

**The relationship between early deprivation and
peer relationship difficulties in middle childhood:
The role of attachment in mediating this
relationship**

Lucy Sawyer

D.Clin.Psy 2004

University College London

Volume 1

ProQuest Number: U643903

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest U643903

Published by ProQuest LLC(2016). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code.
Microform Edition © ProQuest LLC.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

TABLE OF CONTENTS

	Page
Abstract	7
Acknowledgments	9
Chapter one: Introduction	
1.1.0 Overview	10
1.2.0 Early deprivation and child development	11
1.3.0 Deprivation	12
1.4.0 Peer relationships	22
1.5.0 Attachment	27
1.6.0 Attachment and peer relationships	30
1.7.0 Potential mediators of the link between attachment and peer relationships	33
1.8.0 Early deprivation and patterns of attachment	39
1.9.0 Measurement of attachment	47
1.10.0 Attachment stability	52
1.11.0 Study aims	55
1.12.0 Hypotheses	56

Chapter two: Method

2.1.0	Context	57
2.2.0	Participants	57
2.3.0	Demographics and family background	61
2.4.0	Conditions in Romanian orphanages	62
2.5.0	Ethics	63
2.6.0	Procedure	63
2.7.0	Design	64
2.8.0	Measures	64
2.9.0	Inter-rater reliability	73

Chapter three: Results

3.1.0	Research aims	77
3.2.0	Data analysis	78
3.3.0	Demographic variables	79
3.4.0	Hypothesis 1: Early deprivation and difficulties in peer relationships	85
3.5.0	Hypothesis 2: Early deprivation and attachment	89
3.6.0	Hypothesis 3: Attachment as a modulator of the relationship between early deprivation and peer relationship difficulties	99
3.7.0	Summary	106

Chapter four: Discussion

4.1.0 Overview	107
4.2.0 Deprivation and peer relationship difficulties	109
4.3.0 Deprivation and attachment	114
4.4.0 Early deprivation, peer relationship difficulties and attachment relationships	127
4.5.0 Methodological considerations	133
4.6.0 Clinical implications	136
4.7.0 Conclusions	138

References	139
-------------------	------------

Appendices

Appendix 1: Ethics approval	157
Appendix 2: The Child Attachment Interview Protocol	158
Appendix 3: Coding scheme for use with the Child Attachment Interview	158
Appendix 4: Peer relationship difficulties interview and coding scheme	158

List of tables	Page
Table 1: Mean age of child's placement with adoptive parents by adoptee group and child's gender	60
Table 2: Correlations for reliability analysis	75
Table 3: Description of demographic variables according to group membership	82
Table 4: Correlations among demographic variables, peer relationship difficulties and attachment scales	84
Table 5: The effect of deprivation on peer relationship difficulties	88
Table 6: Group differences on coherence and mentalising scales controlling for effects of IQ	92
Table 7: Group differences on atypical behaviour, controlling for IQ and partner's qualifications	96
Table 8: Deprivation and emotion non-containment	98
Table 9: Correlations among dependent variables (peer relationship difficulties, coherence, mentalising, emotion non-containment, atypical behaviour)	100
Table 10: Group differences on peer relationship difficulties controlling for coherence and atypical behaviour	104

List of figures

Figure 1.	The mediational model: Deprivation, coherence and IQ	93
Figure 2.	The mediational model: Deprivation, atypical behaviour and IQ	97
Figure 3.	The mediational model: Deprivation, attachment and peer relationship difficulties	101
Figure 4.	The mediational model: Deprivation, coherence and peer relationship difficulties	102
Figure 5.	The mediational model: Deprivation, atypical behaviour and peer relationship difficulties	105

ABSTRACT

There is evidence that early deprivation and institutionalisation are linked to difficulties in peer relationships in later childhood and beyond, but to date, little is known about the mechanisms underlying such difficulties. Within normally developing populations it is proposed that early attachment experiences influence peer relationships, although there is still some debate regarding the extent and manner of this influence. Given the strong evidence for the association between deprivation and attachment disturbances reported by studies of ex-institutionalised children, the present study assessed the extent to which the relationship between deprivation and difficulties in peer relationships is mediated by attachment disturbances resulting from early deprivation. Much of the research into attachment and peer relationships has focussed on infancy and thus relied mainly on observations of behaviour. This study assessed internal representations of attachment in children aged 11 years old. 90 children adopted into the UK from Romania following early severe deprivation and 30 children adopted from within the UK before 6 months of age were assessed. Data on attachment pattern was assessed from a standardised interview with the children (the Child Attachment Interview, CAI) using a modified version of the CAI coding scale. The scale focused on three cognitive indicators of attachment pattern (mentalising ability, level of narrative coherence and emotion non-containment) and behavioural indicators of attachment disturbance. Children's peer relationship difficulties were assessed from a semi-structured parent interview. The findings demonstrated a significant dose-

response effect of duration of early deprivation on difficulties in peer relationships at age 11. Children who experienced deprivation presented less coherent narratives about attachment relationships and greater levels of atypical attachment behaviour than UK controls. Furthermore there was a significant negative association between deprivation and IQ; group differences in IQ mediated the relationship between deprivation and attachment. There was no evidence that the relationship between deprivation and peer relationship difficulties was mediated by attachment difficulties resulting from early deprivation; this relationship was however mediated by differences in IQ between the groups. The findings are discussed in terms of the implications they have for the focus and methods of supporting children who have experienced global early deprivation.

