with similar levels of psychopathic personality traits as their less successful counter-parts however they clearly manifest these differently behaviourally. As such, these results lend further support to the theory that non-criminal psychopathy results from core psychopathic personality traits being moderated by external factors, such as social skills, as supported by the previous study (see Chapter 7).

#### **8.4.1. Relationship between psychopathy and indirect aggression**

The basic correlation analysis appeared to replicate findings from the previous studies, with psychopathy found to correlate with all three indirect sub-scales. This appeared to be predominantly driven by the impulsive antisociality factor but the coldheartedness factor was nonetheless found to significantly correlate with all indirect aggression scales except guilt induction, replicating what was found in Study 2 (see Chapter 5). However, this was not found to be the case with the regression analysis controlling for the shared variance with direct aggression and age. Specifically after controlling for these two variables, only impulsive antisociality was found to be a significant predictor of indirect aggression use. Although in contrast to previous findings from this thesis, this is in line with results from other researchers using the PPI-R, such as Schmeelk and colleagues (Schmeelk et al., 2008). However, it is notable that only the role of the fearless dominance and impulsive antisociality factors were considered in this latter research.

There are a number of possible reasons for this failure to replicate the findings from Study 2. Notably, in contrast to the prior study, socially desirable responding was not controlled for in this study. This choice was made due to the length of the test battery administered and a wish to reduce participant fatigue. Furthermore, once the psychopathy factors had been entered into the analysis, socially desirable responding was not found to be a significant predictor of indirect aggression use in Study 2. The analysis was also run using the virtuous responding scale from the PPI-R to control for socially desirable responding but this did not change the observed results. However, it is questionable how effective this scale is at capturing all aspects of socially desirable responding, although in Study 2 it was significantly related to results on the BIDR with a correlation coefficient of  $r = .50$ . Alternatively, it could simply be that in the wider adult population there is less of an influence of empathy deficits in the relationship between use of indirect aggression and indirect aggression. This may indicate a more reactive use of indirect aggression than observed within student populations, although it is unclear as to why this might be.

However, despite the results from the regression analysis, there was nonetheless found to be a significant partial empathy mediation effect of affective empathy, but not cognitive empathy. Indeed when the structural equation model from Study 2 (see Chapter 5) between

the psychopathy factors, empathy and aggression was fitted to the data it was found to display a very good fit. This would imply that empathy does nonetheless play a significant role in the relationship between psychopathy and indirect aggression despite the non-significant relationship with the coldheartedness factor. Indeed, observation of the structural equation model would appear to suggest that empathy deficits are significantly related to the impulsive antisociality factor as well as the coldheartedness factor, which may account for why the empathy mediation effects remain significant but the relationship between coldheartedness and indirect aggression was not significant. Although when the model was analysed by sex this was not found to be the case for male participants, indicating that this is unlikely to be the whole answer.

Nonetheless these mixed findings with psychopathy empathy deficits do raise questions as to the Integrated Emotion Systems theory of psychopathy and in particular the centrality of affective deficits to the development of psychopathic traits and in particular aggression (Blair et al, 2005). These findings would instead appear to indicate that even in non-criminal samples it is the psychopaths increased impulsivity rather than affective deficits which indicate the primary increase in aggression use. Although, the significant mediation effect observed would nonetheless appear to indicate some role of empathy deficits, this is not as great as would be expected should affective deficits form the principal deficit underlying psychopathic personality traits.

For the most part, the structural equation model analysis by sex replicated the findings from Study 3. Specifically, the model was found to be a good fit for both males and females but there were nonetheless found to be differences in the significance of the path structures. For females, replicating what was found in Study 3, affective empathy was found to predict direct but not indirect aggression. In contrast with males affective empathy was found to predict both forms of aggression. This is in conflict however with Study 3 whereby, for males, affective empathy was a significant predictor of indirect but not direct aggression. These findings support the hypothesis that the use of indirect aggression in male psychopaths may be more proactive and affectively cold whilst for females it is more reactive in nature. Also of interest, replicating study 3, affective empathy was found to be predicted by only coldheartedness in males but by both coldheartedness and impulsive antisociality in females. This bears similarities to findings from previous research (Ostrov

& Houston, 2008) indicating that impulsive antisociality was related to proactive indirect aggression use in females but not males. This would imply that, as previously theorised (Forouzan & Cooke, 2005), there may be more in-depth sex differences in the structure of psychopathic personality traits themselves, or at the least the behavioural manifestation of these traits, which deserves further attention. Specifically this would appear to support the theory that some overt behavioural manifestations of psychopathy hold different underlying meanings for males compared to females (Forouzan & Cooke, 2005). If this is the case this could have important implications for both the assessment of psychopathy in women and its underlying conceptualisation. It is notable that unlike in Study 3, these differences in model were found to be significant, although the constrained model was nonetheless a good fit to the data. Arguably this difference may have been due to the increased power in the current study resulting from the larger sample sizes used.

In contrast to some prior research (e.g., Marsee et al., 2005), and the findings with the structural equation model however, there was not found to be any significant sex differences in the overall relationship between psychopathy and indirect aggression. For both males and females it was the impulsive antisociality factor not coldheartedness that was driving the observed relationship. This is in contrast to the findings from Study 3 whereby coldheartedness drove the relationship for male participants. Observation of the regression coefficients by sex would appear to suggest a very similar pattern of relationships between the psychopathy factors and indirect aggression for both sexes. It is particularly notable that, unlike in study 3, after controlling for direct aggression the psychopathy factors did still predict a significant proportion of the variance in indirect aggression in females. These findings may in part reflect the generally observed reduction of the role of coldheartedness in this relationship observed in this sample.

It would appear that in this sample that psychopathy in both males and females appears to be related to indirect aggression in a similar fashion. This would appear to support the risk-reward hypothesis of sex differences in aggression use. Specifically it is arguable that given for both males and females in the wider community the risks associated with direct aggression use would be equally high. Therefore, although the underlying cause of increased aggression use would be due to psychopathic personality traits, the use of indirect forms of aggression for both sexes would be due to the increased risk-reward ratio.

This is in contrast to the sexual selection theory which argues that sex differences in the type of aggression used is more innate to each gender (Campbell, 1995). If this was the case then arguably there would be a stronger relationship between male psychopathy, and certainly the impulsivity traits, and direct aggression for males but a stronger relationship observed between psychopathy and indirect aggression for females, which was not found to be the case.

Arguably the previously observed differences in Study 3 in the use of indirect aggression in males and females may have reflected sample differences rather than true sex differences. In particular a significant proportion of the females used in Study 3 were psychology students whereas in contrast many of the males were not, due to the low proportion of male psychology students. Furthermore a higher proportion of Study 3 female participants were foreign students than observed with our male sample which may have also confounded the results. However, nonetheless in this study too there are a number of differences between the males and females in this sample, with the male sample being younger and having a higher proportion of students. Indeed in many ways our male sample in this study is closer to the male sample used in Study 3 than the female sample in the current study is to that in Study 3. Yet despite this the results for females in the current study are closer to those previously seen with females in Study 3 than the results with males are. Nonetheless it would be worthwhile investigating sex differences in this relationship further by using effectively matched male and female samples to account for possible confounding factors.

#### **8.4.2. Social skills**

As with Study 5, non-verbal social skills were not found to significantly correlate with indirect aggression use, despite being theoretically considered necessary for this form of aggression use (Archer & Coyne, 2005; Björkqvist et al., 2000). However, it has been argued (Kaukiainen et al., 1999) that this may be due to the shared variance between social skills and empathy. This was borne out as once total empathy scores had been controlled for non-verbal social skills were found to be significantly correlated with indirect aggression use, replicating previous research findings (Kaukiainen et al., 1999). In particular, the emotion expressivity and emotion sensitivity sub-scales were correlated with



indirect aggression use, but emotion control was not. Although it makes theoretical sense that the ability to read others' non-verbal expressions and express yourself might be relevant to attacking others socially, it is interesting that there was no relation with the emotion control sub-scale. This sub-scale measures the ability to suppress or manipulate individual's emotions, and thus would be expected to be necessary in indirect aggression, particularly scales such as guilt induction. These findings do clearly raise questions about the relationship between indirect aggression use and social skills and this is clearly a relationship that needs to be explored further, certainly given occasional conflicting findings with regards to the social adjustment of indirect aggression use (Björkqvist et al., 2000; Richardson & Green, 2003).

The most striking result from this study is the failure to replicate the previously observed moderation effect of non-verbal social skills on the relationship between psychopathy and indirect aggression. There was not found to be a moderator effect of non-verbal social skills in this study. Instead non-verbal social skills appeared to display a significant main effect, with its presence resulting in reduced levels of indirect aggression use at all levels of psychopathy. Arguably this could in part be due to the sample in Study 4 consisting predominantly of females whereas the current sample displayed a more even gender balance. However, even when the moderation was repeated by sex, there was not found to be a significant moderation effect for either males or females. It is also possible that this finding is in part a reflection of the poor internal consistency within certain sub-scales of the SSI (Riggio, 1989, 2004), in particular the emotional control sub-scales which appears to have been driving the relationship observed in Chapter 7. Although it is notable that it was clear the other emotion sub-scales also played a role, and these have been found, in contrast, to have very good internal consistency. As such it is questionable how big an impact this poor reliability will have on the results.

Another possibility is in relation to the specific sample used in the previous study. In particular they were all psychology students displaying relatively high levels of non-verbal social skills compared to the current sample. Indeed, it could be argued that using non-verbal social skills in the use of indirect aggression may require a higher level of skill than verbal social skills. Therefore, with the relatively lower level of non-verbal social skills observed in the current sample, verbal social skills may be more liable to result in a

moderation effect than non-verbal social skills. Unfortunately, in an attempt to reduce participant's burden the verbal social skills scales from the social skills inventory were not used in the current study. This result may also have been due to the difference in the indirect aggression scale used (see Procedure), although the combined scale was found to have a good reliability. Furthermore, it is questionable as to whether such a small change could produce such a dramatic difference in results. However, these are as yet just speculation and it is clear that further research is needed to investigate the exact role of social skills in the relationship between psychopathy and indirect aggression and, importantly, such research should not be limited to psychology students but should instead provide a representative sample of the general population.

In any case this finding would appear to raise theoretical questions, both with the validity of the Björkqvist hypothesis and the use of social skills as a moderating factor in criminal compared to non-criminal manifestations of psychopathic personality traits. Certainly the linear negative relationship between social skills and indirect aggression use once psychopathy had been controlled for raises questions as to the centrality of social skills in the use of indirect aggression, as hypothesised by Björkqvist (Björkqvist et al., 2000). However, as previously indicated, a positive relationship was found between social skills and indirect aggression once empathy had been controlled for, indicating that social skills do nonetheless play a role in the use of indirect aggression. Nonetheless, the failure to replicate the moderating effect of social skills on the relationship between psychopathy and indirect aggression appears to indicate that merely the presence of high social skills and thus having the skill set to use these non-criminal forms of aggression will not necessarily mean that psychopaths will use this form of aggression over more direct forms.

### **8.4.3. Limitations**

This study did suffer from the number of issues with regard to data collection and the participant pool which may have confounded the results. Firstly there was an issue of missing data due to problems with the response system, which resulted in the removal of a number of otherwise complete datasets. Although, an inspection of the datasets removed indicated that those incomplete data sets did not differ in terms of demographics from the valid responses, it is nonetheless difficult to estimate whether their inclusion would have

significantly affected the observed results or not. However, given that a high proportion of the data was missing due to computer error, it is arguable that this would be randomly distributed within the data set. More worryingly there was also a high level of attrition in participant responding due to the length of the scales. Although the study was piloted for length, it is clear nonetheless that some of our participants lacked the incentive to finish or due to slower reading speeds will have found response more difficult than our pilot group, who were all university postgraduate students. Arguably individuals displaying higher levels of conscientiousness and having more time to devote to responding may also have been more likely to finish the scale, and these participants may not be representative of our overall sample. Attempts were made to account for this by allowing participants to complete the scale measures in stages, nonetheless, it may have given a level of response bias into the completed data set due to the relatively high attrition rate observed.

Another issue with the length of the test battery is that participants may have been suffering from a level of fatigue by the time they got to the end, and as such may not have been paying effective attention to their responses. This may be particularly an issue given that, due to limitations of the online response system, the ordering of the scales could not be manipulated, although the order they were administered in was chosen randomly. Furthermore, related to this there could be an issue of order effects influencing the validity of responses. It became clear during data analysis that more effective choices could have been made with regards to both the inclusion and exclusion of certain scales. In particular, there was an attempt to manipulate the responses to the indirect aggression scale to capture both proactive and reactive forms of indirect aggression. Unfortunately it became very quickly apparent that this manipulation was not successful and as such the scales had to be collapsed together for further analysis. In contrast, it is clear that this analysis should have included both verbal and non-verbal aspects of the Social Skills Inventory (Riggio, Tucker, & Coffaro, 1989) to effectively test the mediation effect of social skills. It would have also, arguably, benefited from containing a well-validated scale of socially desirable responding. As such, it would be useful to replicate this research using both a system allowing for randomisation of scale order and including the verbal social skills subscale.

Finally, although efforts were made to ensure a widely representative, albeit high functioning, population was recruited using a large variety of participant sources, there

may nonetheless have been some level of bias introduced through the method of recruitment. In particular it did appear that most of those completing the study through advertisements on psychology related sites or forums were predominantly female. In contrast those accessing the study through more general discussion forums tended to be male. As such it is possible that the female participants may have had a greater interest in psychology, in particular social psychology than the male participants. However it is arguable that given the length of the study any participant completing the study, regardless of recruitment source, must display some interest in the subject. Nonetheless it is important to keep in mind that the sample was relatively self-selecting and cannot be seen as completely random.

#### **8.4.4. Conclusions**

It can be concluded from this study that psychopathy is very strongly related to the use of indirect aggression, in both student and wider community samples, even after controlling for the shared variance with direct aggression. However, this study does raise some questions as to the role of individual factors in this relationship. It can be concluded that impulsive antisociality is a strong predictor of indirect aggression use, however the role with coldheartedness is not as clear. This may imply that indirect aggression use in psychopaths may be more reactive in nature, in contrast to what would be expected based on the risk-reward hypothesis put forward by Björkqvist. Alternatively, this may simply serve to highlight some of the issues surrounding the factor structure of the PPI-R and in particular the role of affective empathy deficits in this. Empathy does play a strong mediation role in this relationship, and this does appear to be predominantly for males over females, replicating previous findings. In contrast, we can conclude from this study that in a non-student population non-verbal social skills do not have a moderating effect and it is clear further research is required to explore the role of social skills in the use of indirect aggression.

## CHAPTER 9

### 9. Experimental verification of relation of empathy deficits and indirect aggression in psychopathy

#### 9.1. Introduction

The results from the previous studies have strongly supported the role of empathy as a mediator in the relationship between psychopathy and indirect aggression. However, these findings are reliant on the use of self-report measures, which may not accurately capture the underlying concept they are designed to assess. The current study seeks to partially redress this by assessing empathetic responding using behavioural measures as well as self-report. Although there have been a number of measures capturing differences in empathic responding between psychopaths and non-psychopaths within institutional settings (Aniskiewicz, 1979; Blair, 1999; Blair et al., 2004), replicating these in a community sample has thus far been met with little success (Gordon et al., 2004). There have been a number of measures, however, which appear to show considerable theoretical promise in this area, and it is these which will be considered in the current study.

One promising avenue of research is based on an experiment developed by Gernsbacher and colleagues (1992) looking at the mental representations of the emotional state of characters within stories based on situational cues. Specifically it is hypothesised that when people read stories they develop mental models of the situations and persons involved and also of the emotions they may be experiencing, even should there be no overt emotional content in the story (Gernsbacher et al., 1992). To successfully understand characters' emotional states readers must be able to adopt the perceived point of view of the character and associate this with their own emotional experiences (Miall, 1989), a task arguably requiring a level of affective empathy. Gernsbacher and colleagues tested this hypothesis by developing a series of fictional stories about emotion inducing situations but without explicit reference to emotional experiences. These stories were then preceded by a target sentence containing either a congruent or incongruent emotion to the situation presented. It was found that among normal participant's sentences containing congruent emotions were read significantly faster than those with incongruent emotions (Gernsbacher et al., 1992). Given the affective deficits present within psychopathy, particularly an inability to truly

identify with others' emotions (Cleckley, 1988; Hare, 2003), it is arguable that psychopaths will not display the emotional facilitation effect on congruent sentences, given that prior research has generally found that high psychopathy scorers do not display emotional facilitation on priming tasks (Lorenz & Newman, 2002). It is hypothesised therefore that those scoring highly on psychopathic personality traits will not present a significant difference in reading times for congruent compared to incongruent sentences.

It has previously been found that criminal psychopaths display reduced ability to identify emotional faces, particularly fearful faces, in comparison to non-psychopaths (Blair et al., 2004). However, research has failed to effectively replicate this finding among non-criminal psychopaths (Gordon et al., 2004). Arguably this may be due to a high ceiling effect and the possible use of cognitive compensatory processes among non-criminal psychopaths (see section 1.5). However recent work by Besel (2007) indicates that when using a shorter presentation time of 47ms overall facial expression identification is significantly correlated with both the affective psychopathy factor and self-report measures of affective empathy in community samples (Besel, 2007). These findings would seem to point towards the identification of emotional facial expressions at short exposure to be a valid measure of the empathy deficits observed within psychopathy, although thus far no other studies have replicated this finding.

So as to differentiate between cognitive and affective empathy, and thus support the hypothesis that only affective empathy will act as a mediator, a behavioural measure of cognitive empathy was also included. The "Reading the Mind in the Eyes Test" was developed to assess theory of mind ability, equating to cognitive empathy (Lawrence et al., 2004), within both normal and autism spectrum populations. This test was found to display significant differences in responding between patients suffering from autism spectrum disorder and normal controls, with the former scoring significantly lower on the test (Baron-Cohen et al., 2001). However, there was not found to be a significant difference between psychopaths and controls on this test, supporting the discriminate validity of this test in assessing cognitive but not affective forms of empathy (Richell et al., 2003). Furthermore test scores on the Reading the Eyes in the Mind test were found to display a significant negative correlation with scores on the Autism Spectrum Quotient (Baron-Cohen & Wheelwright, 2004), supporting its convergent validity. However, the test was

only found to display a significant positive correlation with the social skills sub-scale of the EQ but not the cognitive empathy sub-scale (Lawrence et al., 2004). As such, though this test would appear to assess some form of ‘theory of mind’, there are some questions as to its exact relation with cognitive empathy, which the current study will also seek to investigate.

It was predicted that results from the current study would replicate those previously seen in Study 2 (Chapter 5) and Study 5 (Chapter 8), even once the behavioural measures have been added to the developed model. Specifically, it was predicted that affective empathy but not cognitive empathy would be a significant partial mediator of the relationship between psychopathy and indirect aggression. In addition, a number of specific hypothesis were made with respect to the individual behavioural measures. For the Gernsbacher task it was hypothesised that, replicating previous results, congruent emotions will be read quicker than non-congruent emotions. It was also hypothesised that this will show an interaction with level of psychopathy, with high psychopathy scorers showing less of a difference in reading times compared to low-psychopathy scorers. It was hypothesised that facial expression identification accuracy will be positively correlated with empathy and negatively correlated with psychopathy scores but that the reading the mind in the eyes task will only be positively correlated with cognitive empathy but not psychopathy.

- Hypothesis 3a: The relationship between psychopathy and indirect aggression will be mediated by levels of affective empathy but not cognitive empathy
- Hypothesis 3b: Scores on the Gernsbacher task and emotional face identification accuracy, in particular with fearful and sad facial expressions, will both be positively correlated with affective empathy scores. The reading the mind in the eyes test will be significantly correlated with cognitive empathy scores
- Hypothesis 3c: The empathy mediation of the relationship between psychopathy and indirect aggression will be replicated using behavioural assessments of empathy. Specifically, scores on face identification accuracy and the Gernsbacher will mediate the relationship between psychopathy and indirect aggression but reading in the minds eye test will not.

## **9.2. Method**

### **9.2.1. Participants**

Data in this study was collected from 117 students at the University of York. Two participants' data were removed at the data entry stage due to being non-native speakers (in contrast to the requirements set out in the study recruitment). This left 115 participants in total: 54 male and 61 females with an average age of 19.65 (SD = 2.48), with all but two participants aged under 25. All remaining participants were native English speakers, 82.6% were of White ethnicity, 10.4% were South East Asian, 5.2% were Asian and 1.7% was mixed ethnicity. A further two participants' data were removed due to the PPI-R validity scales and two due to missing data, resulting in a final sample of 51 males and 60 females with a mean age of 19.67 (SD = 2.52).

### **9.2.2. Measures**

#### **9.2.2.1. Self-report measures**

This study used the Psychopathic Personality Inventory – Revised (PPI-R; Lilienfeld & Widows, 2005), the modified version of the Indirect Aggression Scale (IAS; Forrest et al., 2005) and the Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004) as self-report measures of psychopathic personality, indirect aggression and empathy respectively. These scales have been described in Chapter 5 and as such shall not be dealt with in-depth here.

#### **9.2.2.2. Computerised task 1: Reading the Mind in the Eyes test – revised (Baron-Cohen et al., 2001)**

The revised version Eyes test was developed to account for a lack of sensitivity in the original version of the test. The test consists of 36 images of individual's eye region chosen, half from male subjects and half from female. Around these were four possible response options, the target response and three false responses of similar emotional valence. Correct responses were determined based on a series of pilot studies, requiring a majority response of normal range participants, and with no single distractor receiving over chance response (Baron-Cohen et al., 2001). In this study participants viewed the images on screen, consisting of a central 'Eyes' picture surrounded by four possible emotions (see



Appendix 9.1 for an example) and participants were instructed to select the emotion which best suited what they believed the individual in the picture was feeling by pressing the associated number key. There was no time limit to responses and once a response was recorded the next image was presented, with the order of presentation of the test items randomised for each participant.

#### **9.2.2.3. Computerised task 2: Gernsbacher task (Gernsbacher et al., 1992)**

The Gernsbacher task comprises a series of scenarios that introduce an emotion term in the final sentence which either matches or mismatches what the characters in the story may be expected to feel. Reading time is then considered between those stories whereby the emotion matches the final sentence compared to those whereby there is a mismatch. The current version of the task used 32 stories, which included 22 emotional stories and 10 neutral fillers. These stories were modified for a master's project (Campbell, 2004) from those developed by Gernsbacher and colleagues (Gernsbacher et al., 1992) to make them more appropriate for a British based sample. Small modifications were made to the stories to ensure that all stories contained the same number of sentences, to avoid any bias inadvertently introduced to the procedure from differences in story length. There were two stories for each emotion, one matched and one mismatched; covering 11 emotions in total (see Appendix 9.2). To ensure participants paid attention to the stories, participants were instructed that the stories formed part of a multiple-choice recall task and that they should read through the stories naturally but that they would have to complete a short recall task at the end.

#### **9.2.2.4. Computerised task 3: Emotional face perception**

The final task utilised the pictures of facial affect (PFA; Ekman & Friesen, 1976) to assess participants' ability to recognise emotions when presented for a very short period of time. Based on prior work by Besel (2007), participants were shown a selection of pictures from the PFA set for 47ms each, with each picture followed by the list of six universal emotions: Happiness, Sadness, Anger, Fear, Surprise and Disgust. Participants were instructed to select from this list the emotion they felt fit the picture they had just seen by pressing the response key assigned to the emotion. Six emotional faces were first presented in a randomised order as practice trials, one of each emotion. The experimental trials consisted

of 42 pictures, seven from each emotion, presented in a random order. All pictures used Caucasian models and contained both male and female adult faces and no model was present showing the same emotion more than once, or was present more than three times in total (not including practice items). Efforts were made to present even numbers of male and female faces, however, due to the imbalance in the use of male and female models in the original data set, this resulted in 24 female faces and 18 male faces in the final test set, and four females and two males in the practice trials. Accuracy was investigated both in terms of total response accuracy and based on individual emotions, as prior research has indicated that deficits in psychopathy corresponds only to specific emotions; namely fear and sadness, but not others (Blair et al., 2001; Blair et al., 2004).

### **9.2.3. Procedure**

Participants completed the tasks and self-report questionnaires individually, located in a quiet room so as not to be disturbed. Firstly, participants were given a brief description of the study which was described as a study looking at the relationships between personality and social behaviour and how this related to our ability to read and understand emotions. Participants were also assured of the anonymous nature of their responses and were then asked to sign a consent form. The order of the tasks were counter-balanced in a latin squares design so as to control for order effects, with the self-report questionnaire battery considered as a single task for this purpose, administered in a randomly generated order.

All computerised tasks were presented using E-Prime on a 15" flat-screen monitor. At the start of each task participants were given verbal instructions as to the content of the tasks, and shorter versions of these instructions were also observed on screen, participants were instructed to press SPACE to start each task when ready and to fetch the experimenter once finished so the following task could be set up. After all tasks had been completed participants were debriefed. They were informed as to the general aims of the study, which were to assess the relation between personality, indirect aggression and empathy. They were also informed of the slight deception in the instructions for the Gernsbacher and the true aim of the task. This level of deception was deemed by the University of York, Department of Psychology ethics committee. Again, as with previous studies to avoid issues with anxiety the term psychopathy was not used. Details of individual personality

traits covered by the measures (impulsivity, emotional detachment, fearlessness and so on) were given if requested however individual scores were not.

#### **9.2.4. Missing Data and Data Analysis**

Two of the participants failed to respond on the indirect aggression scale and were, as a result, removed from further analysis. A number of other participants had items missing, however, no single participant had more than 2% of their data missing and these values were replaced using a maximum likelihood process as recommended by Allison (2002). This was done using the EM algorithm supplied by the SPSS 14.0 statistical package. By using the same criteria as with previous studies (see Chapters 4, 5 & 6); one participant was removed due to the PPI-R validity scales. However, observation of the validity scales indicated that one other participant, despite scoring in the normal range for the inconsistent responding scale, displayed scores on both the deviant responding scale and the virtuous responding scale over two standard deviations above the mean. Therefore, it was decided that data from this participant should also be removed.

Outlier analysis indicated that the indirect aggression scale presented with a number of outliers. This was corrected by replacing the outlier variables with a value 3.29 standard deviations above the mean, as recommended by Field (2005). Even after correcting for these outliers, the indirect aggression scales were found to be positively skewed, similarly to findings reported in previous studies (Chapters 4, 5, 7 & 8). To correct for this, the indirect aggression scale total and sub-scales were subjected to a log transformation, whereby a normal distribution was obtained.

### **9.3. Results**

Table 9.1 gives the demographics for both the total group and by sex.

Table 9.1

*Demographics for Psychopathy, Indirect Aggression and Empathy.*

	Total		Male		Female		p
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	
Psychopathy Total	277.61	36.29	293.98	35.27	263.70	31.20	<.01
Coldheartedness	29.81	6.12	31.69	6.59	28.22	5.24	<.01
Fearless Dominance	106.61	19.93	113.90	20.67	100.42	17.13	<.01
Impulsive Antisociality	141.18	21.98	148.39	21.69	135.06	20.47	<.01
Indirect Aggression Total	47.71	11.92	50.98	10.49	44.94	12.44	<.01
Social Exclusionary Behaviour	16.82	5.25	17.33	4.14	16.39	6.04	n.s.
Malicious Humour	17.46	5.73	20.07	5.40	15.23	5.06	<.01
Guilt Induction	13.43	4.21	13.57	4.50	13.32	3.99	n.s.
Empathy Total	43.57	10.85	40.86	10.74	45.87	10.49	<.05
Cognitive Empathy	10.63	4.09	10.71	4.40	10.57	3.84	n.s.
Emotional Reactivity	10.31	4.06	8.82	3.95	11.58	3.73	<.01

Supporting prior research, there were found to be significant sex differences in psychopathy scores, with males scoring higher than females on all factors. In contrast, however, to research with adolescent populations, and supporting our previous studies (Chapter 6, & 8) there was only found to be a significant sex difference for indirect aggression in the male not female direction. However, consideration of the indirect aggression sub-scales indicates that this was only with malicious humour but not other forms of indirect aggression, in contrast to results in Chapter 8.

### 9.3.1. Computerised task validity

To test the validity of the Gernsbacher task, first the significance of the difference between the reading times for congruent emotional phrases was compared to the incongruent emotional phrases. Replicating prior research, participants were found to have read congruent emotional phrases significantly faster than non-congruent ones,  $t(1, 110) = -$

12.09,  $p < .001$ . To test the hypothesis that individuals with high psychopathy scores may display reduced reading times differences compared to non-psychopaths, participants were first divided into even ‘high’, ‘medium’ and ‘low’ psychopathy score groups based on their psychopathy scores. This was then entered into a 2x3 mixed ANOVA (see Figure 9.1). Again, although the main effect of congruence was found to be significant,  $F(1, 108) = 143.81, p < .001$ , there was not found to be a significant effect of psychopathy,  $F(2, 108) = .86, p > .05$ , or a psychopathy x congruence interaction,  $F(2, 108) = .30, p > .05$ . Although observation of the figure would appear to indicate that high scoring psychopaths did read the sentences somewhat faster overall, this effect was not significant.

A series of correlation analyses between participants’ the mean difference of reading times between congruent and incongruent sentences and empathy was conducted. Due to the non-normal nature of this data, it was first square-root transformed before the analysis was applied to it. The correlations were not found to be significant for either total empathy,  $r = -.10, p > .05$ , emotional reactivity,  $r = -.13, p > .05$ , or cognitive empathy,  $r = -.13, p > .05$ . This would appear to indicate that the level of emotional processing captured by the Gernsbacher may not directly relate to differences in empathy per se.

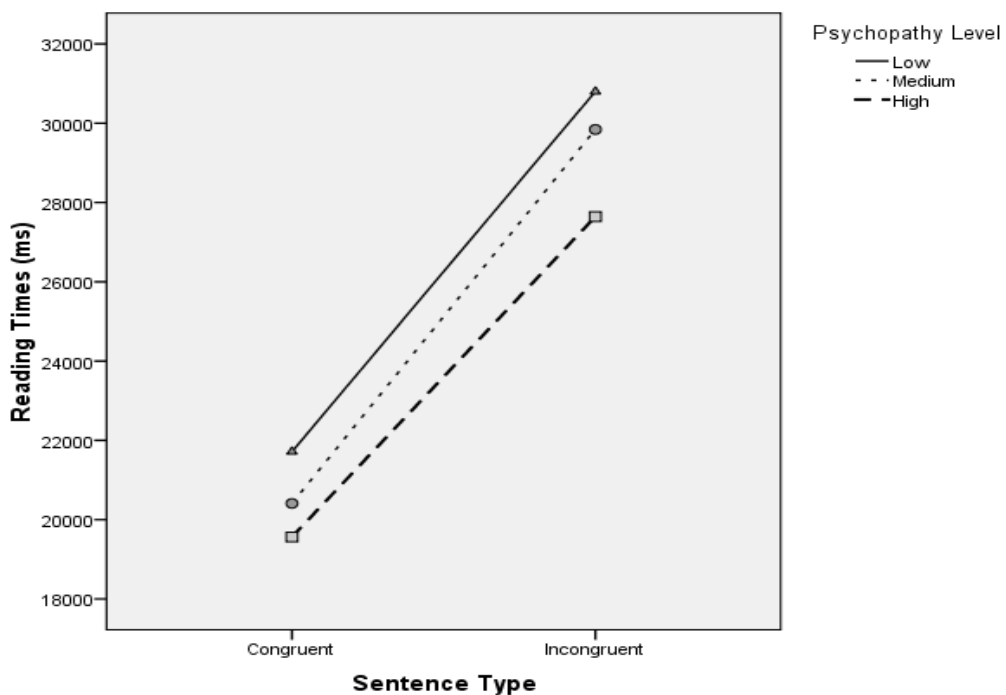


Figure 9.1 – Difference in reading times between congruent and incongruent sentences for low, medium and high psychopathy scorers.

To test how effective the computerised tasks were at capturing empathic responding, the scores on the different computerised tasks were correlated with scores on the empathy quotient scales, as shown in 9.2.

Table 9.2

*Correlations Between Empathy and Scores on the Computerised Tasks.*

	Empathy Total	Emotional Reactivity	Cognitive Empathy
Reading Time differences <sup>1</sup>	-.10	-.13	-.13
Eyes Accuracy <sup>2</sup>	.08	.04	.04
Anger Expression Accuracy <sup>3</sup>	-.08	.06	-.10
Disgust Expression Accuracy <sup>3</sup>	.03	.04	.01
Fear Expression Accuracy <sup>3</sup>	.02	-.08	.17†
Happy Expression Accuracy <sup>3</sup>	.10	-.01	.15
Sad Expression Accuracy <sup>3</sup>	.08	.01	.08
Surprise Expression Accuracy <sup>3</sup>	.01	.03	.03

<sup>1</sup> Taken from the Gernsbacher task

<sup>2</sup> Taken from the Reading the Mind in the Eyes task

<sup>3</sup> Taken from the Emotional Face Expressions tasks

†  $p < .10$

Observation of correlations between performance on the Eyes test similarly failed to find a correlation with either total empathy or any of its sub-scales (see Table 9.2). In contrast, although accuracy in the emotional face perception task was not found to relate to any of empathy sub-scales, there was found to be a significant a trend towards significance for the perception of fearful faces. Furthermore, there was found to be a significant negative correlation between accuracy at identifying fearful facial expression and total psychopathy,  $r = -.28$ ,  $p < .01$ , fearless dominance,  $r = -.24$ ,  $p < .05$ , and coldheartedness,  $r = -.19$ ,  $p < .05$ , as well as significant correlations between total psychopathy and anger accuracy,  $r = -.23$ ,  $p < .05$ , and between fearless dominance and both anger accuracy,  $r = -.27$ ,  $p < .01$ , and disgust accuracy,  $r = -.19$ ,  $p < .05$ .

### 9.3.2. Psychopathy and indirect aggression

To test if we could replicate the basic relationships between psychopathy, indirect aggression and empathy as seen in previous studies (Chapters 4, 5, 7 & 8), a series of correlation analyses were conducted (see Table 9.3).

Table 9.3

*Correlations Between Indirect Aggression, Psychopathy and Empathy*

	Indirect Aggression Total	Social Exclusionary Behaviours	Guilt Induction	Malicious Humour
Psychopathy Total	.46**	.39**	.18†	.46**
Coldheartedness	.17†	.21*	-.03	.17†
Fearless Dominance	.14	.12	-.06	.20*
Impulsive Antisociality	.58**	.48**	.37**	.53**
Empathy Total	-.37**	-.29**	-.21*	-.35**
Emotional Reactivity	-.26**	-.24*	-.07	-.27**
Cognitive Empathy	-.13	-.09	-.10	-.11

†  $p < .10$

\*  $p < .05$

\*\*  $p < .01$

As can be observed, replicating prior studies, indirect aggression was found to be significantly and strongly related to the impulsive antisociality factor, and this was also found to be the case for all indirect aggression sub-scales. In contrast, however, to Study 2, and somewhat more in keeping with Study 1, coldheartedness was only found to be significantly related to social exclusionary behaviours, although there was a trend towards significance at the .10 level for malicious humour and total indirect aggression. In contrast, fearless dominance in this study was found to be positively correlated with the use of malicious humour. Replicating previous findings, emotional reactivity was found to be negatively related to the use of all forms of indirect aggression except guilt induction and cognitive empathy was not found to display any significant correlations with any of the indirect aggression scales.

### 9.3.3. Empathy mediation model

To test if the empathy model developed in Study 2 (see Chapter 5) can be replicated, and to consider the role of the computerised tasks in empathy assessment, a series of structural equation models were conducted. Firstly, the empathy model from Study 2 was replicated using the current data set, albeit with direct aggression removed as it was not assessed within this study. This model was found to be a moderately good fit to the data,  $\chi^2(15, N = 111) = 21.63, p > .05, CFI = .97, SRMR = .07, RMSEA = .06$ , however examination of the regression coefficients indicate that not only is the relationship between impulsive antisociality and affective empathy non-significant, in contrast to prior research, but that the relationship between affective empathy and indirect aggression use also fails to reach significance. Based on both the correlations observed and the modification indices it is apparent that in this current study fearless dominance plays a more significant role in the relationship between psychopathy and indirect aggression than in prior studies (see Chapter 5 & 8).

Next, the predictive ability of the different computerised tasks was considered by entering these into the model. Accuracy on the reading the mind in the eyes task was entered as a factor of cognitive empathy and reading time differences on the Gernsbacher was entered as a factor of affective empathy. Prior research has indicated differential relationships for facial identification of different emotions, in particular that empathy deficits in psychopathy may be related to the identification of negative but not positive emotions (Benning, Patrick, & Iacono, 2005; Levenston, Patrick, Bradley, & Lang, 2000). Certainly the finding in the current study that psychopathy is negatively related to the identification of fear, anger and disgust emotions but not other emotions, would bear this out. Therefore facial identification accuracy for these three emotions was also entered as a factor of affective empathy. The resultant model was found to be a very poor fit,  $\chi^2(60, N = 111) = 88.59, p < .05, CFI = .89, SRMR = .09, RMSEA = .07$ . Supporting the findings from our correlation analysis, scores on neither the Gernsbacher,  $\beta = -.14, p > .05$ , nor the Eyes task,  $\beta = .04, p > .05$ , appear to be related to empathy in any way. This was expected given the findings from our correlation analysis and these two variables were removed from the analysis. It was also apparent from observing the model that neither anger,  $\beta = .07, p > .05$ ,



nor disgust,  $\beta = .09$ ,  $p > .05$ , accuracy significantly loaded onto affective empathy, whilst fear was just significant at the .05 level  $\beta = .21$ ,  $p < .05$ ,

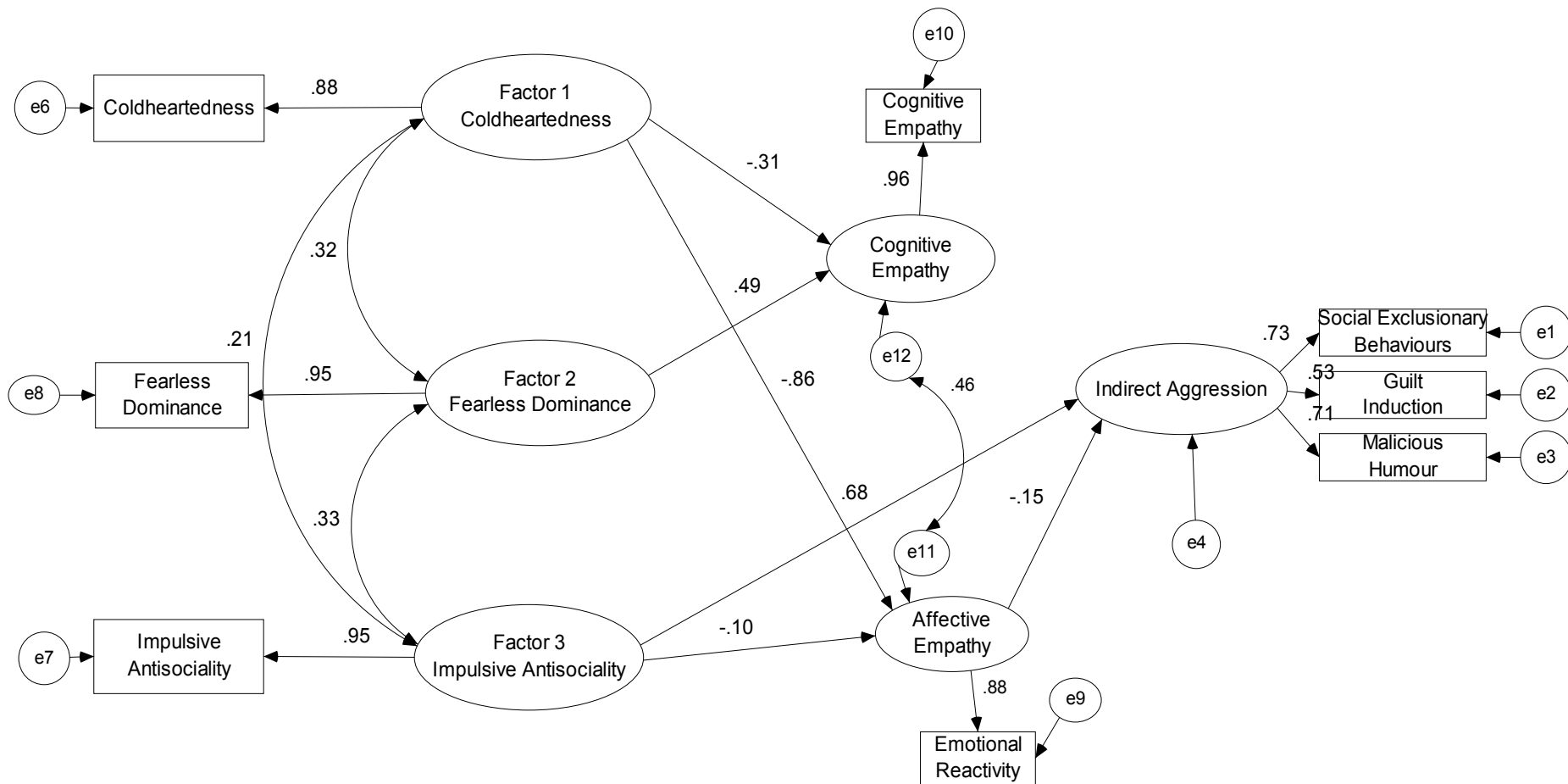


Figure 9.2 – Mediation model of the relationship between psychopathy and indirect aggression by affective and cognitive empathy.

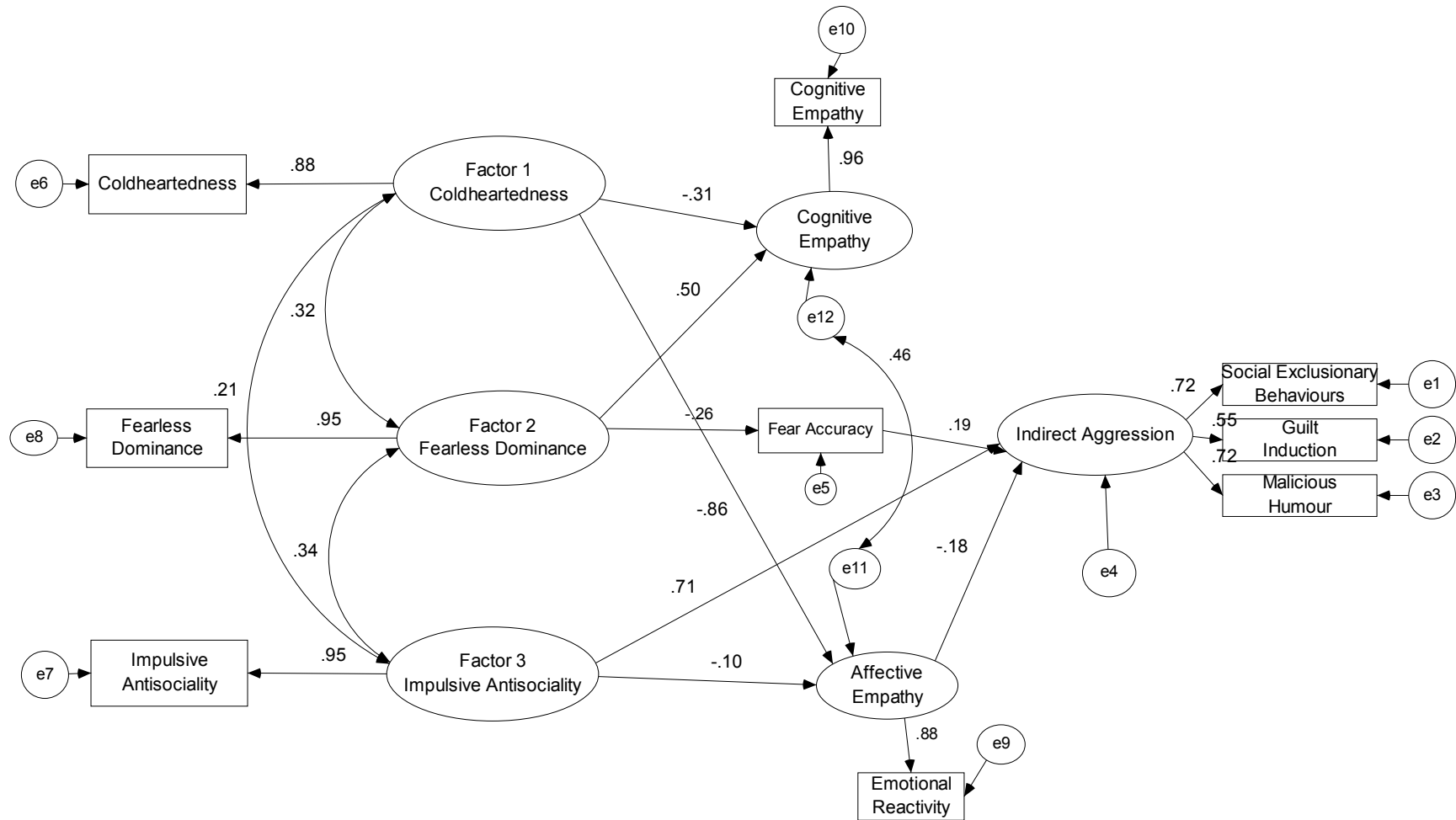


Figure 9.3 Model of the relationship between the psychopathy factors, empathy, fear expression recognition and indirect aggression

Examination of the modification indices, however, supported the previously observed correlation results. Specifically it would appear that fear accuracy would be nonetheless significantly related to psychopathy and in particular fearless dominance but not affective empathy. Therefore fear expression accuracy was entered into the model as a mediator of the unique variance between fearless dominance and indirect aggression (see Figure 9.3). This model was found to be a very good fit to the data,  $\chi^2(21, N = 111) = 26.48, p > .05$ , CFI = .98, SRMR = .07, RMSEA = .06. Furthermore, although the relationships between impulsive antisociality and affective empathy and affective empathy and indirect aggression were not significant at the .05 level, they did show a trend at the .10 level. This may indicate that the lack of relationship is due primarily to the relatively small sample size utilised in this study.