ACKNOWLEDGEMENTS

Grateful thanks to Dr Tom O'Connor for advice and guidance and the opportunity to participate in such an interesting project. Very many thanks to Dr Pasco Fearon and Dr Jane Gilmour for their time, advice and calm reassurance.

Thanks also to Dr Jana Kreppner and Dr Emma Colvert for practical help with the thesis, and to Dr Mary Target and Prof Peter Fonagy for comments on the drafts. Thanks to my family and friends for all their support, particularly to Zoe Martin, for invaluable support during the project. Finally many thanks go to God, for reminding me of the bigger picture.

CHAPTER ONE: INTRODUCTION

1.1.0 Overview

Studies of clinical and at-risk populations can increase our understanding of normative development through explaining abnormal cognitive, emotional and behavioural processes and thereby highlighting the necessary conditions in early life critical to normal development (Cicchetti & Wagner, 1990). In Romania, the fall of Ceaucescu in 1989 exposed the appalling conditions in Romanian orphanages and provided an unfortunate natural experiment into the effects of severe early deprivation on children's long term development. Many of the institutionalised children were later adopted and thus experienced a radical change in circumstances, from deprivation to family life. Longitudinal studies of ex-institutionalised Romanian adoptees can inform the debate regarding the influence of early experience over and above concurrent experience (cf Chisholm, 1998; O'Connor, Marvin, Rutter, Olrick, Britner & the English and Romanian Study Team, 2003; Hodges & Tizard, 1989).

Early deprivation or maltreatment in childhood is associated with various difficulties including difficulties in socioemotional functioning (Bolger & Patterson, 2001; Hodges & Tizard, 1989; Mueller & Silverman, 1989; Quinton & Rutter, 1988) and difficulties in peer relationships in particular (Bolger & Patterson, 2001; Hodges & Tizard, 1989; Rogosch, Cicchetti & Aber, 1995).

Links between early deprivation and difficulties in attachment relationships have also been shown (Carlson, Cicchetti, Barnett & Braunwald, 1989; Egeland & Sroufe, 1981; Tizard & Rees, 1975). Patterns of attachment in the general population carry long term correlates including difficulties in peer relationships (see Belsky & Cassidy, 1994 for review) and therefore it seems reasonable to assume that associations between deprivation and social functioning may be mediated by quality of attachment, which is itself linked to deprivation.

The aims of this study are firstly, to see if there is a relationship between early experience and the development of peer relationships in middle childhood and secondly, to investigate whether such a relationship is mediated by difficulties in parent-child attachment.

1.2.0 Early experience and child development

There has been a longstanding debate in the developmental psychology literature regarding the independent influence of early experience compared with concurrent experience on development (Clarke & Clarke, 2000). Rutter and Rutter (1993) proposed that early experience and concurrent experience were closely linked; early adverse experiences are likely to persist throughout childhood, therefore the continuing effect of early adverse experiences results from the continuation of the adverse experiences themselves. However, if a child from a deprived background subsequently experiences a good environment, then the effects of adverse experiences can be resolved (Rutter,

1989). To separate the effects of early experience from the effects of concurrent experience, it is necessary to study children who have experienced different environments in infancy and childhood. The English and Romanian Adoptees Study (ERA; cf. O'Connor, Rutter, Beckett, Keaveney & Kreppner et al., 2000; Rutter, Kreppner & O'Connor et al., 2001) is one such study following the progress of a group of Romanian children who were adopted from Romanian institutions by British families and have therefore experienced a radical change in circumstances. The children's development has been assessed over a number of years and compared with the developmental outcomes of a comparison group of UK children adopted by British families.

1.3.0 Deprivation

1.3.1 Deprivation and developmental outcomes

To begin, a point of clarity; 'deprivation' could describe a number of experiences including maltreatment, institutionalisation and lack of environmental stimulation. In describing the association between early deprivation and development, findings from studies into different types of deprivation are presented together here, under the overall heading of 'deprivation'; where relevant to the findings, delineations are made between the different types of deprivation experienced.

1.3.2 Deprivation, IQ and cognitive ability

Maltreatment has been associated with low IQ (Martin, Beezely, Conway & Kempe, 1974) as has institutionalisation (Castle et al., 1999; Kaler & Freeman, 1994; Rutter & the ERA Study Team, 1998). There is a dose-response effect of early deprivation on intellectual functioning; the age at which ex-institutionalised children were adopted was a powerful predictor of cognitive ability at age 4 (Rutter et al., 1998) and at follow-up at 6 years (O'Connor, Rutter & Beckett et al., 2000).

Perhaps somewhat surprisingly, not all studies support the association between deprivation and IQ (Tizard & Rees, 1974). The institutionally reared children in Tizard and Rees' study (1974) did not have significantly lower IQ scores than non-institutionalised children. Institutionalisation per se may not have a long term detrimental effect on IQ if the quality of the environment is good (Tizard & Rees, 1974). The institutions in Tizard and Rees' (1974) study provided the children with good quality care and a variety of experiences. The care provided in Romanian institutions on the other hand has been described as ranging from 'poor to appalling' (Castle et al., 1999; see method section for a more detailed description of conditions in the institutions).

Aside from general ability, deprivation and institutionalisation have been associated with difficulties in many areas of development. Children adopted from institutions show more restless and disobedient behaviour and have

greater concentration problems than non-institutionalised children (Tizard & Hodges, 1978; Tizard & Rees, 1975). Preschoolers who have experienced physical or verbal abuse, or neglect are more distractible and show less persistence than non-maltreated preschoolers (Egeland & Sroufe, 1981). There is a significant effect of duration of deprivation on inattention/overactivity (Kreppner, O'Connor & Rutter and the ERA study team, 2001).

The experience of deprivation resulting from institutionalisation has a global, negative effect on children's functioning; there is a high correlation in children's ability across a number of domains of development (Kaler & Freeman, 1994). Assessment of children still living in Romanian institutions showed that children who showed delay in one of the domains measured (cognitive ability, motor function, affect, language, daily living skills, social interaction and play) were likely to exhibit delays in all domains.

1.3.3 Deprivation and socioemotional functioning

In addition to the effect of deprivation on general ability and cognitive functioning, institutionalisation has been associated with emotional difficulties including difficulty recognising emotions and empathising with others (Sloutsky, 1997). Maltreated and abused infants have a greater likelihood of developing social and emotional problems such as displaying more anger, frustration, non-compliance and negative affect than infants who have not been abused (Egeland & Sroufe, 1981).

Social competence difficulties are evident in maltreated children in infancy, and continue into early childhood (Egeland, Sroufe & Erickson, 1983). Maltreated children are at a greater risk of peer rejection than non-maltreated peers (Bolger & Patterson, 2001), demonstrate fewer positive play behaviours with peers (Lewis & Schaeffer, 1981) and demonstrate higher levels of aggressive behaviour (Rogosch, Cicchetti & Aber, 1995).

At 4_ years, children living in institutions demonstrated greater difficulties in peer relationships than non-institutionalised children (Tizard & Rees, 1975). In contrast to the difficulties commonly observed in maltreated children, such as aggression or withdrawal (George & Main, 1979; Martin, 1980), ex-institutionalised children were quarrelsome and unpopular with peers and got on better with children older or younger than themselves when assessed at 8 years (Tizard & Hodges, 1978; Tizard & Rees, 1975). Figures were higher for children who remained in institutions than children who were adopted or restored to their biological families.

Less is known about the social functioning of children exposed to severe global deprivation and institutional rearing as experienced within Romanian institutions. Kaler and Freeman (1994) studied the effects of concurrent deprivation on the social interaction of Romanian orphans (aged 23-50 months) and found that the orphanage children had significant difficulties in social interaction compared to non-orphanage children. Although it appeared that of all the outcomes measured, social functioning with peers was the greatest capability shown by

the orphanage children, Kaler and Freeman (1994) acknowledged that interaction between the children was for the most part indiscriminate; the children did not seem to have formed selective friendships, suggesting pathological development in terms of peer relationships. The study assessed the effects of concurrent deprivation on children's social functioning and so could make no claims about whether the impact of deprivation on peer relationships could be resolved. Findings from the ERA study suggest that removal from the institution is not enough to reverse the adverse effects of deprivation on abilities in peer relationships (Rutter et al., 2001).

Quasi autistic features have been identified in a minority of the Romanian adoptees assessed in the ERA study (Rutter et al., 1999), including difficulties in communication, such as in reciprocal conversation, and difficulties in social relationships such as difficulty in forming selective friendships. Behavioural characteristics include difficulties in making eye contact and in using gesture in social interactions. There was a dose-response of duration of deprivation on presence of quasi-autistic features.

Deprivation is also associated with reduced engagement in pretend and interactive role play in children aged 4 years (Kreppner, O'Connor, Dunn & Anderson-Wood et al., 1999). Difficulties observed in play may be precursors of the later social difficulties known to be related to experiences of institutionalisation. Although there was no evidence of a dose-response effect of deprivation on performance in play activities in Kreppner et al.'s study (1999),

this may have been because the children were observed in play with an adult. Deficits in children's play abilities might have been more evident in interaction with a peer. According to Mueller and Silverman (1989) an important aspect of peer relationships is the relative equality of the children's developmental level. For successful child-child interaction, both participants must contribute effectively whereas in adult-child interaction, the adult can compensate for deficits in the child's abilities.