#### **9.4. Discussion**

The result of this study raises a number of questions with regards to the empathy mediation effect in the relationship between psychopathy and indirect aggression and also around the self-report and computerised measures. In contrast to hypothesis 3c, neither the Gernsbacher task nor the Reading the Mind in the Eyes task were found to correlate with the hypothesised aspects of empathy and although facial expression identification was found to display some relation with empathy and psychopathy as expected, its primary relationship was with the fearless dominance factor not coldheartedness. Furthermore, although the model was found to be a good fit to the data, the relationship between empathy and indirect aggression was not found to be significant at the .05 level in this study, in contrast to prior results and hypothesis 3a.

As expected, and replicating prior findings (Gernsbacher et al., 1992), reading times for incongruent sentences were significantly longer than those for congruent sentences, indicating that our experimental manipulation was valid. However, in contrast to expectations this difference was not found to be moderated by psychopathy and nor was the difference score found to be related to empathy levels. There are two possible reasons for this finding. The first is that the task lacks sensitivity to pick up differences in empathy found among participants scoring highly on psychopathic traits, particularly as these come from a non-offending student population who may be utilising cognitive compensatory processes. Arguably this hypothesis may be tested by replicating this research in a criminal

sample of clinically diagnosed psychopaths. Another possibility is that this task is simply not picking up differences in emotional responding and may instead be assessing a more general aspect of reading comprehension, or other attention processes. The answers to this issue are beyond the remit of the current study and it is clear further research is required in on the Gernsbacher task to determine what exactly it is assessing.

The Reading the Mind in the Eyes task was found to support the discriminate validity of the PPI-R, as PPI-R psychopathy scores were not found to be significantly related to scores on this task. This replicates previous research using the PCL-R (Richell et al., 2003) and thus supporting the hypothesis that psychopathy is independent from performance on theory of mind tasks. However, this scale was also not found to correlate with self-reported cognitive empathy. Although this replicates findings with the empathy quotient (Lawrence et al., 2004), it does raise questions as to the validity of both the task and the cognitive empathy scale. Specifically, in relation to whether the Reading the Mind in the Eyes task truly assess theory of mind, or merely captures some other deficit present within Autism Spectrum disorders. Alternatively, the issue may be more related to whether the cognitive empathy scale effectively captures the cognitive empathy construct. Another possibility may simply be that the task lacks sensitivity at the normal range of functioning. Irrespective of the underlying cause, this finding has little impact on the current study, given that it is affective not cognitive empathy which is our main region of interest. However, it is nonetheless clear that further research is needed to determine exactly what each of these scales is assessing.

Results were more positive with regards to emotional face expression. Replicating a number of previous findings, significant negative correlations were found between psychopathy and facial expression accuracy on fearful (Blair et al., 2004) and disgust (Kosson, Suchy, Mayer, & Libby, 2002) expressions. Interestingly, there was also found to be deficits in relation to angry facial expressions, although this was only for the fearless dominance factor not total psychopathy. Psychopaths have generally not been found to show impaired recognition of angry facial expressions (Blair et al., 2004). However, arguably, this may be related more to low fear responses in psychopaths and specifically a reduced reaction to threat images. Certainly, when the sub-scales were examined angry

facial expression identification was found to relate predominantly to the fearlessness subscale which would appear to support this.

Supporting the theoretical predictions, only fearful face expression identification however was related to the coldheartedness factor and thus to empathy deficits. Although arguably it may be theoretically expected that sad facial expression identification should also be related to empathic responding, research has thus far only found deficits in sad face identification in children with psychopathic traits, not adults (Blair, 1999). This may be due to the high ease of identification found for this particular facial expression (Blair et al., 2004). However despite these findings, fearful facial expression identification failed to correlate significantly with affective empathy at the .05 level, although it was significant at the .10 level. This suggests that fearful facial expression identification may assess a different construct to the emotional reactivity scale. This may in part reflect that, although face recognition may be part of the violence inhibition component of affective empathy, it is unlikely to capture the whole construct. Arguably too, empathy levels are unlikely to be the only factor dictating performance on fearful facial expression identification. However, this does raise the question as to whether self-reported measures of empathic responding, and in particular the emotional reactivity scale use in this study, are an effective measure of the affective empathy construct.

Findings from the empathy mediation model, as shown in Figure 9.4, offer equivocal support for the role of affective empathy as a mediating factor in the relationship between psychopathy and indirect aggression. It was found that the relationship between affective empathy and indirect aggression was only significant at the .10 but not .05 level. Arguably, this may be due partially to a lack of power, given that the current study utilised approximately half the number of participants as the previous study. However, it is notable that previous studies all controlled for the shared variance with direct aggression, which was not the case in the current study, which may serve to confound the current results. In any case, this does highlight that the observed empathy mediation effect may not be as robust as expected and as such it is clear further replication of this effect is required.

What is of particular interest is the role of fearful face accuracy in the empathy mediation model. Based on this model it would appear that rather than loading onto affective

empathy as a predictor, as may be expected, instead fearful face accuracy appeared to act as a mediator variable between fearless dominance and indirect aggression use in its own right. This potentially has a number of important implications. Firstly, it highlights the relationship between fearful face expression accuracy and the fearless dominance factor as opposed to the coldheartedness factor, which arguably may be due to the presence of the fearlessness sub-scale on this former factor. This raises questions as to the factor structure of the PPI-R and the role of coldheartedness as the 'affective' factor. Secondly, it highlights the question of what exactly are the implications of reduced emotional facial expression identification for psychopathy, as it appears overly simplistic to equate these deficits purely to observed deficits in empathic responding. Finally, it raises some questions as to whether fearless dominance does have a role, albeit indirectly, in the use of indirect aggression.

Overall this study would appear to indicate that the behavioural measures used may lack the appropriate sensitivity to assess empathy differences among normal range populations. Alternatively there is also the suggestion that the self-report measures of empathy may not adequately capture the full empathy construct. In either case it is clear that research into and the effective development of empathy measures, both behavioural and self-report, is strongly required.

## CHAPTER 10

### 10. Discussion and future directions

In order to review and discuss the results of this thesis effectively, this chapter will first summarise the main results found in this research and the theoretical implications of these findings. It will then go on to consider some of the wider implications, both theoretical and practical, the limitations within the research including how these may be avoided in further research and the future directions this research may take.

#### 10.1. Results and theoretical implications

One of the primary findings of this thesis was a strong and consistent relationship between total levels of psychopathy and indirect aggression, supporting our first hypothesis. Furthermore, this relationship was found to still be significant even after controlling for shared variance with both direct aggression and socially desirable responding. This supports the hypotheses 1 and 2, that psychopathy predicts an increase in indirect aggression variance independently of possible confounding factors. This finding is, in turn, indicative that increased levels of aggression resulting from psychopathy are not limited to violence and other direct forms of aggression. This replicates what was expected based on both previous research (Coyne & Thomas, 2008; Miller & Lynam, 2003; Schmeelk et al., 2008) and previously found links between certain psychopathy related personality traits, such as empathy deficits, and indirect aggression use (Kaukiainen et al., 1999). As such, these findings offer further strong support for the theorised links underlying the relationship between psychopathy and indirect aggression (see 2.6.3).

Results at the factor level, however, were less consistent with the hypotheses. There was found to be a strong relationship between the impulsive antisociality psychopathy factor and indirect aggression. This was found consistently across all the studies and for each of the indirect aggression sub-scales. In particular, it would appear that this relationship is driven by the machiavellian egocentricity sub-scale of the impulsive antisociality factor. This finding would certainly support work by prior researchers using the PPI, with the impulsive antisociality factor found to be a significant predictor of both indirect (Ostrov & Houston, 2008; Schmeelk et al., 2008) and direct aggression (Ostrov & Houston, 2008).



The findings in the current research with regards to the fearless dominance factor were less clear however. There was found to be both a significant positive relationship with indirect aggression, a significant negative relationship in others or no relationship at all. Arguably some of these differences may have been due to methodological differences between the studies, in particular the wording of the indirect aggression scale instructions, although given that there was variance between studies based on the same version of the scale, it is unlikely this is the sole cause.

Indeed, based on the structural equation model (see 5.3.6), it can be concluded that there is no significant relationship between fearless dominance and indirect aggression, a finding which again would appear to fit with previous research using the PPI (Ostrov & Houston, 2008; Schmeelk et al., 2008). This finding would suggest that it is predominantly impulsive, rather than interpersonal traits of psychopathy which at least partially drive the relationship between psychopathy and indirect aggression. This is in contrast to what might be expected, given the highly social nature of indirect aggression, its relationship with social intelligence (Kaukiainen et al., 1999) and its association with increased dominance in social groups (Xie et al., 2002). Arguably this may, in part, be an issue with concept overlap between the three psychopathy factors. In particular, the machiavellian egocentricity sub-scale from the impulsive antisociality factor appears to capture at least some aspects of the social manipulation associated with psychopathy despite that this would be more expected to load onto the fearless dominance factor. However, the finding of a strong relationship with the impulsivity factor rather than the interpersonal factor does mirror findings with direct aggression. As such, this may instead point towards certain psychopathic traits resulting in a general increase in aggression rather than specific traits being associated with different types of aggression.

In an expansion on previous research using the PPI, the current study also considered the coldheartedness sub-scale as a factor in its own right, as recommended by Lillienfeld and Widows (Lillienfeld & Widows, 2005). Supporting our hypothesis coldheartedness was, in all but one study, found to be a significant predictor of indirect aggression use. This finding serves not only to support the hypothesised role of empathy deficits in the use of indirect aggression but also emphasises the importance of including coldheartedness within the PPI-R factor structure. Indeed, when the effect of empathy was explicitly tested,

affective, but not cognitive, empathy was found to display a significant partial mediation effect of the relationship between psychopathy and indirect aggression, as predicted by hypothesis 3. This is what would be expected given the dissociation between affective and cognitive empathy within psychopathy, with psychopathic personality traits found to related to affective but not cognitive empathy deficits (Blair, 2008). However, the fact that impulsivity traits appeared to nonetheless display a stronger relationship with indirect aggression use than empathic deficits did does raise questions as to the hypothesis that affective deficits may form the primary causal factor underlying the development of psychopathic personality traits (Blair et al, 2005).

Looking at the factor level results, affective empathy was found to fully mediate the relationship between coldheartedness and indirect aggression as would be expected given that coldheartedness assesses emotional detachment and affective deficits. However, affective empathy was also found to partially mediate the relationship between impulsive antisociality and indirect aggression. This supports the argument that there is a level of overlap between the impulsive antisociality and coldheartedness factors (see 3.1.3), with aspects of the impulsive antisociality factor also capturing the affective deficits, and in particular the empathy deficits observable within the psychopathic personality. These results indicate that it is thus a combination of both affective deficits and impulsivity in psychopathy leading to increased use of indirect aggression. These findings would appear to mirror those found with direct aggression, again supporting the idea that psychopathy will result in a general increase in aggression rather than an increase in specific forms of aggression. These results also suggest that, mirroring research with direct aggression (e.g., Flight & Forth, 2007), it would be expected that psychopathy is related to both proactive and reactive uses of indirect aggression. This would fit in with findings from Ostrov and Houston (2008), who similarly found that psychopathy, and in particular the impulsive antisociality factor, was significantly related to both proactive and reactive forms of indirect aggression. This does, however, run counter to the impression of indirect aggression use as being the result of a planned choice of low-risk, high-reward strategy (e.g.; Archer & Coyne, 2005; Björkqvist et al., 2000). Rather, it is indicative of indirect aggression as a core aspect of the psychopath's aggressive behaviour.

It is notable that the relationship between psychopathy and indirect aggression not only mirrors findings between psychopathy and direct aggression (Sandoval et al., 2000) but also that the psychopathy factors were found to predict both of the aggression forms equally. So, for example, the relationship between coldheartedness and indirect aggression was not significantly different from that between coldheartedness and direct aggression. As such, there does not appear to be anything within the psychopathy traits themselves that favours direct over indirect aggression, or vice versa. In particular, these results support the argument that psychopathic personality traits are associated with an increase in general aggression levels. In the case of impulsivity this would be due to low control in response to frustration (Blair et al., 2005) whilst for empathy deficits this is more due to a lack of aversive reaction to others' pain (Blair et al., 2005; Blair, 2006). However, whether this aggression manifests itself as directly or indirectly aggressive behaviours, or indeed a mix of both, will appear to be dependant on external moderating factors, both individual and situational, rather than variation within the psychopathic traits themselves. These results as such support the three factor conceptualisation of psychopathy, with antisocial behaviour, and in particular violence, presenting as a consequence of the underlying psychopathic personality traits rather than a core trait itself. This in turn links in with the hypothesis that non-criminal manifestations of psychopathy result from the moderation of psychopathic personality traits by external factors (see 1.5.2) rather than being a sub-clinical manifestation of the disorder.

This is particularly evident in the prison bullying literature that indirect aggression is used in preference to direct aggression (e.g., Ireland, 1999; Ireland & Archer, 2002; Ireland et al., 2007), arguably due to prisons being more highly controlled environments where use of the latter form of aggression would carry significant risk of retaliation or punishment (Ireland, 1999, 2001). The impact of environmental factors on the prediction of different forms of aggression use among psychopaths is an area in need of exploration, especially given possible practical implications in terms of offender management (see 10.2.3). However, these factors were not considered in the current research and so cannot be commented on fully.

Other moderating factors were considered in the current research. In particular, the role of sex was looked at in more depth. This variable was chosen due to sex differences in the use

of aggression (Archer, 2004) and due to the theorised effect biological sex may have on the relationship between psychopathy and aggression use (Cale & Lilienfeld, 2002b). Somewhat surprisingly, findings from this study indicated a lack of sex differences in the overall relationship between psychopathy and indirect aggression, in contrast to hypothesis 4. This is in contrast to prior findings using adolescents (Marsee et al., 2005) and may reflect the more equal levels of indirect aggression use observed among adults (Archer, 2004). This does support the view that males become similar to women in their patterns of aggression use by adulthood due to the development of a similar level of social skills (Björkqvist, 1994). Alternatively, this may reflect the similar situational and social demands placed on participants within university contexts, specifically that indirect aggression use carries similarly lower risks for males and females compared to direct aggression in these contexts for similarly higher rewards.

There was however found to be some evidence of a difference in the specific factors involved in the use of indirect aggression. Male indirect aggression was predicted predominantly by the coldheartedness factor of psychopathy whilst female indirect aggression was only predicted by impulsive antisociality. This would appear to suggest a sex difference in the role of empathy deficits in the use of indirect aggression, although this finding could not be consistently replicated in non-student samples. What was found to be replicated across studies was the sex difference in affective empathy mediation. Specifically, affective empathy was found to mediate the relationship between psychopathy and direct but not indirect aggression for women and vice versa for males. Although there is some evidence that affective empathy may also mediate the relationship with direct aggression for males. However looking at the factor score differences in males and females, affective empathy was related to both coldheartedness and impulsive antisociality for females; however, only coldheartedness for males. This supports research by Ostrov and Houston (2008) found that for females, but not males, impulsive antisociality predicted proactive aggression use. This does raise the possibility of underlying sex differences with the PPI-R factor structure (see 10.3.1 for further discussion). Although given that, despite the relation with impulsive antisociality, affective empathy was nonetheless not found to be a significant predictor of indirect aggression in women it is unlikely that any underlying factor structure differences had a significant effect with regards to empathy mediation.

The results from the current research point towards sex having an important influence on the specific behavioural manifestation of aggression in relation to psychopathy. However, this does not appear to be a simple linear relationship with males using more direct aggression and females more indirect aggression, as might be expected from results with adolescents and as was predicted in hypothesis 5. (Marsee et al., 2005). Rather, sex differences would appear to be more related to the underlying personality traits predicting this and the possible functions of the aggression. Specifically, for males indirect aggression use appears to be predominantly related to empathy deficits, which in turn implies a more proactive function of aggression. In contrast, for female participants' indirect aggression use appears to be more related to impulsiveness traits and thus implying a more reactive nature. The converse, however, would appear to be true with direct aggression, with female use related more to empathy deficits and male use more related to impulsivity.

These results could in part be explained by a combination of sex specific aggression preferences and the risk-reward ratio. Specifically, men have been found to display a distinct preference towards the use of direct forms of aggression (Hess & Hagen, 2006), as such it is arguably this is liable to be their primary response when using aggression impulsively. In contrast, women will preferentially use indirect forms of aggression (Hess & Hagen, 2006), making this the primary impulsive response. However, should the aggression use be more affectively cold and goal-directed, indirect aggression offers a better risk-reward ratio (Archer & Coyne, 2005; Björkqvist et al., 1992). However, this was only found to hold true for males, not for females. Nonetheless, it could be argued for females that direct aggression, and certainly direct verbal aggression, may actually hold fewer risks for them compared to males. This may arguably be due to both society conventions regarding violence against women which may protect perpetrators from retaliation, in particular by male victims. This is, however, very much extrapolation from the current results and it is clear further research is required to test this hypothesis fully. Nonetheless, these findings do support the concept that similar behavioural manifestations of psychopathic traits may hold different underlying meanings dependant on gender (Forouzan & Cooke, 2005). This in turn points towards the necessity of considering female manifestations of psychopathy distinctly from male samples.

In contrast, the results from the other moderator that was considered, social skills, were mixed at best. Supporting previous findings (Kaukiainen et al., 1999), and hypothesis 6, there was found to be a significant correlation between indirect aggression use and social skills, once the shared variance with empathy had been controlled for. Findings within a student sample furthermore indicated a significant moderation effect as predicted, although only for non-verbal not verbal social skills. Specifically, individuals scoring high on both psychopathy and non-verbal social skills used significantly more indirect aggression than those scoring highly on psychopathy but low on non-verbal social skills. Arguably, this may be due to those who are more able to read and manipulate non-verbal cues in social interactions being better at utilising indirect forms of aggression. In contrast, for low psychopathy scorers, high levels of social skills reduced indirect aggression use, indicating that without the low empathy and high impulsivity, those with high social skills may use these skills more appropriately to achieve non-aggressive solutions. This finding could not, however, be replicated within the wider community sample used, raising questions as to the reliability of this finding and the validity of the underlying theory that high social skills and low empathy form a prerequisite for indirect aggression use (Björkqvist et al., 2000). Although it is arguable that this lack of replication may be due to differences in the samples and scales used (see 8.4.2), based on the current findings it is difficult to draw any firm conclusions in this regard. Nonetheless, these findings do indicate that, at least in certain populations, non-verbal social skills play a moderating effect in the use of indirect aggression. This would imply that the effect of specific moderating factors may be dependant on the population involved.

In summary, these findings indicate that psychopathic personality traits, and specifically the coldheartedness and impulsive antisociality factors, result in a general aggression increase, which is at least partially mediated by empathy deficits. However, the specific use of direct or indirect forms of aggression will be dependant on moderating variables, although the relationship with these appears to be complex.

## **10.2. Wider implications**

### **10.2.1. Psychopathy**

The results from this study have important implications for the wider psychopathy theory and in particular female and non-criminal forms of psychopathy. Firstly, our results support the existence of individuals who are successful in the wider community but who report high levels of psychopathic personality traits. Although many of our participants were within what would be considered the ‘normal’ range of psychopathic personality traits a number of participants did score at the extreme range, despite being, as far as could be told, relatively successful in life. This would appear to contradict the hypothesis that non-criminal psychopathy forms a sub-clinical version of the disorder that is qualitatively similar in manifestation to criminal psychopaths but differing in degree. Specifically that non-criminal psychopaths show a lower level of psychopathic personality traits compared to criminal psychopaths (see 1.5.1). Rather, these results would seem to indicate that non-criminal psychopathy differs from criminal psychopathy in behavioural manifestation rather than level of the underlying traits. In other words that non-criminal psychopaths display the same level of underlying psychopathic personality traits but manifest these in a non-criminal fashion.

It was found that psychopathy scores did not differ significantly by occupation. This is in contrast to findings by Ullrich and colleagues indicative that high psychopathy scores are negatively associated with occupational success (Ullrich et al., 2008). Arguably, this difference may be due to both the low range of psychopathy scores observed in the Ullrich study and differences in the sample groups used. Specifically, the current study used a relatively high functioning population, the majority of whom had stable employment or were in some form of higher education. This is in contrast to the Ullrich study whereby participants were specifically chosen as part of a study on juvenile delinquency from a high risk, low socio-economic status group (Ullrich et al., 2008). Therefore, it is arguable that Ullrich and colleagues sample may already have been biased towards a criminogenic outcome, at least in comparison to the general population. As psychopathy is itself a criminogenic risk factor, it is likely that the combination of both being an ‘at risk’ population and high psychopathy resulted in reduced life success, as opposed to reduced life success being inherent to psychopathy itself.

The strong relationship between psychopathy and indirect aggression in the current sample at least partially supports the hypothesis that non-criminal psychopathic individuals may be more likely to use indirect over direct forms of aggression due to the lower risk involved (Porter & Woodworth, 2006). The evidence of social skills moderation would similarly appear to support this, with those scoring highly on psychopathy and also scoring highly on non-verbal social skills being more likely to use indirect forms of aggression. This thus supports the hypothesis that psychopaths with the appropriate tools would be more likely to use forms of aggression that have lower risks attached (Porter & Woodworth, 2006). This further offers support for the conceptualisation of non-criminal psychopathy as a moderated manifestation of the same level of underlying psychopathic personality traits as criminal psychopathy. However, not only could this social skills moderation not be replicated, there is also no evidence that high levels of social skills reduces the relationship between psychopathy and direct aggression. Overall it would appear that although non-criminal psychopathic individuals may use indirect aggression, they are equally likely to use direct forms of aggression and that factors other than social skills may be more important in determining the behavioural manifestation of these traits.

The lack of clear sex differences in the overall relationship between psychopathy has some important implications for the understanding of female psychopathy. Specifically, it has been theorised that the equivocal relationships observed with violence and physical aggression in female psychopaths may be due to preferential use of indirect forms of aggression (Cale & Lilienfeld, 2002b). However, the current research did not find there to be a significant sex difference in the magnitude of the relationship between psychopathy and indirect aggression, indicating that this is unlikely to be the case. As such, it is arguable that female psychopaths may simply use less aggression compared to male psychopaths. Certainly this would fit with findings from overall levels of aggression in adults which indicate that, although males and females use similar levels of indirect aggression, males still use significantly more direct aggression (Archer, 2004). However, there was not found to be a sex difference in the strength of the relationship between psychopathy and direct forms of aggression as may be expected if this was the case. It is also possible that the observed lack of sex differences may be a reflection of the sample used in this study. Specifically, it is arguable a high-functioning, non-criminal sample may be more likely to use indirect forms of aggression, irrespective of sex, due to social and



situational constraints. Indeed, sex differences in the strength of the relationship between psychopathy and different forms of aggression may be more apparent when looking at offender samples.

Our findings also appear to have a number of wider implications in relation to psychopathy assessment, and in particular the PCL-R. The PCL-R assessment focuses on predominantly direct aggression as an example of the manifestation of certain traits and does not consider indirect forms of aggressive behaviour (Hare, 1991). This may become a particular issue when considering items such as Poor Behavioural Controls, as the current research indicates that impulsivity traits among females appear to be more strongly related to indirect aggression use. As such, it is arguable under current assessment criteria that females may end up being classified as possessing lower levels of these traits due to differences in the behavioural manifestation of aggressive traits. Indeed, item-response analysis of these scales do indicate that directly antisocial items, such as Poor Behavioural Controls, show poor discriminability for female samples (Bolt et al., 2004). More generally, these results highlight that the manifestation of psychopathy may cover a variety of behaviours, not all of which are necessarily criminal. Therefore, without assessing these other forms of psychopathic behavioural manifestations, psychopathy assessment tools will result in an under identification of the disorder, as well as a bias towards a specific form that the disorder may take.

These findings also have wider implications for the underlying conceptualisation of psychopathy itself. Specifically, the theorisation of that psychopathy is aetiologically underpinned by a primarily affective neurological deficit (Blair et al., 2005). These results appear to offer some support for this deficit, replicating in chapter 9 the relationship between psychopathy and deficits in emotional face recognition. This is particularly relevant as, with one notable exception (Besel, 2007), previous research has generally failed to replicate these deficits behaviourally in non-criminal adult populations (e.g., Gordon et al., 2004), although evidence of neurological deficits have been found using imaging studies (Gordon et al., 2004). Based on both the findings from this current research (Chapter 9) and previously unpublished thesis work (Besel, 2007), it would appear that these deficits may be present in non-criminal psychopaths at only very short exposure times. This, along with apparent deficits in self-reported affective but not

cognitive empathy scores offer further support to Blair's Integrated Emotion Systems theory (Blair et al, 2005).

However, the finding that aggression use generally, and indirect aggression use in particular, appears to be predominantly driven by the impulsivity as opposed to the affective factor does raise questions as to the centrality of affective deficits to the psychopathy construct. Specifically, if the principle deficit underlying psychopathy be affective in nature, with cognitive and impulsivity deficits being secondary to this or even developing as a consequence of an anti-social lifestyle, then it would be expected that within a non-criminal population it would be the affective rather than impulsivity factor that plays a stronger role. This was not found to be the case, arguably indicating that even in non-criminal samples the impulsivity deficits would appear to exist in parallel with the affective deficits, seeming to indicate that a dual-deficit model may be a better conceptualisation of the underlying psychopathy aetiology.

### **10.2.2. Indirect aggression**

As with psychopathy, one of the primary implications from these findings for the understanding of indirect aggression is in relation to sex differences. Supporting previous research, it is clear that, unlike with adolescent samples (Archer, 2004), females did not use significantly more indirect aggression than males, although a significant difference in the male direction was found for direct aggression. This would appear to support the concept that indirect aggression use increases with age throughout childhood due to the development of social skills (Björkqvist et al., 1992), with females developing these skills faster than males and therefore it takes until adulthood for males to 'catch up'. Furthermore, these findings would appear to run counter to the view that male and female aggression differs only qualitatively not quantitatively (Björkqvist, 1994), as males were found to have higher overall aggression once both forms of aggression had been accounted for.

The differences in overall levels of aggression between males and females does also raise questions as the validity of the risk-reward ratio hypothesis (Archer & Coyne, 2005) as the sole explanation for sex differences in aggression use. In part the lack of gender

differences between overall use of indirect aggression would support this theory. Arguably, it would be expected in that the comparative risks of direct compared to indirect aggression would be equally strong for males and females in a community, and in particular student, context. However, the fact that males nonetheless displayed higher levels of direct aggression, and indeed higher levels of aggression overall, does contradict what would be expected on the basis of this theory. Furthermore, the finding that for females affective deficits display a stronger association with direct compared to indirect aggression does similarly raise some questions. It would be expected, on the basis of the risk-reward hypothesis, that for more planful, proactive forms of aggression, such as associated with low levels of empathy, the use of indirect aggression would equally display greater levels of rewards for relatively low risk for both sexes. As such, it would appear that the risk-reward may not entirely explain the underlying sex differences in aggression use.

In terms of sexual selection theory (Campbell, 1995), it would be expected that, on the basis of evolutionary imperatives, males should have higher levels of direct aggression whilst females have higher levels of indirect aggression. This was not found to be the case, with males displaying both higher levels of direct aggression and higher or similar levels of indirect aggression as females. However, there was some evidence to support an innate sex preference in aggression use, with impulsivity consistently related to direct aggression use for males but not females, whilst the inverse was true with indirect aggression. This would appear to support the sexual selection theory in that when aggression is due more to impulsive reactions, and therefore arguably less responsive to consideration of risks compared to rewards, males and females appear to display a level of innate preference towards different forms of aggression. However, it should be noted that females did nonetheless display a significant relation between impulsivity and direct aggression use. Furthermore, in contrast to what would be expected based on the risk-reward hypothesis (see above), affective deficits in females were only related to direct rather than indirect aggression. This could arguably, in part, indicate that females high on psychopathic personality traits may use a more traditionally masculine 'cheater' sexual selection strategy, which may result in a more masculine aggression presentation. Certainly, descriptions of female psychopaths indicate a low or nonexistent emotional attachment with offspring and the pursuits of multiple sexual partners (Hare, 1999).

There were found to be sex differences in the different types of indirect aggression used. Males were found to score higher on measures of malicious humour whilst females showed a trend towards increased use of social exclusionary behaviours. These findings run counter to previous research using the indirect aggression scale, which failed to find a sex difference between the sub-scales (Forrest et al., 2005). However, these findings do mirror previous results from Björkqvist (1994) and indicate that there may nonetheless be qualitative differences in the forms of indirect aggression used by males and females. These findings would appear to suggest that indirect aggression is not a unitary construct and that research, certainly research considering sex differences, should differentiate between the forms of indirect aggression used, in a similar fashion that physical and verbal direct aggression are differentiated.

Björkqvist argued that indirect aggression was the result of low levels of empathy combined with high levels of social skills (Björkqvist et al., 2000). The results from the current study do go some way to supporting this, with strong significant negative correlations between empathy and indirect aggression use and some evidence of a significant social skills moderation effect. However, since the social skills moderation effect could not be replicated, it is questionable how accurate this theory may be. Furthermore, the strong relationship between indirect aggression use and impulsivity traits would appear to suggest that low empathy and high social skills are not the sole factors involved in indirect aggression use. Indeed arguably these results suggest that indirect aggression is liable to be used reactively, as well as proactively, and as such low empathy, although related, is not a necessary prerequisite to all forms of indirect aggression use. This undermines the frequent description of indirect aggression as necessarily a calculated response based on relative risks and rewards (Archer & Coyne, 2005; Björkqvist, 1994) and highlights that it may also be an impulsive response to perceived provocation. Indeed, the division between proactive and reactive indirect aggression may go some way to explaining the equivocal findings in relation to the use of indirect aggression and social adjustment. Specifically, research using the Richardson Conflict Response scale (Richardson & Green, 2003), which arguably assesses more reactive forms of indirect aggression (see 3.2.2), has been associated with social withdrawal and poor social adjustment (Richardson & Green, 2003). In contrast, research using other scales has indicated that indirectly aggressive individuals may be more socially adjusted (Leadbeater

et al., 2006; Xie et al., 2002). This mirrors findings with direct aggression indicating significantly worse social adjustment by perpetrators of reactive aggression compared to proactive aggression users (Card & Little, 2006).

### **10.2.3. Bullying**

One particular implication of this research may be in relation to bullying behaviour. Although the term bullying is often confined in the popular conscience to childhood and school-based behaviours, research has indicated it remains a common phenomenon among adults. In particular, there is strong evidence for bullying behaviour being common within both workplace settings (Saunders, Huynh, & Goodman-Delahunty, 2007) and institutional settings, such as forensic hospitals (Ireland & Bescoby, 2005) or prisons (Ireland, 1999; Ireland et al., 2007). This is an important issue given the significant psychological harm suffered by victims of bullying (Ireland, 2005) and research into possible causes and associated traits is a vital first step to the management of this issue. It is notable that indirect aggression has been found to play a significant role in bullying by adults with research concluding that adults in both work (Baron et al., 1999; Kaukiainen et al., 2001) and prison settings (Ireland, 1999) used significantly more indirect than direct bullying behaviours. It has been argued that this is due to situational restraints resulting in significantly higher chances of both retaliation and official sanctions should direct forms of aggression be used (Baron et al., 1999; Ireland, 1999).

In relation to the current research, it is arguable that psychopathy may play a role in predicting involvement in bullying. Although there has not been, as of the authors knowledge, any published research looking specifically at the relationship between psychopathy and involvement in bullying in adults, there has been a significant positive correlation found in children between callous-unemotional traits and direct, but not indirect, bullying (Viding et al., 2009). Arguably, however, the failure to find a relationship between callous-unemotional traits and indirect bullying may be due to age differences in the use of indirect over direct bullying (see 2.4) Furthermore, psychopathy has been significantly related to both physical and verbal institutional misconduct and aggression (Edens et al., 2002; Edens et al., 1999), although these studies did not specifically look at bullying behaviours. There have also been a number of findings both

from the current study and other research which would suggest a link. In particular, although bullying behaviours have been found to be distinct from other forms of aggression, there is nonetheless a significant relationship between the bully classification and scores on general aggression measures (Ireland & Archer, 2004). Given that the current research has indicated that psychopathic personality traits are significantly related to both direct and indirect aggressive behaviours, it is arguable that they may similarly predict an increase in bullying related aggression.

It is notable that bullying has been associated with proactive aggressive behaviour (Ireland, 2004, cited in Archer et al., 2007). Similarly, research has consistently indicated that psychopathy is a significant predictor of proactive direct and indirect aggression use (Cornell et al., 1996; Flight & Forth, 2007; Miller & Lynam, 2003; Ostrov & Houston, 2008). Both of which would support that psychopathic personality traits may play at least some role in the use of bullying behaviours. Research looking at traits associated with bullying behaviour would also appear to support the possibility of a relationship between bullying behaviours and psychopathy. Bullies have been found to favour more aggressive social problem solving responses (Ireland, 2001) and report significantly more positive consequences of aggression use compared to non-bullies (Ireland & Archer, 2002). This is similar to findings with psychopathy, with psychopaths and found to hold a similarly positive view of aggression consequences (Ferrigan, Valentiner, & Berman, 2000).

Research into bullying has indicated that most people involved in bullying behaviours belong to a category of bully/victims (e.g., Archer et al., 2007; Ireland, 2002; Ireland et al., 2007). Nonetheless, there are a small proportion of bullies who are only perpetrators or 'pure bullies' and it is arguable that psychopaths may be most likely to fall into this category. Specifically, it has been argued that pure bullies are more likely to use proactive and instrumental aggression than bully-victims (Archer et al., 2007), in a similar way to psychopaths (Cornell et al., 1996; Miller & Lynam, 2003). Although, psychopaths have also been found to use high levels of reactive aggression (Cornell et al., 1996; Flight & Forth, 2007), indicating that unlike the hypothesised view of pure bullies (Archer et al., 2007), they do not necessarily have that much control over their aggression. Furthermore, although bully-victims have been found to be strongly related to increased anxiety and

depression (Ireland, 2005), which is in contrast to traditional descriptions of psychopathy (Cleckley, 1944; cf. see section 1.2.3.3), however pure bullies were not.

It is clear that this is an area requiring further research, although the findings from the current study may support a role of psychopathy in both direct and indirect bullying, this thesis only looked at aggression generally rather than bullying specifically.

### **10.3. Limitations**

#### **10.3.1. PPI-R factor structure**

The results of this study have served to raise a number of questions with regards to the factor structure of the PPI-R. In particular, evidence from the empathy mediation analysis would appear to suggest an overlap between the impulsive antisociality factor and coldheartedness. Impulsive antisociality, like coldheartedness, was found to be significantly related to empathy deficits with affective empathy found to partially mediate the relationship between this factor and aggression use. Similarly, as highlighted in the current research with the role of machiavellian egocentricity (see Chapter 4, 5), there is arguably a conceptual overlap between the fearless dominance factor and impulsive antisociality in the PPI-R, particularly in relation to the concept of social dominance. These findings raise questions as to whether the three PPI-R factors truly assess distinct aspects of the psychopathy disorder, as well as issues regarding the theoretical mapping of these onto the three-factor model of the PCL-R.

Recent research on offender samples would similarly appear to raise questions as the factor structure of the PPI-R, with a failure to replicate either the two or three factor model (Neumann et al., 2008). Further factor analysis did indicate that a three factor model was the best fit to the data, although the confirmatory factor analysis fit was poor. The two factor structure of psychopathy has previously been broadly replicated using the original version of the PPI (Benning, Patrick, Salekin et al., 2005) although there was found to be a strong cross-loading effect on one of the sub-scales. In particular, the fearlessness sub-scale was found to load equally onto both the impulsive antisociality and fearless dominance factors (Benning, Patrick, Salekin et al., 2005), raising questions as to the underlying validity of the eight PPI-R sub-scales. Indeed, issues with the sub-scale

structure of the PPI-R may explain both the difficulties of developing a clear three-factor model for the scale and issues of cross-loading between factors, since all factor analytic research has thus far been conducted at the sub-scale level (Benning et al., 2003; Benning, Patrick, Salekin et al., 2005; Neumann et al., 2008). Indeed, preliminary confirmatory factor analytic work by the author of this thesis on non-criminal samples, in collaboration with other researchers, has indicated that the current two or three-factor structure is not applicable to the data and that the resolution of this will require examination of the scale at an item level. Therefore, it is clear that the resolution of issue is beyond the scope of the current thesis and that significant research is needed to assess the underlying factor structure of the PPI-R and develop a clear three-factor model based on the items rather than at sub-scale level.

Related to the issue of the PPI-R factor structure is the question of the homogeneity, or lack thereof, of the psychopathy construct. Although in the current research the PPI-R psychopathy factors were found to be significantly correlated the correlation coefficients were relatively low (see Chapters 4 – 9) and prior research has generally found the PPI-R factors to be orthogonal (Benning et al., 2003). Indeed more generally questions have been raised over the coherence of the psychopathy construct (e.g., Cooke et al., 2006; Lilienfeld, 1994) and the possible existence of a typology within the psychopathy construct (e.g., Millon & Davis, 2003). As such, this raises questions over the validity of treating psychopathy as a single homogenous disorder with regards to research, certainly given the differentiated, if not occasionally opposing, associations observed with the different psychopathy factors (e.g., Hall et al., 2004; Sullivan et al., 2006; Verona, Joiner et al., 2001, see 1.2.2). Efforts were made to combat this issue in the current study by predominantly focusing on the factor level in the analysis. Furthermore it is notable that although analyses have indicated the divergent natures of the psychopathy factors, there is nonetheless considerable evidence for an underlying super-ordinate psychopathy construct (Cooke & Michie, 2001; Cooke et al., 2007), even if the presence of certain traits within this construct is questioned (Cooke, Michie et al., 2004; see 1.2.3.2). As such it is arguable that although psychopaths may not form a homogenous population, the psychopathy construct does form a coherent underlying syndrome. Nonetheless, this issue does highlight both the importance of considering psychopathy at the factor level and the necessity of developing a valid, coherent and theoretically consistent factor structure for



the PPI-R. Nonetheless, it is important to note that the PPI-R scale itself has been found to be a reliable and valid assessment of psychopathy and that the construct validity of the basic factor structure has nonetheless been well supported (see 3.1.3), even if there is some question over the exact item make-up of the individual factors.

### **10.3.2. Self-report scales**

The use of self-report scales throughout this research does raise a number of issues in and of itself. Although this method was chosen as it was deemed the most practical and effective fashion of assessing the traits of interest, there is little doubt that these measures bring with them a number of flaws. Firstly, there is the issue of response bias.

Psychopathy, aggression and empathy were all found to be significantly related to scores on the socially desirable responding scale. Though this was expected given that both aggression use and aspects of psychopathy are socially undesirable traits, whilst empathy is a highly socially desirable trait, this is nonetheless indicative that the scales used display a significant response bias. However, controlling for the effect of socially desirable responding did not significantly change the results obtained, indicating that socially desirable responding does not appear to have a significant impact on the results obtained.

There is, however, also the question of the validity of the scales themselves. The results from the behavioural empathy measures used raise questions as to the validity of the empathy quotient. In particular, it was found that the emotional reactivity scale did not display a significant correlation with fearful face identification, as would be expected. Although it is arguable that this may be the result of issues with the behavioural task as much as with the self-report measure itself, nonetheless, these findings do raise an underlying issue with reliance on self-report measures and point towards the necessity of replicating these findings using other, more objective measures. In particular, the use of peer reports has been well-validated in aggression research and may be an effective alternative for assessing direct and indirect aggression. Similarly, it is important to effectively replicate this finding using clinical measures of psychopathy, such as the PCL:SV.

#### **10.4. Sample issues**

There are a number of issues surrounding the sample used in this thesis. In particular the sample population was relatively limited. All but one of the studies in this thesis was conducted on university students, and in particular psychology students, at a high ranking British university. As a result the population involved is liable to have been considerably younger than the general population and arguably more intelligent and of higher socio-economic status than the average. Although we were aiming for a high functioning population in this study, which was well served by the current population, reliance on university students does, nonetheless, call into question the generalisability of the current findings. Certainly, this issue is illustrated by the difficulty replicating the social skills moderation in a non-student sample. Efforts were made to account for this in study 5, looking at these results in a wider population. However, it is questionable how successfully this aim was achieved with our community sample nonetheless containing a relatively high number of students, particularly among males, and this sample was still relatively young with an average age of 28 years for males and 35 years for females. Arguably this could be representative of the fact that our data was collected via an online sample and using internet discussion forums, which may draw a younger age range than would otherwise be found in the general population.

Another possible issue with the current sample is that resulting from cross-cultural differences. Although the majority of our sample were British in origin, there were nonetheless a large number of non-British participants both in the university and the online samples. In our online sample British participants made up approximately half of our participants, and we had in addition a small number of North American participants and a relatively large number of participants from continental Europe. Although the culture between the United Kingdom and the rest of Europe is far from homogenous, research on psychopathy has nonetheless indicated that findings are relatively similar across cultures (Cooke, Michie, Hart, & Clark, 2005b). The same cannot be said between Europe and North America as American samples have been consistently found to display higher levels of psychopathy compared to European samples (Cooke, 1997; Cooke, Hart et al., 2004; Cooke et al., 2005a). However, North American participants were relatively small in number making it unlikely that they would have had a significant impact on the outcome.

There was also a relatively high number of foreign students within our university samples, who predominantly had a Chinese nationality, which may have confounded the results somewhat due to cross-cultural differences. Indeed, research has indicated that individuals from collectivist cultures, such as China, have lower levels of both direct and indirect aggression compared to individualistic cultures (Forbes, Zhang, Doroszewics, & Haas, 2009), which may have confounded results somewhat. Language issues are another concern as a large number of our participants were non-native English speakers. Indeed, a large proportion of those participants who were removed due to inconsistent and deviant responding were classified as non-native English speakers. However, this would indicate that the validity scales were working as intended to capture misunderstandings from participants. That stated, all non-native English speaking students at UK universities are nonetheless required to have a good command of the English language, which should minimise bias introduced through language difficulties. Similarly, the online sample was predominantly collected from English language discussion forums and mailing lists. Therefore, although a possible issue, it is unlikely that language difficulties significantly affected the results received.

Finally, a further issue throughout our samples is noted in relation to gender balance. Specifically, there were found to be more female participants than males in all studies, considerably more in some cases (see Chapters 4 & 7). Furthermore, when attempts were made to control for gender in recruitment within the student samples, the female sample nonetheless ended up more homogenous, consisting predominantly of psychology students, than the male sample. This is due to the gender imbalance inherent within the psychology course make-up at the University of York, with approximately 70-80% of psychology students being female. Given that participant recruitment is easier among psychology students, due to course requirements, difficulties were encountered in recruiting sufficient male participants and this goes some way to account for the gender imbalance seen in the studies. This was also observed with our online study, arguably due to the use of psychology-interest sites as a primary source of participant recruitment, which were found to be more frequented by women. Indeed, sufficient males were only recruited when recruitment was conducted through more general and current affairs discussion forums. The gender balance in the different recruitment locations may also, in part, account for the

significant age difference between males and females. However, further investigation would be required to effectively confirm this.

### **10.5. Future Directions**

The previous section has highlighted some of the limitations of this study and pointed to some clear directions for future research which shall be explored in more detail herein. Following on from the prior limitations, it is clear one area requiring further research is use of different and more diverse samples. A clear area for expansion of these results is to consider them within different cultural contexts. The current study focused on a predominantly European sample, however cross-cultural differences have been found within psychopathy traits and in particular the behavioural manifestation of some of the more social traits, such as superficial charm and glibness (Cooke et al., 2005a). As such, replication within North American populations is a clear future path for this research and would help support the validity of these results. It would be expected, given that there was not found to be an impact of the interpersonal factor in this study, that there would, however, be not significant difference in results between the two samples. However, North American culture is, similarly to Europe, a highly individualistic culture. Given the social nature of the aggression being researched, it would also be of interest to consider the relationship between psychopathic traits and indirect aggression in more collectivist cultures, using, for example, an Asian based sample. Arguably, within these cultures there may be different situational and cultural pressures which may affect the results. Certainly cross-cultural research has indicated differences in reported aggression levels between collectivist and individualistic cultures (Forbes et al., 2009), which may be liable to affect the relationship between psychopathy and indirect aggression.

The current work focused specifically on non-criminal samples, predominantly so that the relationship between psychopathy and indirect aggression could be studied independently of possible effects of criminogenic factors or incarceration. Nonetheless, given the relevance of psychopathy in the use of criminal behaviours, and particularly aggressive criminal behaviours, (e.g., Hare et al., 2000; Hemphill et al., 1998), a clear future expansion of the current research would be to replicate these results within an offender sample. Research using offender samples would serve to indicate whether the relationship between psychopathy and indirect aggression use holds true at higher levels of the

disorder, as assessed by the PCL-R. It is arguable that, due to a pre-existing tendency towards direct aggression and overt anti-social behaviour, that a relationship between psychopathy and indirect aggression may not be readily apparent in an offender sample and that, with the influence of antisocial traits, psychopathy may only be related to more direct violence. However, research into prison bullying has indicated high levels of indirect aggression use among offenders (Ireland, 1999; Ireland & Archer, 2004), more so indeed than direct aggression. Arguably this may be due to situational constraints within the prison context (Ireland, 1999, 2001). Indeed, research into offender samples offers an opportunity to further study the moderating effects of situational constraints on the relationship between psychopathy and different forms of aggression.

Indeed, this does highlight another possible direction of future research and that is the consideration of the relationship between psychopathy and bullying, particularly prison bullying. As mentioned previously, the current research between psychopathy and indirect aggression points towards possible implications for bullying research. There is a lot of support for theoretical links between psychopathy and bullying behaviours (see 10.3.1); however there has, thus far, been little to no research explicitly looking at the role of psychopathic personality traits. Arguably it would be expected that psychopathy would be more related to pure bullies than bully-victims or pure victims, since pure bullies have been theorised to be more proactive in their aggression use (Archer et al., 2007) and have been found to rate hostile responses more positively (Ireland & Archer, 2002) and display less anxiety and depression (Ireland, 2005), which are similarly negatively related to psychopathy. Furthermore, based on the current research, it would be expected that psychopathy would be equally related to both direct and indirect forms of aggression, as determined by situational factors.