Rutter et al. (2001) assessed peer difficulties in the children involved in the ERA study at age 6. The Romanian children were twice as likely to experience peer difficulties as the non-deprived sample, although this figure did not reach statistical significance. Rutter and his colleagues (2001) found no significant association between peer relationship disturbances and the children's age of entry into the UK suggesting that any difficulties in peer relationships were not related to the duration of early deprivation. However, the authors proposed that the children's age might account for the findings, suggesting that further research be carried out when the children were older and reached a different developmental stage in peer relationships.

1.3.4 Deprivation, socioemotional functioning and long term development

The longitudinal findings from Tizard and colleagues (Hodges & Tizard, 1989; Tizard & Rees, 1975) support Rutter et al.'s claim that peer difficulties become more pronounced as children mature. At 4 years, there was a significant

difference in peer relationship disturbances between the institutionalised children and the non-institutionalised children (which included children who had been removed from the institution as well as those in the control group; Tizard & Rees, 1975). These findings suggest that peer relationship disturbances are related to the concurrent influence of institutionalisation; the negative association between institutionalisation and peer difficulties appeared to have resolved following removal from the orphanage. When the children were followed up at age 16 however (up to 14 years after leaving the institution), peer difficulties were more evident; the ex-institutionalised group were more likely to have difficulties in relationships with peers than non-institutionalised controls (Hodges & Tizard, 1989). Problems included being less likely to have a special friend, being more likely to demonstrate indiscriminate friendliness toward peers, and being less likely to use friends as a source of emotional support. The ERA findings at age 6 (Rutter et al., 2001) might not be evidence of resilience in terms of peer relationships, but rather that difficulties in this domain of functioning might not be expressed until middle childhood or beyond.

Aside from Hodges and Tizard (1989), one of the few studies to report long term findings regarding deprivation and social relationships was carried out by Quinton and Rutter (1988). They studied a group of women, in a group foster home for most of their childhood, followed up into adulthood. Compared to a group of women from similar backgrounds but who were brought up by their parents, the ex-institutionalised women experienced greater difficulties in social relationships. The link between institutionalisation and later difficulties was to a

large part an indirect link; a consequence of developing non-supportive relationships with deviant partners. Quinton and Rutter (1988) found a dose-response effect of institutionalisation on outcome; difficulties in later life were more likely among those women who had been institutionalised from infancy until at least 16 years of age.

1.3.5 Resilience

Although deprivation is associated with difficulties and deficits in many areas of functioning, many children demonstrate remarkable resilience in the face of extreme deprivation (Rutter et al., 2001). Contrary to some of the foregoing findings, the ERA study (Rutter et al., 2001) found that early severe deprivation was not associated with significantly higher rates of emotional difficulties, poor peer relationships and conduct problems at 6 years (although as has been postulated above, there may be an alternative explanation for the lack of evidence of peer relationship difficulties). In addition, a surprising 20% of the children who experienced the longest period of institutionalisation showed normal functioning in cognitive and emotional development, attachment patterns, inattention/overactivity, peer relationships and conduct. As yet, little is known about the factors that promote such resilience to severe early deprivation. In terms of factors which promote cognitive resilience, the age at which children were removed from the institutions and the quality of individualised care, were the two greatest predictors of cognitive ability (Castle et al., 1999). Being a favourite child with institution staff and having access to

toys are associated with better development in general (Morison & Ellwood, 1997).

The studies of children who have been removed from depriving circumstances are all retrospective and therefore it is not possible to tease out with certainty the elements of early experience which have the most influence on later development. Studies rely on parent reports about conditions within the orphanages for clues about factors that may have impacted on children's development. Comparisons between findings from children who have been maltreated, institutionalised, or that have suffered global deprivation can help to separate out some of the conditions associated with normative (or pathological) development.

1.3.6 Age of assessment

As can be seen, very little research has followed the long term correlates of early severe deprivation as far as adulthood. To date the majority of studies into global deprivation have looked at outcomes in infancy and early childhood (up to 6 years of age) with a few reported findings of children at age 11. However difficulties associated with early deprivation may become more apparent as children mature (cf Caldwell, 1970; Egeland & Sroufe, 1981), perhaps because the developmental tasks of middle childhood and adolescence, for example negotiating successful friendships, become more complex and require more complex skills. It is therefore important that studies continue to monitor the long

term effects of early deprivation and maltreatment into middle childhood and beyond. The present study is concerned with the functioning of 11 year olds, specifically their functioning within peer relationships.

1.3.7 Summary

1. Maltreatment, institutionalisation and deprivation are associated with low IQ, attentional difficulties and quasi-autistic features.
2. Deprivation is linked to difficulties in peer relationships in childhood and adolescence, problems recognising emotions, difficulties in social interaction, aggressive behaviour and high levels of negative emotion.
3. Little is known about the long term effects of global deprivation on peer relationships; to date, the majority of studies in this area have focused on infancy and early childhood.
4. A minority of children demonstrate remarkable resilience in the face of extreme early deprivation; little is known about the factors supporting resilience.
5. The relationship between deprivation and developmental difficulties may become stronger as children mature and negotiate more complex developmental tasks.

1.4.0 Peer relationships

1.4.1 Peer relationships in the general population

Piaget (1932) claimed peer relationships play a central role in facilitating children's development. Peer relationships have a positive impact on children's cognitive, social linguistic, sex role and moral development (see Parker & Asher, 1987 for review). The inability to develop supportive relationships with peers in middle childhood is a predictor of later psychopathology (Dunn & McGuire, 1992; Sroufe & Rutter, 1984). There is a bi-directional relationship between peer relationships and childhood disorders (Hay, Payne & Chadwick, 2004). Much of the research into peer relationships has focussed on peer relationships in infancy and early childhood, because of the interest in identifying early indicators of later disturbance.

The degree to which a child is accepted by peers is associated with the risk of future disorder (Hay et al., 2004). Poorly accepted children stand a greater chance than others of developing later life difficulties, and therefore should be considered a group at risk (Parker & Asher, 1987). Low peer acceptance in middle childhood and early adolescence has been shown to be predictive of lower performance at school, school avoidance and drop out in adolescence (Dunn & McGuire, 1992; Ladd, 1990; Parker & Asher, 1987). Various factors have been associated with level of peer acceptance: social competence, prosocial behaviour, aggressiveness and shyness (Hay et al., 2004).

Individual differences in the quality of peer relationships observed in infancy remain stable through to middle childhood (Howes, Hamilton & Philipson, 1998). Complex skills are involved in interactions with peers from a young age: differentiation between peers is present in infants (Stefani & Camaioni, 1983) and toddlers show a preference for playing with same-sex peers and a preference for particular peers i.e. friends (Howes et al., 1998). Friendships become more important as children mature; an important developmental task of adolescence is to separate from the parents and form closer bonds with peers (Erickson, 1968). In a review of the literature on peer relationships, Mueller and Silverman (1989) describe how friendships in early childhood centre on shared activities and play but from about age 9 or 10 this focus becomes less important. Children become more selective in choosing preferred friends (Bronfenbrenner, 1970), reduce their dependence on parental support and begin to use peers as a source of emotional support (Mueller & Silverman, 1989). Peers are an increasingly important source of support as children move towards adolescence (Ladd, 1990). The friendships of 11 year olds require more complex skills and abilities. Children need to be able to offer emotional support, and therefore need to have an understanding of the other's emotional needs. Assessment of children's peer relationships in middle childhood may provide a different picture of the long term correlates of early deprivation than that gained so far from studies of younger children.

1.4.2 Underlying skills

Two key factors associated with abilities in peer relationships are emotion regulation and mentalising (or social understanding; Hay et al., 2004).

1.4.2.1 *Emotion regulation*

Emotion regulation describes the ability to maintain and regulate the onset, intensity and persistence of affective states, either positive or negative (Thompson, 1994). The ability to understand and regulate emotions enhances a child's ability to engage with others and is associated with peer relationships (Eisenberg, Fabes et al., 1997; Eisenberg, Guthrie et al., 1997; McDowell, O'Neil & Parke, 2000). Bowlby (1979) believed that an ability to acknowledge and manage distress both within oneself and between others was a major requirement for gaining pleasure from interactions with others. Peer relationships are an important context within which emotion regulation develops. Difficulties in emotion regulation in infancy may adversely influence peer relationships in childhood; this then has a negative effect upon emotion regulation development (Hay et al., 2004).

1.4.2.2 *Mentalising*

The ability to reflect on the mental states and beliefs of others and to understand cause and effect processes within social relationships has been variously described as social understanding (Hay et al., 2004) 'theory of mind' or

'mentalising' (Fonagy & Target, 1997) and will be referred to here as mentalising.

Children's mentalising capability is linked to abilities in peer relationships (Hay et al., 2004; McElwain & Volling, 2002). The ability to represent one's own mental state and that of a peer is a necessary skill in empathising with another and engaging in reciprocal relationships and it is an important skill in peer relationships from as early as preschool age (McElwain & Volling, 2002). Failure to acquire sufficient mentalising capabilities may lead to difficulties in forming and sustaining peer relationships. As with emotion regulation, peer relationships both provide an important context within which mentalising ability develops and are adversely affected by mentalising difficulties (Slaughter, Dennis & Pritchard, 2002).