A further area of future research would be to similarly look at the relationship between indirect aggression and bullying but within business/workplace contexts. Workplace bullying is a common and serious issue (e.g.; Baron et al., 1999; Giacalone & Greenburg, 1990), and like prison based bullying has been found to take predominantly indirect forms due to both the capacity for retaliation and strong sanctions against more overt and direct forms of aggression (Kaukiainen et al., 2001). Furthermore, qualitative descriptions of psychopaths' behaviour within the workplace would appear to strongly support the use

indirect aggression generally and indirect bullying specifically (Babiak & Hare, 2006). However, thus far no research has specifically looked at the relationship between bullying and psychopathy within work settings, although based on the current and previous research, a positive association between these variables would be expected.

Another possible area for further research highlighted by the results from this thesis is the role proactive and reactive functions of aggression play in the relationship between psychopathy and both forms of aggression use. Both the current and previous research (Ostrov & Houston, 2008) have highlighted possible interactions between the function and form in the use of indirect aggression by high psychopathy scorers, in particular in relation to the different factors. Specifically, it was found that impulsive antisociality was related to both proactive and reactive indirect aggression but only proactive physical aggression. In contrast, reactive physical aggression was positively related to fearless dominance (Ostrov & Houston, 2008). Furthermore, this difference between function and form would appear to be particularly related to sex, with the relationship between impulsive antisociality and proactive indirect aggression significant only for females not for males. Therefore, it is clear that to effectively understand the relationship between psychopathy and aggression, further research is required. Specifically this research should look at how psychopathy interacts with both the function and the form aggression takes and how these may differ based on biological sex. In particular, it would appear relevant to consider the role of the different factor scores in this, although some of the sex differences observed between the factor scores may be relevant to issues with the PPI-R factor structure. Nonetheless, both the research by Ostrov and Houston (2008) and the current research would appear to indicate that the primary differences in psychopathic aggression use lies with the interaction between the different functions and forms the aggression may take, and this is clearly an area ripe for further research.

Another area of research which has also been clearly highlighted by the current study is the role of social skills in the relationship between psychopathy and indirect aggression. The current study found mixed results (as described above), with a significant relationship found between non-verbal social skills and indirect aggression when empathy was controlled for. Further there was evidence of a significant moderating effect, but this could not be replicated in a non-student sample. However, there were a number of issues

surrounding the study attempting to replicate the social skills moderation effect. In particular, there were differences in the indirect aggression scale instructions and a failure to include verbal social skills, as this scale had not shown a significant moderating effect in the previous study. As such, it is clear further research is required to investigate any possible moderating effect fully, in particular using both verbal and non-verbal social skills and a range of participant populations. As well as looking at the issues of social skills moderation in the use of indirect aggression, further research should also consider how social skills affects the use of direct forms of aggression. This could have important implications for treatment should social skills result in decreased direct but increased indirect aggression.

Finally, in response to identified limitations, it is clear one important path of further research is the replication of these results using non self-report measures. In particular, as highlighted in the limitations section, further research using measures such as clinical assessments for psychopathy and peer reports for aggression are clearly necessary to support the validity of the current findings. However, the current research also highlights a necessity to develop effective alternatives to self-reports, particularly when dealing with a non-institutionalised population, where clinical measures become less applicable or appropriate peers cannot be recruited for effective peer assessments. Although the current research looked at several possible behavioural measures of empathy, these appeared to lack the level of sensitivity necessary to be applied to a general sample. As such, another avenue for further research would be the development and validation of appropriate alternatives to self-report measures of psychopathy and aggression among community samples. A number of behavioural measures have previously been developed to assess direct forms of aggression (Suris et al., 2004) however, thus far there is a lack of effective behavioural measures for indirect aggression. Arguably this may be due to the social and covert nature of this form of aggression which makes it more difficult to assess in this fashion, although, there have been some promising work by Vaillancourt on this subject (Vaillancourt & Sharma, 2008). Nonetheless, replication of these results using alternatives to self-report measures is an important step with regards to this research.

## **10.6. Conclusions**

In conclusion, it was found that psychopathy significantly predicts the use of indirect aggression and that this was predominantly due to the impulsive antisociality and coldheartedness factors and was partially mediated by low levels of affective empathy. Furthermore the relationship observed between psychopathy and indirect aggression was found to mirror that observed between psychopathy and direct forms of aggression. These findings imply that psychopathy, and in particular the impulsivity and empathy deficits associated with this disorder, results in a general increase in aggression use however the exact form the aggression takes will depend on other moderation factors. In particular, the current research implies that biological sex will moderate the form of aggression used, dependant on its function. There was also some evidence of social skills moderation, however this finding was less clear. These findings may have important implications for the understanding of both psychopathy and aggression theory and, on a practical level, in the management and treatment of psychopathic traits. The research presented in this thesis was predominantly exploratory on a topic which has thus far received relatively little research and it points to a number of directions for future research to take which will help increase our understanding of both psychopathy and indirect forms of aggression.



## REFERENCES

- Allison, P. D. (2002). *Missing data*. Thousand Oaks, Ca: Sage Publications.
- American Psychiatric Association. (2000). *The diagnostic and statistical manual of mental disorders* (4th text revision ed.). Washington DC: Author.
- Anderson, C., A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27-51.
- Aniskiewicz, A. S. (1979). Autonomic components of vicarious conditioning and psychopathy. *Journal of Clinical Psychology*, 35(1), 60-67.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology*, 8(4), 291-322.
- Archer, J., & Coyne, S. M. (2005). An integrated review of indirect, relational, and social aggression. *Personality and Social Psychology Review*, 9(3), 212-230.
- Archer, J., Ireland, J. L., & Power, C. L. (2007). Differences between bullies and victims, and men and women, on aggression-related variables among prisoners. *British Journal of Social Psychology*, 46(2), 299-322.
- Archer, J., & Webb, I. A. (2006). The relation between scores on the Buss-Perry aggression questionnaire and aggressive acts, impulsiveness, competitiveness, dominance and sexual jealousy. *Aggressive Behavior*, 32, 464-473.
- Babiak, P. (2000). Psychopathic manipulation at work. In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 287-311). NJ, US: Lawrence Erlbaum Associates Publishers.
- Babiak, P., & Hare, R. D. (2006). *Snakes in suits: When psychopaths go to work*. NY, US: Regan Books/Harper Collins Publishers.
- 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(2), 163-175.
- 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 Psychology and Psychiatry*, 42(2), 241-251.

- Baron, R. A., Neuman, J. H., & Geddes, D. (1999). Social and personal determinants of workplace aggression: Evidence for the impact of perceived injustice and the type A behavior pattern. *Aggressive Behavior, 25*, 281-296.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.
- Barratt, E. S., & Slaughter, L. (1998). Defining, measuring, and predicting impulsive aggression: A heuristic model. *Behavioral Sciences & the Law, 16*(3), 285-302.
- Barry, T. D., Thompson, A., Barry, C. T., Lochman, J. E., Adler, K., & Hill, K. (2007). The importance of narcissism in predicting proactive and reactive aggression in moderately to highly aggressive children. *Aggressive Behavior, 33*(3), 185-197.
- Ben-Horin, H. C. (2001). *The interface between psychopathy and relational aggression in an incarcerated female population*. Alliant International University, San Diego.
- Benning, S. D., Patrick, C. J., Blonigen, D. M., Hicks, B. M., & Iacono, W. G. (2005). Estimating facets of psychopathy from normal personality traits: A step toward community epidemiological investigations. *Assessment, 12*(1), 3-18.
- Benning, S. D., Patrick, C. J., Hicks, B. M., Blonigen, D. M., & Krueger, R. F. (2003). Factor structure of the psychopathic personality inventory: Validity and implications for clinical assessment. *Psychological Assessment, 15*(3), 340-350.
- Benning, S. D., Patrick, C. J., & Iacono, W. G. (2005). Psychopathy, startle blink modulation, and electrodermal reactivity in twin men. *Psychophysiology, 42*(6), 753-762.
- Benning, S. D., Patrick, C. J., Salekin, R. T., & Leistico, A.-M. R. (2005). Convergent and discriminant validity of psychopathy factors assessed via self-report: A comparison of three instruments. *Assessment, 12*(3), 270-289.
- Benson, D., & Archer, J. (2002). An ethnographic study of sources of conflict between young men in the context of the night out. *Psychology, Evolution & Gender, 4*(1), 3-30.
- Berardino, S. D., Meloy, J. R., Sherman, M., & Jacobs, D. (2005). Validation of the Psychopathic Personality Inventory on a female inmate sample. *Behavioral Sciences & the Law, 23*(6), 819-836.
- Besel, L. D. S. (2007). *Empathy: The role of facial expression recognition*. University of British Columbia, Vancouver.

- Björkqvist, K. (1994). Sex differences in physical, verbal, and indirect aggression: A review of recent research. *Sex Roles, 30*(3-4), 177-188.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (2000). Social intelligence-empathy=aggression? *Aggression and Violent Behavior, 5*(2), 191-200.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Björkqvist & P. Niemelä (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51-64). San Diego, CA: Academic Press.
- Björkqvist, K., Österman, K., & Lagerspetz, K. (1994). Sex differences in covert aggression among adults. *Aggressive Behavior, 20*(1), 27-33.
- Blackburn, R. (2005). Psychopathy as a personality construct. In S. Strack (Ed.), *Handbook of personality and psychopathology*. Hoboken, NJ, USA: John Wiley & Sons.
- Blair, J., Mitchell, D., & Blair, K. (2005). *The psychopath: Emotion and the brain*. MA, US: Blackwell Publishing.
- Blair, K. S., Richell, R. A., Mitchell, D. G. V., Leonard, A., Morton, J., & Blair, R. J. R. (2006). They know the words, but not the music: Affective and semantic priming in individuals with psychopathy. *Biological Psychology, 73*(2), 114-123.
- Blair, R. J. R. (1999). Responsiveness to distress cues in the child with psychopathic tendencies. *Personality and Individual Differences, 27*, 135-145.
- Blair, R. J. R. (2001a). Advances in neuropsychiatry: Neurocognitive models of aggression, the antisocial personality disorders and psychopathy. *Journal of Neurology, Neurosurgery and Psychiatry, 71*, 727-731.
- Blair, R. J. R. (2001b). Neurocognitive models of aggression, the antisocial personality disorders, and psychopathy. *Journal of Neurology, Neurosurgery & Psychiatry, 71*(6), 727-731.
- Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition, 14*(4), 698-718.
- Blair, R. J. R. (2006). Subcortical brain systems in psychopathy: The amygdala and associated structures. In C. J. Patrick (Ed.), *Handbook of Psychopathy* (pp. 296-312). NY, US: Guilford Press.

- 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., Colledge, E., Murray, L., & Mitchell, D. G. V. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology*, *Electronic*(6), 491-498.
- Blair, R. J. R., Jones, L., Clark, F., & Smith, M. (1995). Is the psychopath "morally insane"? *Personality and Individual Differences*, *19*(5), 741-752.
- Blair, R. J. R., Jones, L., Clark, F., & Smith, M. (1997). The psychopathic individual: A lack of responsiveness to distress cues? *Psychophysiology*, *34*(2), 192-198.
- Blair, R. J. R., Mitchell, D. G., Richell, R. A., Kelly, S., Leonard, A., Newman, C., & Scott, S. K. (2002). Turning a deaf ear to fear: Impaired recognition of vocal affect in psychopathic individuals. *Journal of Abnormal Psychology*, *111*(4), 682-686.
- Blair, R. J. R., Mitchell, D. G. V., Peschardt, K. S., Colledge, E., Leonard, R. A., Shine, J. H., Murray, L. K., & Perrett, D. I. (2004). Reduced sensitivity to others' fearful expressions in psychopathic individuals. *Personality and Individual Differences*, *37*(6), 1111-1122.
- Blair, R. J. R., Morris, J. S., Frith, C. D., Perrett, D. I., & Dolan, R. J. (1999). Dissociable neural responses to facial expressions of sadness and anger. *Brain*, *122*, 883-893.
- Blanchard, R. J., Blanchard, D. C., Takahashi, T., & Kelley, M. J. (1977). Attack and defensive behaviour in the albino rat. *Animal Behaviour*, *25*(3), 622-634.
- Blonigen, D. M., Carlson, S. R., Krueger, R. F., & Patrick, C. J. (2003). A twin study of self-reported psychopathic personality traits. *Personality and Individual Differences*, *35*(1), 179-197.
- Board, B. J., & Fritzon, K. (2005). Disordered personalities at work. *Psychology, Crime & Law*, *11*(1), 17-32.
- Bolt, D. M., Hare, R. D., Vitale, J. E., & Newman, J. P. (2004). A multigroup item response theory analysis of the Psychopathy Checklist-Revised. *Psychological Assessment*, *16*(2), 155-168.
- Book, A. S., Holden, R. R., Starzyk, K. B., Wasylkiw, L., & Edwards, M. J. (2006). Psychopathic traits and experimentally induced deception in self-report assessment. *Personality and Individual Differences*, *41*, 601-608.

- Book, A. S., Quinsey, V. L., & Langford, D. (2007). Psychopathy and the perception of affect and vulnerability. *Criminal Justice and Behavior.*, 34, 531-544.
- Booth-Kewley, S., Edwards, J. E., & Rosenfeld, P. (1992). Impression management, social desirability, and computer administration of attitude questionnaires: Does the computer make a difference. *Journal of Applied Psychology*, 77(4), 562-566.
- Bowlby, J. (1951). Maternal care and mental health. *Bull World Health Organ*, 3(3), 355-533.
- Brinkley, C. A., Schmitt, W. A., & Newman, J. P. (2005). Semantic processing in psychopathic offenders. *Personality and Individual Differences*, 38, 1047-1056.
- Brinkley, C. A., Schmitt, W. A., Smith, S. S., & Newman, J. P. (2001). Construct validation of a self-report psychopathy scale: Does Levenson's self-report psychopathy scale measure the same constructs as Hare's psychopathy checklist-revised? *Personality and Individual Differences*, 31(7), 1021-1038.
- Bushman, B. J., & Anderson, C., A. (2001). Is it time to pull the plug on the hostile versus instrumental aggression dichotomy? *Psychological Review*, 108(1), 273-279.
- Buss, A. H. (1961). Stimulus generalization and aggressive verbal stimuli. *Journal of Experimental Psychology*, 61(6), 469-473.
- Buss, A. H., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology*, 63(3), 452-459.
- Cale, E. M., & Lilienfeld, S. O. (2002a). Histrionic personality disorder and antisocial personality disorder: Sex-differentiated manifestations of psychopathy. *Journal of Personality Disorders*, 16(1), 52-72.
- Cale, E. M., & Lilienfeld, S. O. (2002b). Sex differences in psychopathy and antisocial personality disorder: A review and integration. *Clinical Psychology Review*, 22(8), 1179-1207.
- Campbell, A. (1995). A few good men: Evolutionary psychology and female adolescent aggression. *Ethology & Sociobiology*, 16(2), 99-123.
- Campbell, F. (2004). *A cognitive developmental approach to representing emotional states and recognition of emotion: Investigating the psychopath*. University of York, York.
- Card, N. A., & Little, T. D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioural Development*, 30(5), 466-480.

- Chapman, A. L., Gremore, T. M., & Farmer, R. F. (2003). Psychometric analysis of the Psychopathic Personality Inventory (PPI) with female inmates. *Journal of Personality Assessment, 80*(2), 164-172.
- Cleckley, H. (1944). *The mask of sanity* (1st ed.). Saint Louis: The C.V. Mosby Company.
- Cleckley, H. (1988). *The mask of sanity* (5th ed.). Saint Louis: The C.V. Mosby Company.
- Cohen, D., & Strayer, J. (1996). Empathy in conduct-disordered and comparison youth. *Developmental Psychology, 32*(6), 988-998.
- Connor, D. F., Steingard, R. J., Cunningham, J. A., Anderson, J. J., & Melloni, R. H. (2004). Proactive and reactive aggression in referred children and adolescents. *American Journal of Orthopsychiatry, 74*(2), 129-136.
- Cooke, D. J. (1997). Psychopaths: Oversexed, overplayed but not over here? *Criminal Behaviour and Mental Health, 7*(1), 3-11.
- Cooke, D. J., Hart, S. D., & Michie, C. (2004). Cross-national differences in the assessment of psychopathy: Do they reflect variations in raters' perceptions of symptoms? *Psychological Assessment, 16*(3), 335-339.
- Cooke, D. J., Kosson, D. S., & Michie, C. (2001). Psychopathy and ethnicity: Structural, item, and test generalizability of the Psychopathy Checklist--Revised (PCL-R) in Caucasian and African American participants. *Psychological Assessment, 13*(4), 531-542.
- Cooke, D. J., & Michie, C. (1997). An item response theory analysis of the hare psychopathy checklist-revised. *Psychological Assessment, 9*(1), 3-14.
- Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopath: Towards a hierarchical model. *Psychological Assessment, 13*(2), 171-188.
- Cooke, D. J., Michie, C., & Hart, S. D. (2006). Facets of clinical psychopathy: Toward clearer measurement. In C. J. Patrick (Ed.), *Handbook of Psychopathy*. New York: Guilford Press.
- Cooke, D. J., Michie, C., Hart, S. D., & Clark, D. (2005a). Assessing psychopathy in the UK: Concerns about cross-cultural generalisability. *British Journal of Psychiatry, 186*(4), 335-341.
- Cooke, D. J., Michie, C., Hart, S. D., & Clark, D. (2005b). Searching for the pan-cultural core of psychopathic personality disorder. *Personality and Individual Differences, 39*, 283-295.

- Cooke, D. J., Michie, C., Hart, S. D., & Clark, D. A. (2004). Reconstructing psychopathy: Clarifying the significance of antisocial and socially deviance behavior in the diagnosis of psychopathic personality disorder. *Journal of Personality Disorders*, *18*(4), 337-357.
- Cooke, D. J., Michie, C., & Skeem, J. (2007). Understanding the structure of the Psychopathy Checklist-Revised: An exploration of methodological confusion. *British Journal of Psychiatry*, *190*(Suppl 49), s39-s50.
- Cornell, D. G., Warren, J., Hawk, G., Stafford, E., Oram, G., & Pine, D. (1996). Psychopathy in instrumental and reactive violent offenders. *Journal of Consulting and Clinical Psychology*, *64*(4), 783-790.
- Coyne, S. M., Archer, J., & Eslea, M. (2006). "We're not friends anymore! Unless...": The frequency and harmfulness of indirect, relational, and social aggression. *Aggressive Behavior*, *32*(4), 294-307.
- Coyne, S. M., Manning, J. T., Ringer, L., & Bailey, L. (2007). Directional asymmetry (right-left differences) in digit ratio (2D:4D) predict indirect aggression in women. *Personality and Individual Differences*, *43*, 865-872.
- Coyne, S. M., & Thomas, T. J. (2008). Psychopathy, aggression, and cheating behavior: A test of the Cheater-Hawk hypothesis. *Personality and Individual Differences*, *44*(5), 1105-1115.
- Crick, N. R., Casas, J. F., & Ku, H.-C. (1999). Relational and physical forms of peer victimization in preschool. *Developmental Psychology*, *35*(2), 376-385.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*(3), 710-722.
- Currie, D. H., Kelly, D. M., & Pomerantz, S. (2007). 'The power to squash people': Understanding girls' relational aggression. *British Journal of Sociology of Education*, *28*(1), 23-37.
- Dadds, M. R., Perry, Y., Hawes, D. J., Merz, S., Riddell, A. C., Haines, D. J., Solak, E., & Abeygunawardane, A. I. (2006). Attention to the eyes and fear-recognition deficits in child psychopathy. *British Journal of Psychiatry*, *189*(3), 280-281.
- Davis, M. H. (1994). *Empathy: A social psychological approach*. Oxford: Westview Press.
- Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology*, *41*, 417-440.

- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53(6), 1146-1158.
- Dodge, K. A., Pepler, D. J., & Rubin, K. H. (1991). The structure and function of reactive and proactive aggression. In *The development and treatment of childhood aggression* (pp. 201-218). NJ, England: Lawrence Erlbaum Associates, Inc.
- Eagly, A. H. (1987). *Sex differences in social behavior: A social-role interpretation*. NJ, England: Lawrence Erlbaum Associates, Inc.
- Edens, J. F., Buffington-Vollum, J. K., Colwell, K. W., Johnson, D. W., & Johnson, J. K. (2002). Psychopathy and institutional misbehavior among incarcerated sex offenders: A comparison of the Psychopathy Checklist-Revised and the Personality Assessment Inventory. *International Journal of Forensic Mental Health*, 1(1), 49-58.
- Edens, J. F., Buffington, J. K., Tomicic, T. L., & Riley, B. D. (2001). Effects of positive impressions management on the Psychopathic Personality Inventory. *Law and Human Behavior*, 25(3), 235-256.
- Edens, J. F., Lilienfeld, S. O., Marcus, D. K., & Poythress, N. G. J. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology*, 115(1), 131-144.
- Edens, J. F., Poythress, N. G., & Lilienfeld, S. O. (1999). Identifying inmates at risk for disciplinary infractions: A comparison of two measures of psychopathy. *Behavioral Sciences and the Law*, 17, 435-443.
- Ekman, R., & Friesen, W. V. (1976). *Pictures of facial affect*. Palo Alto, CA: Consulting Psychologists Press.
- Endresen, I. M., & Olweus, D. (2002). Self-reported empathy in Norwegian adolescents: Sex differences, age trends and relationship to bullying. . In A. C. Bohart & D. J. Stipek (Eds.), *Constructive and destructive behavior: Implications for family, school, and society* (pp. 147-165). Washington, DC: American Psychological Association.
- Farrington, D. P. (2006). Family background and Psychopathy. In C. J. Patrick (Ed.), *Handbook of Psychopathy*. New York, NY: Guilford Press.
- Farrington, D. P., & Loeber, R. (2000). Epidemiology of juvenile violence. *Child and Adolescent Psychiatric Clinics of North America*, 9(4), 733-748.