1.4.3 The development of peer relationships

There is still debate in the literature about the developmental models which best account for the development of peer relationships (Ainsworth, 1990; Hartup, 1983; Mueller & Silverman, 1989). Two models used to explain individual differences in the quality of peer relationships are the attachment and social network models (Mueller & Silverman, 1989). The two models differ in the extent to which they consider parent-child and peer relationships to be part of one or two social worlds (Hartup, 1983; Sroufe, 1999). The social network model claims that peer relationships develop relatively independently of other

relationships such as the parent-child relationship and therefore the formation of an attachment bond is not a prerequisite for the development of peer relationships (Hartup, 1983; Mueller & Silverman, 1989). The attachment model on the other hand states that there is a direct link between the quality of parent-child relationships and peer relationships (Mueller & Silverman, 1989). Given the present study's focus on the potential for attachment to mediate the link between deprivation and peer difficulties, the attachment model is of particular interest here.

According to attachment theory, two mechanisms mediate the association between attachment and peer relationships: emotion regulation and internal working models of attachment (IWM; Contreras, Kerns, Weimer, Gentzler & Tomich, 2000; Main, Kaplan & Cassidy, 1985). Cognitive indicators of IWM include constructs such as mentalising and narrative coherence. The underlying processes common to attachment and peer relationships such as mentalising and emotion regulation might shed light on the mechanisms underlying peer difficulties in children who have experienced global deprivation. The next sections consider attachment more closely, describing the development of the attachment system and the socioemotional consequences of attachment relationships before moving on to a consideration of some of the underlying processes of attachment relationships.

1.4.4 Summary

1. Peer acceptance is positively associated with many aspects of development.
2. Peer rejection is associated with risk of future disorder.
3. Peer relationships require increasingly complex skills as children mature.
4. Emotion regulation and mentalising are key factors associated with peer relationships.
5. Two models are described that account for the development of peer relationships: attachment and social network models.
6. Attachment proposes that two mechanisms mediate the association between attachment and peer relationships: emotion regulation and IWM.

1.5.0 Attachment

1.5.1 Attachment in the general population

According to Bowlby (1988) attachment relationships serve an important evolutionary function of ensuring infant survival; the attachment system regulates the infant's proximity to the caregiver and in this way the infant is protected from danger. Attachment to the primary caregiver is regulated by behaviours such as stranger wariness and separation anxiety, which emerge at around six months of age. Attachment behaviours are organised to balance the child's need for security with the desire to explore; the aim of this behavioural organisation is to achieve 'felt security' (Sroufe & Waters, 1977).

The primary caregiver serves as a secure base from which the infant can explore the environment and to which the infant can return in times of threat (Ainsworth, 1967). According to Bowlby, all infants will form a selective attachment to a caregiver as long as they are reared within an 'environment of evolutionary adaptedness' (Bowlby, 1969 / 1982); in other words, an attachment figure must be consistently available. If a child is not raised in such an environment (as is the case in institutional settings), "the resulting organisation of behaviour may be very different...sometimes it is bizarre" (Bowlby, 1982, p.151).

1.5.2 Traditional classifications of attachment

The development of the Strange Situation procedure (Ainsworth, Blehar, Waters & Wall, 1978), enabled classification of infant attachment to the caregiver. The Strange Situation activates the infant's attachment system by inducing mild distress through a series of separations from and reunions with the caregiver. From observations of parent-infant dyads in the Strange Situation, three coherent and organised patterns of attachment were identified: anxious-avoidant (A), secure (B) and anxious-ambivalent/resistant (C; Ainsworth et al., 1978). The three attachment patterns describe the different ways that infants organise their behaviour in order to gain a response from the caregiver; for example, how infants use the caregiver as a secure base to achieve felt security, the types of behaviours they exhibit to get a response and how easily they can be comforted by the carer.

Some infants exhibit unusual patterns of attachment behaviour, preventing classification to the A/ B/ C categories of attachment. Main and Solomon (1990) identified a sub-group united by their lack of an organised strategy for obtaining proximity with the caregiver. Disorganised/disoriented (D) infants (Main & Solomon, 1990) demonstrate contradictory behavioural patterns (such as initially approaching the stranger then subsequently showing wariness), confusion, apprehension, and behavioural freezing or stilling.

1.5.3 Summary

1. Traditional attachment classifications assume that an infant was raised within an environment of evolutionary adaptedness and was able to form a selective attachment to one caregiver.
2. Secure and insecure attachment patterns (A B and C) describe organised strategies of behaviour designed to regulate proximity to the primary caregiver.
3. More recently, disorganised attachment style has been identified. This describes attachment behaviours which do not comprise an organised strategy of obtaining proximity with the caregiver.

1.6.0 Attachment and peer relationships

1.6.1 Socioemotional consequences of attachment in general populations

Early attachment relationships affect many aspects of a child's development including the development of self regulation, self-esteem, cognitive ability, behavioural reciprocity, emotional regulation, expectations or beliefs about the self and other and abilities in peer relationships (Belsky & Cassidy, 1994; Hartup, 1983; Sroufe, Egeland & Carlson, 1999). Of particular interest here is the association between attachment and peer relationships.