- Ferrigan, M. M., Valentiner, D. P., & Berman, M. E. (2000). Psychopathy dimensions and awareness of negative and positive consequences of aggressive behavior in a nonforensic sample. *Personality and Individual Differences, 28*(3), 527-538.
- Field, A. (2005). *Discovering statistics using SPSS (2nd ed.)*. Sage Publications, Inc, CA, US.
- Flight, J. I., & Forth, A. E. (2007). Instrumentally violent youths: The roles of psychopathic traits, empathy, and attachment. *Criminal Justice and Behavior, 34*(6), 739-751.
- Forbes, G., Zhang, X., Doroszewics, K., & Haas, K. (2009). Relationships between individualism-collectivism, gender, and direct or indirect aggression: A study in China, Poland, and the US. *Aggressive Behavior, 35*, 24-30.
- Forouzan, E., & Cooke, D. J. (2005). Figuring out la femme fatale: Conceptual and assessment issues concerning psychopathy in females. *Behavioral Sciences & the Law, 23*(6), 765-778.
- Forrest, S., Eatough, V., & Shevlin, M. (2005). Measuring adult indirect aggression: The development and psychometric assessment of the indirect aggression scales. *Aggressive Behavior, 31*(1), 84-97.
- Forth, A. E., Brown, S. L., Hart, S. D., & Hare, R. D. (1996). The assessment of psychopathy in male and female noncriminal: Reliability and validity. *Personality and Individual Differences, 20*(5), 531-543.
- Forth, A. E., & Burke, H. C. (1998). Psychopathy in adolescence: Assessment, violence, and developmental precursors. . In D. J. Cooke, A. E. Forth & R. D. Hare (Eds.), *Psychopathy: Theory, research, and implications for society*. Dordrecht, The Netherlands: Kulwar.
- Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male young offenders. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2*(3), 342-344.
- Frick, P. J. (2007). Using the construct of psychopathy to understand antisocial and violent youth. In H. Hervé & J. C. Yuille (Eds.), *The psychopath: Theory, research, and practice* (pp. 343-367). NJ, US: Lawrence Erlbaum Associates Publishers.
- Frick, P. J., & Hare, R. D. (2001). *Antisocial process screening device*. Toronto, Canada: Multi-Health Systems.

- Gendreau, P., Goggin, C., & Smith, P. (2002). Is the PCL-R really the "unparalleled" measure of offender risk? A lesson in knowledge cumulation. *Criminal Justice and Behavior, 29*(4), 397-426.
- Gernsbacher, M. A., Goldsmith, H. H., & Robertson, R. R. (1992). Do readers mentally represent characters' emotional states? *Cognition & Emotion, 6*(2), 89-111.
- Giocalone, R. A., & Greenburg, J. (1990). *Anti-social behavior in organizations*. Thousand Oaks, CA: Sage.
- Gordon, H. L., Baird, A. A., & End, A. (2004). Functional differences among those high and low on a trait measure of psychopathy. *Biological Psychiatry, 56*(7), 516-521.
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist, 59*(2), 93-104.
- Grann, M. (2000). The PCL-R and gender. *European Journal of Psychological Assessment, 16*(3), 147-149.
- Green, L. R., Richardson, D. R., & Lago, T. (1996). How do friendship, indirect and direct aggression relate? *Aggressive Behavior, 22*, 81-86.
- Gustafson, S. B., & Ritzer, D. R. (1995). The dark side of normal: A psychopathy-linked pattern called aberrant self-promotion. *European Journal of Personality, 9*(3), 147-183.
- Hall, J. R., & Benning, S. D. (2006). The "successful" psychopath: Adaptive and subclinical manifestations of psychopathy in the general population. In C. J. Patrick (Ed.), *Handbook of Psychopathy* (pp. 459-478). NY, US: Guilford Press.
- Hall, J. R., Benning, S. D., & Patrick, C. J. (2004). Criterion-related validity of the three-factor model of psychopathy: Personality, behavior, and adaptive functioning. *Assessment, 11*(1), 4-16.
- Hamburger, M. E., Lilienfeld, S. O., & Hogben, M. (1996). Psychopathy, gender, and gender roles: Implications for antisocial and histrionic personality disorders. *Journal of Personality Disorders, 10*(1), 41-55.
- Hare, R. D. (1985). Comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology, 53*(1), 7-16.
- Hare, R. D. (1991). *Manual for the revised psychopathy checklist*. Toronto, ON, Canada: Multi-Health Systems.

- Hare, R. D. (1999). *Without conscience: The disturbing world of the psychopaths among us*. NY, US: Guilford Press.
- Hare, R. D. (2003). *Manual for the Hare Psychopathy Checklist - Revised*. Toronto: Multi-Health Systems.
- Hare, R. D., Clark, D., Grann, M., & Thornton, D. (2000). Psychopathy and the predictive validity of the PCL-R: An international perspective. *Behavioral Sciences & the Law, 18*(5), 623-645.
- Hare, R. D., Harpur, T. J., Hakstian, A. R., Forth, A. E., & Hart, S. D. (1990). The revised psychopathy checklist: Reliability and factor structure. *Psychological Assessment, 2*(3), 338-341.
- Hare, R. D., Hart, S. D., & Harpur, T. J. (1991). Psychopathy and the DSM-IV criteria for Antisocial Personality Disorder. *Journal of Abnormal Psychology, 100*(3), 391-398.
- Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural properties and new direction. In C. J. Patrick (Ed.), *Handbook of psychopathy*. New York: Guilford Press.
- Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment, 1*(1), 6-17.
- Harpur, T. J., Hart, S. D., & Hare, R. D. (2002). Personality of the psychopath. In P. Costa (Ed.), *Personality disorders and the five-factor model of personality* (2nd ed.). Washington, DC: American Psychological Society.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology, 62*(2), 387-397.
- Harris, J. A. (1997). A further evaluation of the aggression questionnaire: Issues of validity and reliability. *Behavioural Research and Therapy, 35*(11), 1047-1053.
- Hemphill, J. F., Hare, R. D., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology, 3*(Part 1), 139-170.
- Henington, C., Hughes, J. N., Cavell, T. A., & Thompson, B. (1998). The role of relational aggression in identifying aggressive boys and girls. *Journal of School Psychology, 36*(4), 457-477.

- Hervé, H., Mitchell, D. G., Cooper, B. S., Spidel, A., & Hare, R. D. (2004). Psychopathy and unlawful confinement: An examination of perpetrator and event characteristics. *Canadian Journal of Behavioural Science, 36*(2), 137-145.
- Hess, N. H., & Hagen, E. H. (2006). Sex differences in indirect aggression: Psychological evidence from young adults. *Evolution and human behavior, 27*, 231-245.
- Hiatt, K. D., Schmitt, W. A., & Newman, J. P. (2004). Stroop tasks reveal abnormal selective attention among psychopathic offenders. *Neuropsychology, 18*(1), 50-59.
- Hicklin, J., & Widiger, T. A. (2005). Similarities and differences among antisocial and psychopathic self-report inventories from the perspective of general personality functioning. *European Journal of Personality, 19*(4), 325-342.
- Hill, C. D., Neumann, C. S., & Rogers, R. (2004). Confirmatory factor analysis of the Psychopathy Checklist: Screening Version with offenders with axis I disorders. *Psychological Assessment, 16*(1), 90-95.
- Hogan, R. (1969). Development of an empathy scale. *Journal of Consulting and Clinical Psychology, 33*(3), 307-316.
- Hrdy, S. B. (1999). *Mother Nature*. New York: Ballantine.
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. Hoyle (Ed.), *Structural Equation Modelling: Concepts, Issues and Applications* (pp. 76-99). London: Sage.
- Ireland, J. L. (1999). Bullying behaviors among male and female prisoners: A study of adult and young offenders. *Aggressive Behavior, 25*(3), 161-178.
- Ireland, J. L. (2001). The relationship between social problem-solving and bullying behaviour among male and female adult prisoners. *Aggressive Behavior, 27*(4), 297-312.
- Ireland, J. L. (2002). Do juveniles bully more than young offenders? *Journal of Adolescence, 25*(2), 155-168.
- Ireland, J. L. (2005). Psychological health and bullying behavior among adolescent prisoners: A study of young and juvenile offenders. *Journal of Adolescent Health, 36*(3), 236-243.
- Ireland, J. L., & Archer, J. (2002). The perceived consequences of responding to bullying with aggression: A study of male and female adult prisoners. *Aggressive Behavior, 28*(4), 257-272.
- Ireland, J. L., & Archer, J. (2004). Association between measures of aggression and bullying among juvenile and young offenders. *Aggressive Behavior, 30*, 29-42.

- Ireland, J. L., Archer, J., & Power, C. L. (2007). Characteristics of male and female prisoners involved in bullying behavior. *Aggressive Behavior, 33*(3), 220-229.
- Ireland, J. L., & Bescoby, N. (2005). Behavioural Assessment of Bullying Behaviour Among Personality Disordered Patients in a High Secure Hospital. *Aggressive Behavior, 31*(1), 67-83.
- Ireland, J. L., & Monaghan, R. (2006). Behaviours indicative of bullying among young and juvenile male offenders: A study of perpetrator and victim characteristics. *Aggressive Behavior, 32*(2), 172-180.
- Ishikawa, S. S., Raine, A., Lencz, T., Bihrlé, S., & Lacasse, L. (2001). Autonomic stress reactivity and executive functions in successful and unsuccessful criminal psychopaths from the community. *Journal of Abnormal Psychology, 110*(3), 423-432.
- Jackson, R. L., Rogers, R., Neumann, C. S., & Lambert, P. L. (2002). Psychopathy in female offenders: An investigation of its underlying dimensions. *Criminal Justice and Behavior, 29*(6), 692-704.
- Johnson, J. A. (2005). Ascertaining the validity of individual protocols from web-based personality inventories. *Journal of Research in Personality, 39*, 103-129.
- Jones, S., Cauffman, E., Miller, J. D., & Mulvey, E. (2006). Investigating different factor structures of the Psychopathy Checklist: Youth Version: Confirmatory factor analytic findings. *Psychological Assessment, 18*(1), 33-48.
- Justus, A. N., & Finn, P. R. (2007). Startle modulation in non-incarcerated men and women with psychopathic traits. *Personality and Individual Differences, 43*, 2057-2071.
- Kaukiainen, A., Björkqvist, K., Lagerspetz, K., Österman, K., Salmivalli, C., Rothberg, S., & Ahlbom, A. (1999). The relationship between social intelligence, empathy and three types of aggression. *Aggressive Behavior, 25*(1), 81-89.
- Kaukiainen, A., Salmivalli, C., Björkqvist, K., Österman, K., Lahtinen, A., Kostamo, A., & Lagerspetz, K. (2001). Overt and covert aggression in work settings in relation to the subjective well-being of employees. *Aggressive Behavior, 27*(5), 360-371.
- Kokko, H., Morley, J., Brooks, R., & Jennions, M. D. (2003). The evolution of mate choice and mating biases. *Proc Biol Sci, 270*(1515), 653-664.
- Kosson, D. S., Suchy, Y., Mayer, A. R., & Libby, J. (2002). Facial affect recognition in criminal psychopaths. *Emotion, 2*(4), 398-411.

- Krakowski, M., Czobor, P., Carpenter, M. D., Libiger, J., Kunz, M., Papezova, H., Parker, B. B., Schmader, L., & Abad, T. (1997). Community violence and inpatient assaults: Neurobiological deficits. *Journal of Neuropsychiatry & Clinical Neurosciences.*, 9(4), 549-555.
- Kruh, I. P., Whittemore, K., Arnaut, G. L. Y., Manley, J., Gage, B., & Gagliardi, G. J. (2005). The concurrent validity of the Psychopathic Personality Inventory and its relative association with past violence in a sample of insanity acquittees. *International Journal of Forensic Mental Health*, 4(2), 135-145.
- Langdon, R., Repacholi, B., & Slaughter, V. (2003). Theory of mind and social dysfunction: Psychotic solipsism versus autistic asociality. In *Individual differences in theory of mind: Implications for typical and atypical development* (pp. 241-269). NY, US: Psychology Press.
- 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.
- Leadbeater, B. J., Boone, E. M., Sangster, N. A., & Mathieson, L. C. (2006). Sex differences in the personal costs and benefits of relational and physical aggression in high school. *Aggressive Behavior*, 32(4), 409-419.
- Lederman, C. S., & Brown, E. (2000). *Entangled in the shadows: Girls in the juvenile justice system*. Buffalo, NY: University of Buffalo Law School.
- LeSure-Lester, G. E. (2000). Relation between empathy and aggression and behavior compliance among abused group home youth. *Child Psychiatry & Human Development.*, 31(2), 153-161.
- Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a noninstitutionalized population. *Journal of Personality and Social Psychology*, 68(1), 151-158.
- Lilienfeld, S. O. (1994). Conceptual problems in the assessment of psychopathy. *Clinical Psychology Review*, 14(1), 17-38.
- Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment*, 66(3), 488-524.

- Lilienfeld, S. O., & Fowler, K. A. (2006). The self-report assessment of psychopathy: Problems, pitfalls, and promises. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 107-132). New York: Guilford Press.
- Lilienfeld, S. O., & Widows, M. R. (2005). *Psychopathic Personality Inventory-Revised: Professional Manual*. Lutz, FL: Psychological Assessment Resources, Inc.
- Lipsey, M. W., & Derzon, J. H. (1998). Predictors of violent or serious delinquency in adolescence and early adulthood: A synthesis of longitudinal research. In *Serious & violent juvenile offenders: Risk factors and successful interventions* (pp. 86-105). CA, US: Sage Publications, Inc.
- Little, T. D., Henrich, C., C., Jones, S. M., & Hawley, P. H. (2003). Distinguishing the "whys" from the "whats" of aggressive behaviour. *International Journal of Behavioural Development* 27(2), 122-133.
- Lorenz, A. R., & Newman, J. P. (2002). Deficient response modulation and emotion processing in low-anxious Caucasian psychopathic offenders: Results from a lexical decision task. *Emotion*, 2(2), 91-104.
- Loudin, J. L., Loukas, A., & Robinson, S. (2003). Relational aggression in college students: Examining the roles of social anxiety and empathy. *Aggressive Behavior*, 29, 430-439.
- Lykken, D. T. (1957). A study of anxiety in the sociopathic personality. *Journal of Abnormal and Social Psychology*, 55, 6-10.
- Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 3-13). New York, NY: Guilford Press.
- Lynam, D. R., Whiteside, S., & Joanes, S. (1999). Self-reported psychopathy: A validation study. *Journal of Personality Assessment*, 73(1), 110-132.
- Lynam, D. R., & Widiger, T. A. (2007). Using a general model of personality to identify the basic elements of psychopathy. *Journal of Personality Disorders*, 21(2), 160-178.
- MacNeil, B. M., & Holden, R. R. (2006). Psychopathy and the detection of faking on self-report inventories of personality. *Personality and Individual Differences*, 41, 641-651.
- Mahmut, M. K., Homewood, J., & Stevenson, R. J. (2008). The characteristics of non-criminals with high psychopathy traits: Are they similar to criminal psychopaths? *Journal of Research in Personality*, 42(3), 679-692.

- Marcus, D. K., John, S. L., & Edens, J. F. (2004). A taxometric analysis of psychopathic personality. *Journal of Abnormal Psychology, 113*(4), 626-635.
- Marsee, M. A., & Frick, P. J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology, 35*(6), 969-981.
- Marsee, M. A., Silverthorn, P., & Frick, P. J. (2005). The association of psychopathic traits with aggression and delinquency in non-referred boys and girls. *Behavioral Sciences & the Law, 23*(6), 803-817.
- Marshall, L. A., & Cooke, D. J. (1999). The childhood experiences of psychopaths: A retrospective study of familial and societal factors. *Journal of Personality Disorders, 13*(3), 211-225.
- McCord, W., & McCord, J. (1964). *The psychopath: An essay on the criminal mind.* . Princeton, NJ: D. Van Nostrand.
- McDermott, P. A., Alterman, A. I., Cacciola, J. S., Rutherford, M. J., Newman, J. P., & Mulholland, E. M. (2000). Generality of Psychopathy Checklist--Revised factors over prisoners and substance-dependent patients. *Journal of Consulting and Clinical Psychology, 68*(1), 181-186.
- McHoskey, J. W., Worzel, W., & Szyarto, C. (1998). Machiavellianism and psychopathy. *Journal of Personality and Social Psychology, 74*(1), 192-210.
- Mehrabian, A. (1997). Relations among personality scales of aggression, violence, and empathy: Validation evidence bearing on the risk of eruptive violence scale. *Aggressive Behavior, 23*, 433-445.
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality, 40*, 525-543.
- Meloy, J. R. (2006). Empirical basis and forensic application of affective and predatory violence. *Australian and New Zealand Journal of Psychiatry, 40*, 539-547.
- Melvin, M. D. (2005). *Emotional word recognition and female psychopathy.* Florida State University.
- Miall, D. S. (1989). Beyond the schema given: Affective comprehension of literary narratives. *Cognition & Emotion, 3*, 55-78.
- Miller, J. D., & Lynam, D. R. (2003). Psychopathy and the Five-factor model of personality: A replication and extension. *Journal of Personality Assessment, 81*(2), 168-178.



- Miller, J. D., & Lynam, D. R. (2006). Reactive and proactive aggression: Similarities and differences. *Personality and Individual Differences, 41*(8), 1469-1480.
- Miller, J. D., Lynam, D. R., Widiger, T. A., & Leukefeld, C. (2001). Personality disorders as extreme variants of common personality dimensions: Can the five-factor model adequately represent psychopathy? *Journal of Personality, 69*(2), 253-257.
- Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalizing/antisocial behaviour. *Psychological Bulletin, 103*(3), 324-344.
- Millon, T., & Davis, R. D. (2003). Ten subtypes of psychopathy. In T. Millon, E. Simonsen, M. Birket-Smith & R. D. Davis (Eds.), *Psychopathy: Antisocial, Criminal and Violent Behavior* (pp. 161-170). London: The Guilford Press.
- Millon, T., Simonsen, E., & Birket-Smith, M. (2003). Historical conceptions of psychopathy in the United States and Europe. In T. Millon, E. Simonsen, M. Birket-Smith & R. D. Davis (Eds.), *Psychopathy: Antisocial, criminal and violent behaviour*. New York: Guilford Press.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*(4), 674-701.
- Muncer, S., & Ling, J. (2006). Psychometric analysis of the empathy quotient (EQ) scale. *Personality and Individual Differences, 40*, 1111-1119.
- Neumann, C. S., Malterer, M. B., & Newman, J. P. (2008). Factor structure of the Psychopathic Personality Inventory (PPI): Findings from a large incarcerated sample. *Psychological Assessment, 20*(2), 169-174.
- Newman, J. P. (1998). Psychopathic behaviour: An information processing perspective. In D. J. Cooke, A. E. Forth & R. D. Hare (Eds.), *Psychopathy: Theory, research and implications for society*. Dordrecht, NL: Kulwer Academic Publishers.
- Newman, J. P., Brinkley, C. A., Lorenz, A. R., Hiatt, K. D., & MacCoon, D. G. (2007). Psychopathy as psychopathology: Beyond the clinical utility of the psychopathy checklist-revised. In H. Hervé & J. C. Yuille (Eds.), *The psychopath: Theory, research and practice*. Mahwah, New Jersey: Lawrence Erlbaum.
- Newman, J. P., & Kosson, D. S. (1986). Passive avoidance learning in psychopathic and nonpsychopathic offenders. *Journal of Abnormal Psychology, 95*(3), 252-256.
- Newman, J. P., & Lorenz, A. R. (2003). Response modulation and emotion processing: Implications for psychopathy and other dysregulatory psychopathology. In R. J.

- Davidson, K. Scherer & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 904-930). New York: Oxford University Press.
- Newman, J. P., & Schmitt, W. A. (1998). Passive avoidance in psychopathic offenders: a replication and extension. *Journal of Abnormal Psychology, 107*(3), 527-532.
- Newman, J. P., Schmitt, W. A., & Voss, W. D. (1997). The impact of motivationally neutral cues on psychopathic individuals: Assessing the generality of the response modulation hypothesis. *Journal of Abnormal Psychology, 106*(4), 563-575.
- Nicholls, T. L., Ogloff, J. R. P., Brink, J., & Spidel, A. (2005). Psychopathy in women: A review of its clinical usefulness for assessing risk for aggression and criminality. *Behavioral Sciences & the Law, 23*(6), 779-802.
- Odgers, C. L., Reppucci, N. D., & Moretti, M. M. (2005). Nipping psychopathy in the bud: An examination of the convergent, predictive, and theoretical utility of the PCL-YV among adolescent girls. *Behavioral Sciences & the Law, 23*(6), 743-763.
- Österman, K., Björkqvist, K., Lagerspetz, K. M. J., Kaukiainen, A., Landau, S. F., Fraczek, A., & Caprara, G. V. (1998). Cross-cultural evidence of female indirect aggression. *Aggressive Behavior, 24*, 1-8.
- Ostrov, J. M., & Houston, R. J. (2008). The utility of forms and functions of aggression in emerging adulthood: Association with personality disorder symptomatology. *Journal of Youth and Adolescence, 37*(9), 1147-1158.
- Owens, L., Shute, R., & Slee, P. (2000). "Guess what I just heard!": Indirect aggression among teenage girls in Australia. *Aggressive Behavior, 26*(1), 67-83.
- Parrott, D. J., & Giancola, P. R. (2007). Addressing "the criterion problem" in the assessment of aggressive behavior: Development of a new taxonomic system. *Aggression and Violent Behavior, 12*(3), 280-299.
- Patrick, C. J. (2006). Back to the future: Cleckley as a guide to the next generation of psychopathy research. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 605-617). London: Guilford Press.
- Patrick, C. J., Bradley, M. M., & Lang, P. J. (1993). Emotion in the criminal psychopath: Startle reflex modulation. *Journal of Abnormal Psychology, 102*(1), 82-92.
- Patrick, C. J., Edens, J. F., Poythress, N. G., Lilienfeld, S. O., & Benning, S. D. (2006). Construct validity of the Psychopathic Personality Inventory two-factor model with offenders. *Psychological Assessment, 18*(2), 204-208.

- Paulhus, D. L. (1984). Two-component model of socially desirable responding. *Journal of Personality and Social Psychology*, 46, 598-609.
- Paulhus, D. L. (2002). Socially desirable responding: The evolution of a construct. In H. I. Braun, D. N. Jackson & D. E. Wiley (Eds.), *The role of constructs in psychological and educational measurement* (pp. 49-69). Mahwah, NJ: Erlbaum.
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, machiavellianism and psychopathy. *Journal of Research in Personality*, 36(6), 556-563.
- Pauls, C. A., & Stemmler, G. (2003). Substance and bias in social desirability responding. *Personality and Individual Differences*, 35, 263-275.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design and analysis: An integrated approach*. London: LEA.
- Peets, K., & Kikas, E. (2006). Aggressive strategies and victimization during adolescence: Grade and gender differences, and cross-informant agreement. *Aggressive Behavior*, 32, 68-79.
- Pellegrini, A. D., & Long, J. D. (2003). A sexual selection theory longitudinal analysis of sexual segregation and integration in early adolescence. *Journal of Experimental Child Psychology*, 85, 257-278.
- Penney, S. R., & Moretti, M. M. (2007). The relation of psychopathy to concurrent aggression and antisocial behavior in high-risk adolescent girls and boys. *Behavioral Sciences & the Law*, 25(1), 21-41.
- Pethman, T. M. I., & Erlandsson, S. I. (2002). Aberrant self-promotion or subclinical psychopathy in a Swedish general population. *Psychological Record*, 52(1), 33-50.
- Porter, S., Birt, A. R., & Boer, D. P. (2001). Investigation of the criminal and conditional release profiles of Canadian federal offenders as a function of psychopathy and age. *Law and Human Behavior*, 25(6), 647-661.
- Porter, S., Fairweather, D., Drugge, J., Herve, H., Birt, A., & Boer, D. P. (2000). Profiles of psychopathy in incarcerated sexual offenders. *Criminal Justice and Behavior*, 27(2), 216-233.
- Porter, S., & Woodworth, M. (2006). Psychopathy and aggression. In C. J. Patrick (Ed.), *Handbook of psychopathy*. New York: Guilford.

- Porter, S., Woodworth, M., Earle, J., Drugge, J., & Boer, D. P. (2003). Characteristics of sexual homicides committed by psychopathic and nonpsychopathic offenders. *Law and Human Behavior, 27*(5), 459-470.
- Poulin, F., & Boivin, M. (2000a). Reactive and proactive aggression: Evidence of a two-factor model. *Psychological Assessment, 12*(2), 115-122.
- Poulin, F., & Boivin, M. (2000b). The role of proactive and reactive aggression in the formation and development of boys' friendships. *Developmental Psychology, 36*(2), 233-240.
- Poythress, N. G., Edens, J. F., & Lilienfeld, S. O. (1998). Criterion-related validity of the Psychopathic Personality Inventory in a prison sample. *Psychological Assessment, 10*(4), 426-430.
- Puzzanchera, C., Stahl, A. L., Finnegan, T. A., Tierney, N., & Snyder, H. N. (2003). *Juvenile Court Statistics 1998*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Quinsey, V. L. (2002). Evolutionary theory and criminal behaviour. *Legal and Criminological Psychology, Electronic*(1), 1-13.
- Raine, A., Brennan, P. A., Farrington, D. P., & Mednick, S. A. (1997). *Biosocial bases of violence*. NY, US: Plenum Press.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthamer-Loeber, M., & Liu, J. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior, 32*(2), 159-171.
- Reidy, D. E., Zeichner, A., Miller, J. D., & Martinez, M. A. (2007). Psychopathy and aggression: Examining the role of psychopathy factors in predicting laboratory aggression under hostile and instrumental conditions. *Journal of Research in Personality, 41*(6), 1244-1251.
- Reise, S. P., & Wink, P. (1995). Psychological implications of the psychopathy Q-sort. *Journal of Personality Assessment, 65*(2), 300-312.
- Richardson, D. S., & Green, L. R. (2003). Defining direct and indirect aggression: The Richardson conflict response questionnaire. *Revue Internationale de Psychologie Sociale, 16*(3), 11-30.

- Richell, R. A., Mitchell, D. G. V., Newman, C., Leonard, A., Baron-Cohen, S., & Blair, R. J. R. (2003). Theory of mind and psychopathy: Can psychopathic individuals read the 'language of the eyes'? *Neuropsychologia., Electronic(5)*, 523-526.
- Richetin, J., & Richardson, D. R. (2008). Automatic processes and individual differences in aggressive behaviour. *Aggression and Violent Behavior, 13(6)*, 423-430.
- Riggio, R. E. (1989). *Social Skills Inventory: Research Edition*. Palo Alto, CA: Consulting Psychologists Press.
- Riggio, R. E. (2004). The social skills inventory: Measuring nonverbal and social skills. In V. L. Manusov (Ed.), *Sourcebook of nonverbal measures: Going beyond words* (pp. 25-33). Mahwah, NJ, USA: Lawrence Erlbaum Associates.
- Riggio, R. E., Tucker, J., & Coffaro, D. (1989). Social skills and empathy. *Personality and Individual Differences, 10(1)*, 93-99.
- Robins, L. N. (1966). *Deviant children grown up*. Baltimore: Williams & Wilkins.
- Rogers, J., Viding, E., Blair, R. J., Frith, U., & Happe, F. (2006). Autism spectrum disorder and psychopathy: Shared cognitive underpinnings or double hit? *Psychological Medicine, 36(12)*, 1789-1798.
- Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A.-M. R., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four-factor model. *Criminal Justice and Behaviour, 33(2)*, 135-157.
- Salekin, R. T., Rogers, R., & Sewell, K. W. (1997). Construct validity of psychopathy in a female offender sample: A multitrait-multimethod evaluation. *Journal of Abnormal Psychology, 106(4)*, 576-585.
- Salekin, R. T., Rogers, R., Ustad, K. L., & Sewell, K. W. (1998). Psychopathy and recidivism among female inmates. *Law and Human Behavior, 22(1)*, 109-128.
- Salekin, R. T., Trobst, K. K., & Krioukova, M. (2001). Construct validity of psychopathy in a community sample: A nomological net approach. *Journal of Personality Disorders, 15(5)*, 425-441.
- Sampson, R. J., & Laub, J. H. (2003). Life-course desisters? Trajectories of crime among delinquent boys followed to age 70. *Criminology, 40*, 555-592.
- Sandler, J. C. (2007). Computer equivalency of the Psychopathic Personality Inventory-Revised in a nonincarcerated population. *Criminal Justice and Behavior, 34(3)*, 399-410.

- Sandoval, A.-M. R., Hancock, D., Poythress, N., Edens, J. F., & Lilienfeld, S. (2000). Construct validity of the psychopathic personality inventory in a correctional sample. *Journal of Personality Assessment, 74*(2), 262-281.
- Saunders, P., Huynh, A., & Goodman-Delahunty, J. (2007). Defining workplace bullying behaviour professional lay definitions of workplace bullying. *International Journal of Law and Psychiatry, 30*, 340-354.
- Schmeelk, K. M., Sylvers, P., & Lilienfeld, S. O. (2008). Trait correlates of relational aggression in a nonclinical sample: DSM-IV personality disorders and psychopathy. *Journal of Personality Disorders, 22*(3), 269-283.
- Sellbom, M., & Verona, E. (2007). Neuropsychological correlates of psychopathic traits in a non-incarcerated sample. *Journal of Research in Personality, 41*, 276-294.
- Sergeant, M. J. T., Dickins, T. E., Davies, M. N. O., & Griffiths, M. D. (2006). Aggression, empathy and sexual orientation in males. *Personality and Individual Differences, 40*(3), 475-486.
- Silva, J. A., Weinstock, R., Ferrari, M. M., Derecho, D. V., & Leong, G. B. (2001). A classification of psychological factors leading to violent behavior in posttraumatic stress disorder. *J Forensic Sci, 46*(2), 309-316.
- Silver, E., Mulvey, E. P., & Monahan, J. (1999). Assessing violence risk among discharged psychiatric patients: Toward an ecological approach. *Law and Human Behavior, 23*(2), 237-255.
- Skeem, J. L., & Cooke, D. J. (in press). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment*.
- Skeem, J. L., Miller, J. D., Mulvey, E., Tiemann, J., & Monahan, J. (2005). Using a five-factor lens to explore the relation between personality traits and violence in psychiatric patients. *Journal of Consulting and Clinical Psychology, 73*(3), 454-465.
- Skeem, J. L., Mulvey, E. P., & Grisso, T. (2003). Applicability of traditional and revised models of psychopathy to the Psychopathy Checklist: Screening Version. *Psychological Assessment, 15*(1), 41-55.
- Skilling, T. A., Harris, G. T., Rice, M. E., & Quinsey, V. L. (2002). Identifying persistently antisocial offenders using the Hare Psychopathy Checklist and DSM antisocial personality disorder criteria. *Psychological Assessment, 14*(1), 27-38.

- Stöber, J., Dette, D. E., & Musch, J. (2002). Comparing continuous and dichotomous scoring of the Balanced Inventory of Desirable Responding. *Journal of Personality Assessment, 78*(2), 370-389.
- Strand, S., & Belfrage, H. (2005). Gender differences in psychopathy in a Swedish offender sample. *Behavioural Sciences and the Law, 23*, 837-850.
- Sullivan, E. A., Abramowitz, C. S., Lopez, M., & Kosson, D. S. (2006). Reliability and construct validity of the Psychopathy Checklist-Revised for Latino, European American, and African American male inmates. *Psychological Assessment, 18*(4), 382-392.
- Suomi, S. J. (2005). Genetic and Environmental Factors Influencing the Expression of Impulsive Aggression and Serotonergic Functioning in Rhesus Monkeys. In R. E. Tremblay, W. W. Hartup & J. Archer (Eds.), *Developmental origins of aggression* (pp. 63-82). NY, US: Guilford Press.
- Suris, A., Lind, L., Emmett, G., Borman, P. D., Kashner, M., & Barratt, E. S. (2004). Measures of aggressive behavior: Overview of clinical and research instruments. *Aggression and Violent Behavior, 9*(2), 165-227.
- Sutton, J., & Keogh, E. (2000). Social competition in school: Relationships with bullying, Machiavellianism and personality. *British Journal of Educational Psychology, 70*, 443-456.
- Sutton, J., Smith, P. K., & Swettenham, J. (1999). Social cognition and bullying: Social inadequacy or skilled manipulation? *British Journal of Developmental Psychology, 17*, 453-450.
- Sutton, S. K., Vitale, J. E., & Newman, J. P. (2002). Emotion among women with psychopathy during picture perception. *Journal of Abnormal Psychology, 111*(4), 610-619.
- Toldos, M. P. (2005). Sex and age differences in self-estimated physical, verbal and indirect aggression in Spanish adolescents. *Aggressive Behavior, 31*(1), 13-23.
- Tremblay, R. E., & Ewart, L. A. (2005). The Buss and Perry Aggression Questionnaire and its relations to values, the Big Five, provoking hypothetical situations, alcohol consumption patterns and alcohol expectancies. *Personality and Individual Differences, 38*, 337-346.
- Tremblay, R. E., Japel, C., Perusse, D., McDuff, P., Boivin, M., Zoccolillo, M., & Montplaisir, J. (1999). The search for the age of 'onset' of physical aggression:

- Rousseau and Bandura revisited. *Criminal Behaviour and Mental Health*, 9(1), 8-23.
- Trivers, R. L. (1972). Personal investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871-1971* (pp. 136-179). Chicago: Aldine.
- Ullrich, S., Farrington, D. P., & Coid, J. W. (2008). Psychopathic personality traits and life-success. *Personality and Individual Differences*, 44(5), 1162-1171.
- Underwood, M. K. (2003). *Social aggression among girls*. NY, US: Guilford Press.
- Uzieblo, K., Verschuere, B., & Crombez, G. (2007). The Psychopathic Personality Inventory: Construct validity of the two-factor structure. *Personality and Individual Differences*, 43(4), 657-667.
- Vaillancourt, T. (2005). Indirect aggression among humans: Social construct or evolutionary adaptation? In R. E. Tremblay, W. W. Hartup & J. Archer (Eds.), *Developmental origins of aggression* New York, NY, USA: Guilford Publications.
- Vaillancourt, T., Brendgen, M., Boivin, M., & Tremblay, R. E. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time? *Child Development*, 74(6), 1628-1638.
- Vaillancourt, T., & Hymel, S. (2004). The social context of children's aggression. In M. M. Moretti, C. Odgers & M. Jackson (Eds.), *Girls and aggression: Contributing factors and intervention principles* (pp. 57-73). NY, US: Kluwer Academic/Plenum Publishers.
- Vaillancourt, T., Miller, J. L., Fagbemi, J., Cote, S., & Tremblay, R. E. (2007). Trajectories and predictors of indirect aggression: Results from a nationally representative longitudinal study of Canadian children aged 2-10. *Aggressive Behavior*, 33(4), 314-326.
- Vaillancourt, T., & Sharma, A. (2008). Undergraduate females' use of indirect aggression: Under the right circumstances everyone aggresses, *International Society for Research on Aggression XVIII. World Meeting* Budapest, Hungary.
- Vanman, E. J., Mejia, V. Y., Dawson, M. E., Schell, A. M., & Raine, A. (2003). Modification of the startle reflex in a community sample: Do one or two dimensions of psychopathy underlie emotional processing? *Personality and Individual Differences*, 35(8), 2007-2021.



- Verona, E., Joiner, T. E., & Patrick, C. J. (2001). The reliability and validity of the Psychopathy Checklist - Revised in a sample of female offenders. *Criminal Justice and Behaviour*, 29, 202-231.
- Verona, E., Patrick, C. J., & Joiner, T. E. (2001). Psychopathy, Antisocial Personality, and Suicide Risk. *Journal of Abnormal Psychology*, 110(3), 462-470.
- Viding, E., Blair, R. J. R., Moffitt, T. E., & Plomin, R. (2005). Evidence for substantial genetic risk for psychopathy in 7-year-olds. *Journal of Child Psychology and Psychiatry*, 46(6), 592-597.
- Viding, E., Simmonds, E., Petrides, K. V., & Frederickson, N. (2009). The contribution of callous-unemotional traits and conduct problems to bullying in early adolescence. *The Journal of Child Psychology and Psychiatry*, 4(50), 471-481.
- Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a four-factor model of psychopathy and its association with ethnicity, gender, intelligence, and violence. *Journal of Consulting and Clinical Psychology*, 73(3), 466-476.
- Vitale, J. E., & Newman, J. P. (2001). Response perseveration in psychopathic women. *Journal of Abnormal Psychology*, 110(4), 644-647.
- Vitale, J. E., Smith, S. S., Brinkley, C. A., & Newman, J. P. (2002). The reliability and validity of the Psychopathy Checklist--Revised in a sample of female offenders. *Criminal Justice and Behavior*, 29(2), 202-231.
- Vitaro, F., & Brendgen, M. (2005). Proactive and reactive aggression: A developmental perspective. In R. E. Tremblay, W. W. Hartup & J. Archer (Eds.), *Developmental origins of aggression* (pp. 178-199). New York: Guilford Publishers.
- Vitaro, F., Brendgen, M., & Barker, E. D. (2006). Subtypes of aggressive behaviors: A developmental perspective. *International Journal of Behavioral Development*, 30(1), 12-19.
- Vitaro, F., Brendgen, M., & Tremblay, R. E. (2002). Reactively and proactively aggressive children: Antecedent and subsequent characteristics. *Journal of Child Psychology and Psychiatry*, 43(4), 495-506.
- Walker, S., Richardson, D. S., & Green, L. R. (2000). Aggression among older adults: The relationship of interaction networks and gender role to direct and indirect responses. *Aggressive Behavior*, 26(2), 145-154.

- Warren, J. I., Burnette, M. L., South, S. C., Chauhan, P., Bale, R., Friend, R., & Van Patten, I. (2003). Psychopathy in women: Structural modelling and comorbidity. *International Journal of Law and Psychiatry*, 26(3), 223-242.
- Warren, J. I., & South, S. C. (2006). Comparing the constructs of antisocial personality disorder and psychopathy in a sample of incarcerated women. *Behavioral Sciences & the Law*, 24(1), 1-20.
- Warren, J. I., South, S. C., Burnette, M. L., Rogers, A., Friend, R., Bale, R., & Van Patten, I. (2005). Understanding the risk factors for violence and criminality in women: The concurrent validity of the PCL-R and HCR-20. *International Journal of Law and Psychiatry*, 28(3), 269-289.
- Weizmann-Henelius, G., Viemero, V., & Eronen, M. (2003). The violent female perpetrator and her victim. *Forensic Science International*, 133, 197-203.
- Werner, N. E., & Crick, N. R. (1999). Relational aggression and social-psychological adjustment in a college sample. *Journal of Abnormal Psychology*, 108(4), 615-623.
- Whalen, P. J., Rauch, S. L., Etkoff, N. L., McInerney, S. C., Lee, M. B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. *Journal of Neuroscience*, 18(1), 411-418.
- Williams, K. M., Nathanson, C., & Paulhus, D. L. (2002). Factor structure of the Self-report Psychopathy scale, *meeting of the Canadian Psychology Association*. Vancouver, Canada.
- Williams, K. M., Nathanson, C., & Paulhus, D. L. (2003). Structure and validity of the Self-Report Psychopathy Scale-III in normal populations, *111th annual convention of the American Psychological Association*. Toronto, Canada.
- Williams, K. M., & Paulhus, D. L. (2004). Factor structure of the Self-Report Psychopathy scale (SRP-II) in non-forensic samples. *Personality and Individual Differences*, 27, 765-778.
- Williamson, S., Harpur, T. J., & Hare, R. D. (1991). Abnormal processing of affective words by psychopaths. *Psychophysiology*, 28(3), 260-273.
- Woodworth, M., & Porter, S. (2002). In cold blood: Characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology*, 111(3), 436-445.
- Wootton, J. M., Frick, P. J., Shelton, K. K., & Silverthorn, P. (1997). Ineffective parenting and childhood conduct problems: The moderating role of callous-unemotional traits. *Journal of Consulting and Clinical Psychology*, 65(2), 301-308.

- Xie, H., Cairns, B. D., & Cairns, R. B. (2005). The development of aggressive behaviors among girls: Measurement issues, social functions and differential trajectories. In D. J. Pepler (Ed.), *Development and treatment of girlhood aggression* (pp. 105-136). Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Xie, H., Cairns, R. B., & Cairns, B. D. (2002). The development of social aggression and physical aggression: A narrative analysis of interpersonal conflicts. *Aggressive Behavior, 28*(5), 341-355.
- Zagon, I. K., & Jackson, H. J. (1994). Construct validity of a psychopathy measure. *Personality and Individual Differences, 17*(1), 125-135.

## APPENDIXES

### Appendix 4.1 – Indirect Aggression Scale original version

#### Indirect Aggression Scale

The indirect aggression scale is designed to measure aggressive behaviours of a social, as opposed to physical, nature. Please indicate for each item whether you have used the behaviour listed against another person within the last 12 months, with 1 = ‘Never’, 2 = ‘Once or twice’, 3 = ‘Sometimes’, 4 = ‘Often’ and 5 = ‘Regularly’. Please try to answer all items as honestly as possible.

	Never	Once or twice	Some- times	Often	Regularly
1) Use my relationship with them to try and get them to change a decision	1	2	3	4	5
2) Used sarcasm to insult them	1	2	3	4	5
3) Tried to influence them by making them feel guilty	1	2	3	4	5
4) Withheld information from them that the rest of the group is let in on	1	2	3	4	5
5) Purposefully left them out of activities	1	2	3	4	5
6) Made other people not talk to them	1	2	3	4	5
7) Excluded them from a group	1	2	3	4	5
8) Used their feelings to coerce them	1	2	3	4	5
9) Made negative comments about their physical appearance	1	2	3	4	5
10) Used private in-jokes to exclude them	1	2	3	4	5
11) Used emotional blackmail on them	1	2	3	4	5
12) Imitated them in front of others	1	2	3	4	5
13) Spread rumours about them	1	2	3	4	5
14) Played a nasty practical joke on them	1	2	3	4	5
15) Done something to try and make them look stupid	1	2	3	4	5
16) Pretended to be hurt and/or angry with them to make them feel bad about him/her-self	1	2	3	4	5

17) Made them feel that they don't fit in	1	2	3	4	5
18) Intentionally embarrassed them around others	1	2	3	4	5
19) Stopped talking to them	1	2	3	4	5
20) Put undue pressure on them	1	2	3	4	5
21) Omitted them from conversations on purpose	1	2	3	4	5
22) Made fun of them in public	1	2	3	4	5
23) Called them names	1	2	3	4	5
24) Criticised them in public	1	2	3	4	5
25) Turned other people against them	1	2	3	4	5

Forrest, S., Eatough, V., & Shevlin, M. (2005). Measuring adult indirect aggression: The development and psychometric assessment of the indirect aggression scales. *Aggressive Behavior, 31*, 84-97.

## Appendix 5.1 – Indirect Aggression Scale revised version

### IAS

Please indicate for each item how characteristic of you it would be to use this behaviour against someone else, on a scale of 1 to 5, with 1 as *extremely uncharacteristic of me* and 5 as *extremely characteristic of me*.

	Extremely uncharacteristic of me			Extremely characteristic of me	
1) Use my relationship with them to try and get them to change a decision	1	2	3	4	5
2) Use sarcasm to insult them	1	2	3	4	5
3) Try to influence them by making them feel guilty	1	2	3	4	5
4) Withhold information from them that the rest of the group is let in on	1	2	3	4	5
5) Purposefully leave them out of activities	1	2	3	4	5
6) Make other people not talk to them	1	2	3	4	5
7) Exclude them from a group	1	2	3	4	5
8) Use their feelings to coerce them	1	2	3	4	5
9) Make negative comments about their physical appearance	1	2	3	4	5
10) Use private in-jokes to exclude them	1	2	3	4	5
11) Use emotional blackmail on them	1	2	3	4	5
12) Imitate them in front of others	1	2	3	4	5
13) Spread rumours about them	1	2	3	4	5
14) Play a nasty practical joke on them	1	2	3	4	5
15) Do something to try and make them look stupid	1	2	3	4	5
16) Pretend to be hurt and/or angry with them to make them feel bad about him/her-self	1	2	3	4	5
17) Make them feel that they don't fit in	1	2	3	4	5
18) Intentionally embarrass them around others	1	2	3	4	5
19) Stop talking to them	1	2	3	4	5
20) Put undue pressure on them	1	2	3	4	5

21) Omit them from conversations on purpose	1	2	3	4	5
22) Make fun of them in public	1	2	3	4	5
23) Call them names	1	2	3	4	5
24) Criticise them in public	1	2	3	4	5
25) Turn other people against them	1	2	3	4	5

## Appendix 5.2 – The Empathy Quotient scale.

### The EQ

Below is a list of statements. Please read each statement *carefully* and rate how strongly you agree or disagree with it by circling your answer. There are no right or wrong answers, or trick questions.

1. I can easily tell if someone else wants to enter a conversation.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
2. I prefer animals to humans.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
3. I try to keep up with the current trends and fashions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
4. I find it difficult to explain to others things that I understand easily, when they don't understand it first time.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
5. I dream most nights.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
6. I really enjoy caring for other people.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
7. I try to solve my own problems rather than discussing them with others.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
8. I find it hard to know what to do in a social situation.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
9. I am at my best first thing in the morning.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
10. People often tell me that I went too far in driving my point home in a discussion	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
11. It doesn't bother me too much if I am late meeting a friend.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
12. Friendships and relationships are just too	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree



difficult, so I tend not to bother with them.	agree	agree	disagree	disagree
13. I would never break a law, no matter how minor.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
14. I often find it difficult to judge if something is rude or polite.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
15. 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
16. I prefer practical jokes to verbal humour.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
17. I live life for today rather than the future.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
18. When I was a child, I enjoyed cutting up worms to see what would happen.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
19. I can pick up quickly if someone says one thing but means another.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
20. I tend to have very strong opinions about morality.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
21. It is hard for me to see why some things upset people so much.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
22. I find it easy to put myself in somebody else's shoes.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
23. I think that good manners are the most important thing a parent can teach their child.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
24. I like to do things on the spur of the moment.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
25. I am good at predicting how someone will feel.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
26. I am quick to spot when someone in a group is feeling awkward or uncomfortable.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
27. If I say something that someone else is offended by, I think that's their problem not mine.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree

28. If anyone asked me if I liked their haircut, I would reply truthfully even if I didn't like it.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
29. I can't always see why someone should have felt offended by a remark.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
30. People often tell me that I am very unpredictable.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
31. I enjoy being the centre of attention at any social gathering.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
32. Seeing people cry doesn't really upset me.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
33. I enjoy having discussion about politics.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
34. I am very blunt, which some people take to be rudeness, even though this is unintentional.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
35. I don't tend to find social situations confusing.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
36. Other people tell me I am good at understanding how they are feeling and what they are thinking	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
37. When I talk to people, I tend to talk about their experiences rather than my own.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
38. It upsets me to see an animal in pain.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
39. I am able to make decisions without being influenced by people's feelings.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
40. I can't relax until I have done everything I had planned to do that day.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
41. I can easily tell if someone else is interested or bored with what I am saying.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
42. I get upset if I see people suffering on news programmes.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
43. Friends usually talk to me about their problems as they say that I am very understanding.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree

44. I can sense if I am intruding, even if the other person doesn't tell me.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
45. I often start new hobbies but quickly become bored with them and move on to something else.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
46. People sometimes tell me that I have gone too far with teasing.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
47. I would be too nervous to go on a big rollercoaster	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
48. other people, often say that I am insensitive, though I don't always see why.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
49. If I see a stranger in a group, I think that it's up to them to make an effort to join in.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
50. I usually stay emotionally detached when watching a film	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
51. I like to be very organized in day-to-day life and often make lists of the chores I have to do.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
52. I can tune into how someone else feels rapidly and intuitively.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
53. I don't like to take risks.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
54. I can easily work out what another person might want to talk about.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
55. I can tell if someone is masking their true emotion.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
56. Before making a decision I always weigh up the pros and cons.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
57. I don't consciously work out the rules of social situations.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
58. I am good at predicting what someone will do.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
59. I tend to get emotionally involved with a friend's problems.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree

60. I can usually appreciate the other person's viewpoint, even if I don't agree with it.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
---	----------------	----------------	-------------------	-------------------

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.