1.6.2 Association between attachment security and abilities in peer relationships

Secure children receive higher ratings of adaptive behaviour when playing with peers than insecure children (Sroufe, Carlson & Shulman, 1993). For example, they concentrate better during play, initiate more play, their play is of a higher quality than insecure children and they are more popular than insecure children. Secure attachment has been associated with abilities in peer relationships at preschool age (van IJzendoorn, 1991; and Suess, Grossmann & Sroufe, 1992), in middle childhood (Weinfeld, Sroufe, Egeland & Carlson, 1999) and in adolescence (Sroufe et al., 1993). Secure children have been found to form deeper friendships (they demonstrated greater mutuality, responsiveness and affective involvement) than insecure children (Freitag, Belsky, Grossmann, Grossmann & Scheurer-Englisch, 1996). Research into children's' relationships

with their best friends has produced even stronger evidence for the theory that early attachment relationships (with a selective caregiver) influence later attachment relationships outside of the family, such as with peers (Belsky & Cassidy, 1994; Youngblade & Belsky, 1992).

Many studies into the socioemotional outcomes of attachment relationships have focussed on infancy and early childhood. Therefore, much of the evidence linking attachment patterns with peer relationships relates to behavioural indices of attachment such as aggressive behaviour and hostility towards peers (Bretherton, 1985; Lyons-Ruth, 1996). Secure attachment behaviour in infancy has been linked to positive social behaviour towards parents and peers throughout early childhood (Bretherton, 1985), while insecure attachment has been related to higher levels of angry and non-compliant behaviour expressed towards both parents and peers from infancy through to preschool years (Ainsworth et al., 1978; Erickson, Sroufe & Egeland, 1985). Disorganised attachment patterns have a greater association with aggressive behaviour than insecure attachment behaviour (Lyons-Ruth, 1996). Infants who show disorganised patterns of attachment make fewer social overtures towards peers than children rated secure or insecure anxious-avoidant or resistant and if social contact is initiated, it is more likely to be through aggressive behaviour (Hann, Castino, Jarosinski & Britter, 1991, in Lyons-Ruth, 1996).

Further research is needed to investigate the association between attachment and peer relationships in middle childhood. This would necessitate looking at

attachment representations, because observations of behaviour become less meaningful as children develop and spend more time away from the attachment figure; it cannot be assumed that infant data generalises to later age groups.

Rutter et al. (2001) suggested that the relationship between attachment and peer relationships might change late in childhood and adolescence. One of the developmental tasks in adolescence is separation from the primary caregiver leading to an increased importance of peer relations and therefore, an even stronger effect of attachment to primary caregiver on peer relationships may be observed.

1.6.3 Summary

1. Attachment security is positively associated with quality of play and friendship and with popularity with peers.
2. Insecure attachment is associated with angry and aggressive behaviour towards peers.
3. Further research is needed to investigate the possible changes that occur in the relationship between attachment and peer relationships in middle childhood.

1.7.0 Potential mediators of the link between attachment and peer relationships

1.7.1 *Emotion regulation*

Although peer relationships provide an important context for emotion regulation development, the ability to monitor and contain emotional arousal is believed to first develop within the primary attachment relationship (Bowlby, 1982). Emotional distress is responded to and contained by the mother and the infant learns through such interactions to control and contain his/her own emotions. In this way, early relationships are vitally important in facilitating an understanding of complex emotions (Steele, Steele, Croft & Fonagy, 1999).

Emotion regulation mediates associations between mother-child attachment and peer relationships in middle childhood (Contreras et al., 2000). The term emotional regulation is used to describe a number of skills including the ability to modulate arousal (Thompson, 1994), the ability to control attentional processes and coping abilities (Eisenberg, Fabes et al., 1997). It is therefore difficult to compare studies of emotion regulation as very often different definitions, and hence, different measures of emotion regulation are used.

1.7.2 Internal working models of attachment

Attachment theory predicts that the quality of attachment to the primary caregiver directly influences the quality of peer relationships through the operation of 'internal working models' (IWM; Sroufe, 1979). Attachment relationships are internalised in the form of internal working models (Bowlby, 1969/1982) which describe expectations of the self and the caregiver and guide expectations of future interactions. In this way, IWM provide a blueprint on which future relationships are based (Bowlby, 1969/1982). Difficulties within the attachment relationship with the primary caregiver in infancy (e.g. as a result of early deprivation or maltreatment) are generalised to future relationships, such as bonds with peers, through IWM (Ainsworth et al., 1978; Bretherton, 1985; Youngblade & Belsky, 1992; Park & Waters, 1989). On the other hand, secure children may feel valued and accepted by their parents; the internalised model of attachment guides the child's expectations about interactions with peers, thus the child may approach peer relationships with more confidence than insecurely attached children (Kerns, Cole & Andrews, 1998).