## Appendix 5.3 – The Aggression Questionnaire

### AQ

Please indicate how characteristic of you is each of the following statements on a 1 to 5 scale, whereby 1 would be *extremely uncharacteristic of me* and 5 would be *extremely characteristic of me*.

	Extremely uncharacteristic of me				Extremely characteristic of me
1. I know that “friends” talk about me behind my back	1	2	3	4	5
2. My friends say that I’m somewhat argumentative	1	2	3	4	5
3. When frustrated, I let my irritation show	1	2	3	4	5
4. I am sometimes eaten up with jealousy	1	2	3	4	5
5. I can’t help getting into arguments when people disagree with me	1	2	3	4	5
6. I have threatened people I know	1	2	3	4	5
7. I tell my friends openly when I disagree with them	1	2	3	4	5
8. Sometimes I fly off the handle for no good reason	1	2	3	4	5
9. Other people always seem to get the breaks	1	2	3	4	5
10. I flare up quickly but get over it quickly	1	2	3	4	5
11. Once in a while I can’t control the urge to strike another person	1	2	3	4	5
12. I wonder why sometimes I feel so bitter about things	1	2	3	4	5
13. If I have to resort to violence to protect my rights I will	1	2	3	4	5
14. I have become so mad that I have broken things	1	2	3	4	5
15. I can think of no good reason for ever hitting a person	1	2	3	4	5
16. I sometimes feel that people are laughing at me behind my back	1	2	3	4	5
17. Some of my friends think I’m a hothead	1	2	3	4	5
18. There are people who pushed me so far that we came to blows	1	2	3	4	5
19. Given enough provocation, I may hit another person	1	2	3	4	5
20. If somebody hits me, I hit back	1	2	3	4	5

21. I sometimes feel like a powder keg ready to explode	1	2	3	4	5
22. I am suspicious of overly friendly strangers	1	2	3	4	5
23. I am an even-tempered person	1	2	3	4	5
24. I get into fights a little more than the average person	1	2	3	4	5
25. At times I feel I have gotten a raw deal out of life	1	2	3	4	5
26. I often find myself disagreeing with people	1	2	3	4	5
27. I have trouble controlling my temper	1	2	3	4	5
28. When people annoy me, I may tell them what I think of them	1	2	3	4	5
29. When people are especially nice, I wonder what they want	1	2	3	4	5

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63, 452-459.

## Appendix 5.4 – The Balanced Inventory of Desirable Responding version 6

### BIDR Version 6

Please indicate on a scale from 1 (*not true*) to 7 (*very true*) how much you agree with each statement below.

	Not true						Very True
1. My first impressions of people usually turn out to be right	1	2	3	4	5	6	7
2. It would be hard for me to break any of my bad habits	1	2	3	4	5	6	7
3. I don't care to know what other people really think of me	1	2	3	4	5	6	7
4. I have not always been honest with myself	1	2	3	4	5	6	7
5. I always know why I like things	1	2	3	4	5	6	7
6. When my emotions are aroused, it biases my thinking	1	2	3	4	5	6	7
7. Once I've made up my mind, other people can seldom change my opinion	1	2	3	4	5	6	7
8. I am not a safe driver when I exceed the speed limit	1	2	3	4	5	6	7
9. I am fully in control of my own fate	1	2	3	4	5	6	7
10. It's hard for me to shut off a disturbing thought	1	2	3	4	5	6	7
11. I never regret my decisions.	1	2	3	4	5	6	7
12. I sometimes lose out on things because I can't make up my mind soon enough	1	2	3	4	5	6	7
13. The reason I vote is because my vote can make a difference	1	2	3	4	5	6	7
14. My parents were not always fair when they punished me	1	2	3	4	5	6	7
15. I am a completely rational person	1	2	3	4	5	6	7
16. I rarely appreciate criticism	1	2	3	4	5	6	7
17. I am very confident of my judgments	1	2	3	4	5	6	7
18. I have sometimes doubted my ability as a lover	1	2	3	4	5	6	7

19. It's all right with me if some people happen to dislike me	1	2	3	4	5	6	7
20. I don't always know the reasons why I do the things I do	1	2	3	4	5	6	7
21. I sometimes tell lies if I have to	1	2	3	4	5	6	7
22. I never cover up my mistakes	1	2	3	4	5	6	7
23. There have been occasions when I have taken advantage of someone	1	2	3	4	5	6	7
24. I never swear	1	2	3	4	5	6	7
25. I sometimes try to get even rather than forgive and forget	1	2	3	4	5	6	7
26. I always obey laws, even if I'm unlikely to be caught	1	2	3	4	5	6	7
27. I have said something bad about a friend behind his or her back	1	2	3	4	5	6	7
28. When I hear people talking privately, I avoid listening	1	2	3	4	5	6	7
29. I have received too much change from a salesperson without telling him or her	1	2	3	4	5	6	7
30. I always declare everything at customs	1	2	3	4	5	6	7
31. When I was young I sometimes stole things	1	2	3	4	5	6	7
32. I have never dropped litter on the street	1	2	3	4	5	6	7
33. I sometimes drive faster than the speed limit	1	2	3	4	5	6	7
34. I never read sexy books or magazines	1	2	3	4	5	6	7
35. I have done things that I don't tell other people about	1	2	3	4	5	6	7
36. I never take things that don't belong to me	1	2	3	4	5	6	7
37. I have taken sick-leave from work or school even though I wasn't really sick	1	2	3	4	5	6	7
38. I have never damaged a library book or store merchandise without reporting it	1	2	3	4	5	6	7
39. I have some pretty awful habits	1	2	3	4	5	6	7
40. I don't gossip about other people's business	1	2	3	4	5	6	7

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology*, 46, 598-609.



**Appendix 8.1 - Factor analysis of the Proactive and Reactive Indirect Aggression Scales from Study 5**

	Social Exclusionary Behaviours	Guilt Induction	Malicious Humour
Reactive 7 - Exclude them from a group	.826		
Reactive 6 - Make other people not talk to them	.761		
Reactive 5 - Purposefully leave them out of activities	.754	.403	
Reactive 17 - Make them feel that they don't fit in	.748		.510
Reactive 4 - Withhold information from them that the rest of the group is let in on	.738		
Reactive 25 - Turn other people against them	.729		.454
Reactive 10 - Use private in-jokes to exclude them	.695	.404	.436
Reactive 21 - Omit them from conversation on purpose	.695		
Proactive 21 - Omit them from conversation on purpose	.678		
Proactive 19 - Stop talking to them	.674		.426
Proactive 10 - Use private in-jokes to exclude them	.649		.578
Proactive 25 - Turn other people against them	.640		.411
Reactive 19 - Stop talking to them	.635		
Proactive 17 - Make them feel that they don't fit in	.612		.516
Reactive 15 - Do something to try and make them look stupid	.610	.518	.592
Proactive 7 - Exclude them from a group	.591		
Proactive 5 - Purposefully leave them out of activities	.558		
Reactive 13 - Spread rumours about them	.494		

	Social Exclusionary Behaviours	Guilt Induction	Malicious Humour
Proactive 4 - Withhold information from them that the rest of the group is let in on	.492		
Proactive 6 - Make other people not talk to them	.468		
Proactive 13 - Spread rumours about them	.424		
Reactive 8 - Use their feelings to coerce them		.815	
Reactive 3 - Try to influence them by making them feel guilty	.449	.810	
Proactive 8 - Use their feelings to coerce them		.689	
Reactive 11 - Use emotional blackmail on them		.687	
Reactive 20 - Put undue pressure on them	.436	.678	.469
Reactive 1 - Use my relationship with them to try and get them to change a decision		.655	
Proactive 16 - Pretend to be hurt and/or angry with them to make them feel about him/her-self		.620	
Reactive 2 - Use sarcasm to insult them	.405	.611	.490
Proactive 3 - Try to influence them by making them feel guilty		.607	
Reactive 16 - Pretend to be hurt and/or angry with them to make them feel about him/her-self		.606	
Reactive 18 - Intentionally embarrass them around others	.586	.604	.596
Proactive 11 - Use emotional blackmail on them		.576	
Reactive 24 - Criticise them in public	.509	.576	.525
Proactive 20 - Put undue pressure on them	.430	.526	.506
Proactive 1 - Use my relationship with them to try and get them to change a decision		.500	
Proactive 22 - Make fun of them in public			.803
Proactive 23 - Call them names			.753
Proactive 15 - Do something to try and make them look stupid	.560		.704
Reactive 22 - Make fun of them in public	.518	.519	.686

	Social Exclusionary Behaviours	Guilt Induction	Malicious Humour
Proactive 14 - Play a nasty practical joke on them			.662
Reactive 23 - Call them names	.420	.454	.644
Reactive 12 - Imitate them in front of others	.543		.634
Proactive 24 - Criticise them in public	.417	.454	.628
Reactive 14 - Play a nasty practical joke on them			.604
Proactive 12 - Imitate them in front of others			.596
Proactive 18 - Intentionally embarrass them around others	.455	.417	.569
Reactive 9 - Make negative comments about their physical appearance			.566
Proactive 9 - Make negative comments about their physical appearance			.553
Proactive 2 - Use sarcasm to insult them		.469	.511

Note: item loading <.04 were suppressed to increase clarity of the resultant factor structure

**Appendix 8.2 - Table of correlations between psychopathy, indirect aggression, direct aggression and empathy from Study 5**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Psychopathy Total	-															
2. Coldheartedness	.41*	-														
3. Fearless Dominance	.72*	.15*	-													
4. Impulsive Antisociality	.80*	.20*	.20*	-												
5. Indirect Aggression Total	.49*	.22*	.10	.61*	-											
6. Social Exclusionary Behaviours	.38*	.25*	.01	.50*	.88*	-										
7. Guilt Induction	.39*	.05	.07	.52*	.82*	.56*	-									
8. Malicious Humour	.53*	.24*	.19*	.58*	.89*	.68*	.64*	-								
9. Physical Aggression	.43*	.29*	.17*	.42*	.49*	.41*	.35*	.51*	-							

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10. Verbal Aggression	.52*	.31*	.23*	.51*	.58*	.45*	.44*	.62*	.49*	-						
11. Social Skills Emotion	.33*	-.29*	.52*	.15*	-.02	-.09	.05	.00	.11	.01	-					
12. Emotion Control	.29*	.13	.37*	.08	-.03	-.01	-.08	.01	.02	-.04	.37*	-				
13. Emotion Sensitivity	.10	-.40*	.24*	.08	-.09	-.15*	-.01	-.08	.02	-.03	.83*	.01	-			
14. Emotion Expressivity	.20*	-.24**	.31*	.11	.10	.01	.20*	.08	.16*	.10	.56*	-.41**	.46*	-		
15. Empathy Total	-.31*	-.49*	.06	-.38*	-.42*	-.39*	-.28*	-.42*	-.31*	-.44*	.53*	.01	.65*	.27**	-	
16. Cognitive Empathy	.05	-.17*	.22*	-.06	-.17*	-.20*	-.11	-.14	-.01	-.10	.59*	.09	.71*	.24*	-.77*	-
17. Emotional Reactivity	-.46*	-.71*	-.11	-.40*	-.43*	-.42*	-.25*	-.41*	-.35*	-.44*	.38*	-.14*	.51*	.31*	.79*	.37*

\* p < .05

**Appendix 9.1 – Example item from the Reading the Mind in the Eyes Test**

jealous

panicked



arrogant

hateful

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 Psychology and Psychiatry*, 42, 241-251.

**Appendix 9.2 – Modified Gernsbacher emotional stories. Target sentences given in bold.**

Panic Congruent:

Cameron was on the train home after returning from holiday. It was not far to his stop, so he started to get his luggage down from the luggage rack. He got off the train and made his way home. Outside his front door he looked in his case to get his small bag that had his keys and wallet in, so he could open the door. He could not find them, he looked through the whole case and still could not find them. He thought he must have left them on the train. **Cameron started to panic at what had happened.**

Panic Incongruent:

Sue was out walking with her friend Matt. They were walking along some cliffs by the sea. Matt walked over to the edge to take a look out to sea. Sue shouted over to him to be careful, and just as she did Matt lost his footing and slipped. Although a little hurt he managed to pull himself back up. **When Matt slipped and fell, Sue felt calm.**

Sad Congruent:

Pam had just returned from her regular Tuesday visit to the nursing home. Today, there had been several problems. One elderly patient had died. Another had fallen and broken her hip. All their faces had looked wrinkled, withered and neglected. The sheer magnitude of the problems simply overcame Pam and a tear ran slowly down her cheek. **Pam felt very sad.**

Sad Incongruent:

Alison was on her way to the vet. Her cat had been unwell for sometime. It had been given medication, but only two days ago the cat took a turn for the worse. So Alison decided to take the cat to the vet. Alison had had the cat since she was a child. After examination the vet decided it would be better for the cat to be put to sleep. **Alison was full of joy.**

Elated Congruent:

Sarah finished university two months ago and has been looking for work. She had been to many interviews. Three weeks ago she attended an interview for a job that she really wanted. The competition for the position was extremely strong and she was not sure how she had done. The company called her to offer her the job. Sarah could hardly believe it. **Sarah felt elated.**

Elated Incongruent:

Tom enjoyed doing crosswords and competitions. He had been doing crosswords for years. He would do about three each day. He sent off his entries every week. But so far he had never won anything. One morning there was a letter stating that he had won £500. **Tom was disheartened.**

Empathy Congruent:

Jennifer called her best friend Stacie with the terrible news. Jennifer's grandmother had just died. She was in a state of shock. She and her grandmother had been so close. Stacie listened to Jennifer's trembling voice, and said she'd come over right away. Stacie drove to Jennifer's house immediately. **Stacie felt empathy toward her best friend Jennifer.**



Empathy Incongruent:

Michael had had a really bad day. He called his friend Mark to tell him about his day. Michael first of all slept in and was late for his train that he needed to get for his interview. Michael also felt that the interview had gone badly from the start as he arrived 10 minutes late. On the way back home Michael got his wallet stolen. Michael wanted the day to be over and could not believe the string of bad luck. **Mark felt indifference toward his friend Michael.**

Anxious Congruent:

Hannah was walking through a darkened park at night. She knew that some other people had been attacked in that park. However, this was the quickest route home. Hannah had walked this way many times. She walked quickly as she thought she had heard footsteps behind her. She kept thinking about the recent attacks. **Hannah felt anxious.**

Anxious Incongruent:

Louis went to the local animal park. He really like animals but was quite scared of snakes. He had been having a nice day at the park and the last place they were to visit was the reptile house. When they got there a warden was taking out a snake for the public to see. Louis went in reluctantly and he could feel his heartbeat increase as he got closer to the snake. He moved slowly closer and plucked up the courage to touch the snake. **Louis was unconcerned.**

Happy Congruent:

For Trevor, this had to be the best week of his 23-year life. Tomorrow he would be graduating from university. He had received first class honours in his degree. Just yesterday he received a formal job acceptance letter. This job was with a company he

really wanted to work for. It appeared that recently everything seemed to be going in Trevor's favour. **Trevor was happy.**

Happy Incongruent:

Danny was on the way to the airport to pick up his best friend Tess. Tess had been on a year long trip to the United States. Although they had been in contact occasionally on the phone and via e-mail, they had still really missed each other. They had been friends since primary school. Danny waited for Tess at arrivals. Tess came running to meet her friend. **Danny felt depressed.**

Guilt Congruent:

Joe worked at the local shop to get spending money while in school. One night, his best friend, Tom, came in to buy a drink. Joe needed to go back to the storage room for a second. While he was away, Tom noticed the cash register was open. Tom couldn't resist the open drawer and quickly took a ten pound note. Later that week, Tom learned that Joe had been sacked from the shop because his cash had been low one night. **It would be weeks before Tom's feeling of guilt would subside.**

Guilt Incongruent:

John worked at a restaurant in the city. It was Saturday afternoon and John was due to be at work shortly. John liked his employers but decided to call in work saying that he was too unwell to work. John knew it would be a busy evening and that he would be leaving them short staffed. But there was also a concert that he wanted to go to. John called his employers and they accepted John's story. **It would be weeks before John's feeling of pride would subside.**

Disgust Congruent:

Paul had been left to clean the flat again. His flatmate did little to help and often left the flat in quite a mess. Paul decided to start with the fridge. It had not been cleaned since the last time he had done it. He opened the fridge door. Paul saw some rotten meat at the back of the fridge that belonged to his flatmate. **This filled Paul with disgust.**

Disgust Incongruent:

The man was lying face down, probably unconscious, on the busy pavement. Other men and women bustled by on their way to work. Mark, who was late again, almost tripped over the man. "Why doesn't someone move this guy so people can get through," Mark yelled. He jabbed the man with his foot and then continued on his way, laughing. Mark called his friend Stan to joke about what he had just done. **This filled Stan with admiration.**

Despair Congruent:

Ken was talking to his tutor. She was reviewing with him the fact that he had to make over 50% to stay on the course. Ken wished his percentage would have improved. But he just found out that he was going to fail four of his modules. It was too late in the term to do anything about it. Perhaps a degree was no longer in his reach. **Ken was filled with despair.**

Despair Incongruent:

Sam was taking his driving test. The examiner came into the car and they started the test. From early on in the test Sam was shaking and doubting himself. He started to make small errors, and did not manage to do one of the manoeuvres as well as he had done when practicing. The test was over and they made their way back to the test centre. It was obvious that Sam had made many errors, and knew that he must have failed his test. **Sam was filled with hope.**

#### Anger Congruent:

Tracy now considered Patti to be an ex-friend. She had trusted Patti with her deepest, most private, secrets. And now it seemed that everyone in the street knew of them. Tracy confronted Patti with her suspicions. "But they were just too funny to keep secret," Patti replied. "Tracy, you probably don't realize how silly you are," Patti went on. **The sense of anger inside Tracy continued to grow.**

#### Anger Incongruent:

Ethan had been waiting in a queue for some time. The assistants seemed more interested in chatting to one another than in serving customers. Ethan was in a hurry and was beginning to lose his patience. The assistants continued to chat and were really slow in serving. Ethan stepped out of the queue and threw down what he was intending to buy. He then stormed out of the shop. **This type of situation made Ethan feel calm.**

#### Contempt Congruent:

Mike was reading the weekend newspaper. He was drawn to a story about a well-respected business man who had supposedly been helping an elderly lady in the community. However the story went on to say that the business-man had been stealing money from the lady. He had also convinced her to change her will so he would be left her estate. The elderly lady had no immediate family. She was very vulnerable. **Reading that story filled Mike with contempt.**

#### Contempt Incongruent:

Katie was walking home from work. In the distance she could see an elderly gentleman looking upset. He explained to her that two youths had pushed him over and had stolen what little money he had on him. Katie called for an ambulance for the man. She also

found his bag that had been dropped, however the money was missing. They had also ripped up a picture of the gentleman's elderly wife. **Katie could barely contain her feeling of admiration.**

Neutral:

Ed worked part time at a local café. He worked at the café to help pay for his studies at university and to give him a little extra money. One particularly busy day Ed was serving food. On the way to a table in the corner of the café he slipped on some grease and fell straight over. Everyone in the café stared at him. Ed was helped to his feet. **He was a little sore but unhurt.**

Robert was sitting on a train on his way to an interview for a new job. The sun was shining strongly in the window. This made Robert feel very tired. He shut his eyes and accidentally fell asleep. When Robert awoke he realised that he had slept past his stop. He would miss the interview. **Robert called the interviewer to explain and rearranged another time.**

Shona was a file clerk who worked in an office in the city. It was a sunny day so Shona decided to take her lunch to the park. There, she sat on a bench to eat it. Shona met her friend Paul in the park. They talked about their forthcoming holiday. Shona finished her lunch and made her way back to the office. **Shona knew she had a busy afternoon ahead of her.**

Paul was sitting his final maths exam today. He had studied very hard and had previously done well in other maths exams. He did however feel quite apprehensive about this one. He had found the recent module quite difficult. Paul turned over his exam paper. He started to answer the questions. **After the exam Paul felt confident he had passed.**

Gavin was visiting New York. This was his very first time. Today he wanted to go sight-seeing. He wanted to see as much as the cities attractions as he could. He only had two

days left. The schedule he had prepared would be very busy. **Gavin's feet were sore after his day of sightseeing.**

Wendy had been hiking in the mountains. She had been out for most of the day. Dusk was beginning to fall. Wendy hoped she would soon arrive back at the youth hostel. That was where she was staying. She made her way back down from the mountains. **Wendy could see the hostel in the distance.**

Dennis really enjoyed photography. He had been into photography since he was young. Dennis mostly took pictures of living creatures. He took many pictures of people and animals. He also photographed historical buildings. Dennis picked out some of his best work. **The photographs were displayed in a local art gallery.**

Isobel and David walked down the shops. There were many shops. They went in to a shop that sold hand made crafts. Isobel and David browsed for about ten minutes. Then they left the store. They knew there were many similar shops to be found. **They continued to walk along the street looking at more shops.**

Alan had just finished work and was heading for the gym. Alan tried to go to the gym at least four times a week. He usually went after work. The locker room was nearly empty when he entered. Alan got changed and went to the weights area. The weights area was also un-crowded. **Alan managed to get his workout completed quicker than usual.**

Sean always cooked dinner on a Saturday. He rummaged through the cupboards. He found all the ingredients he needed. He carefully prepared them all. He laid the table ready for dinner. Just as the meal was ready his girlfriend arrived home. **They sat down and ate the meal that Sean had just cooked.**