IWM are flexible and are susceptible to influence from the surrounding environment. Improvements in a child's relationship with the attachment figure can cause the IWM to be updated. Accordingly, early attachment patterns are not believed to have absolute predictive power over later development and relationships; rather past experience and current circumstances jointly influence a person's relationships (Bowlby, 1973).

Although much has been written about IWM, it is still unclear exactly how representations of different attachment figures are organised and how IWM influence future relationships. Hypotheses regarding the way in which IWM influence later relationships include: firstly, that the quality of the attachment relationship with the mother predicts all future relationships (the hierarchical model); secondly, that each attachment relationship is independent and different types of relationship predict different developmental outcomes (the independent model); thirdly, that all attachment relationships are combined to form one working model of relationships (the integrative model); and fourthly (and of most interest to the present study), that there is a dynamic transaction between IWM and the quality of current attachment relationships (the transactional model). Early experience sets a person off along a pathway and concurrent experience subsequently influences the person's progress along this path.

It is difficult to evaluate these models due to the difficulty in separating out the effects of early and concurrent experience. Cassidy and colleagues (Cassidy, Kirsch, Scolton & Parke, 1996) demonstrated a positive relationship between early experience and peer relationships. This study did not look at concurrent attachment however; it may be that attachment pattern changed over time and in fact the concurrent peer relationships reflected concurrent attachment relationships rather than early experience. In two other studies Cassidy et al., (1996) found associations between concurrent attachment security and peer relationships in early and middle childhood. A problem with looking at concurrent attachment alone is that the effect of concurrent experience cannot

be separated from early experience. Kobak and Sceery (1988) found that adolescents' representations of their relationships with their parents predicted difficulties in concurrent social relationships. However, the authors were unable to say whether this finding indicated the influence of early experience on later experience, or concurrent experience, or whether there was an interaction between the two. In deprived groups of children, it is more possible (although by no means simple) to assess the influence of early experience on later development.

The studies described here are important as there is very little literature that examines representations of attachment and peer relationships. However, the samples are taken from low risk middle class groups and thus the results may not be generalisable to our sample.

1.7.3 Cognitive indicators of attachment representations

1.7.3.1 Mentalising

Mentalising is used as an indicator of individuals' IWM of attachment (Humfress, O'Connor, Slaughter, Target & Fonagy, 2002). In addition to being influenced by peer relationships, mentalising is understood to develop within the context of attachment relationships (Bowlby, 1982; Sroufe, 1979). The fourth stage in the development of the attachment relationship is the 'goal corrected partnership' (Bowlby, 1982). This describes the ability to attribute independent thoughts and feelings to the caregiver and to take into account the desires of the attachment

figure when interacting with him or her, or in other words, the ability to mentalise. Mentalising is positively associated with secure attachment (Fonagy & Target, 1997).

1.7.3.2 *Coherence*

Coherence is a term which is used in a number of ways. This study is concerned with narrative coherence as described by Main (1991). Children's (and adult's) narrative accounts of attachment relationships are believed to represent internal working models of attachment. The degree of narrative coherence is believed to be an indicator of the way in which attachment relationships are internally represented (Main, 1991). Coherence has been positively associated with abilities in peer relationships (Allen & Land, 1999) and incoherence has been linked to difficulties in social functioning (Cassidy, et al., 1996).

Narrative coherence conforms to Grice's four maxims of coherence in conversations (Grice, 1975, in Main, 1991): quality, quantity, relation (relevance) and manner (orderliness; taken from Main, 1991). A coherent narrative demonstrates that the individual is able to access and organise memories of relationship episodes and then is capable of reflecting on the memories and presenting the information in an organised fashion without contradicting previous information or digressing onto other memories or topics.

Coherence is related to secure attachment (Main et al., 1985; Main & Cassidy, 1988); insecure children and adults are more likely to present incoherent accounts of attachment experiences, which may appear as a 'jumble of contradictory thoughts, feelings and intentions' (Main, 1991, p. 132).

1.7.4 Peer relationships, attachment and modelling

IWM of attachment are not the only process to be put forward to explain the links between attachment patterns and children's functioning in peer relationships. Van IJzendoorn (1995) proposed that secure parents may be more likely to model secure interactions with others and this behaviour is learnt by their children. In addition, as parents of securely attached children are more likely to be rated as having a secure attachment status themselves, they may place a high value on attachment relationships and so encourage their child to interact with their peers (Kerns, Cole & Andrews, 1998). In this way, concurrent relationships with the caregiver may have a more important influence on the child's interactions with peers than early attachment relationships (Freitag et al., 1996). However, in a study by Sroufe, Egeland and Kreuzer (1990), early attachment style was found to predict social outcome in middle childhood above and beyond the style of concurrent relationships with parents.

1.7.5 Summary

1. Attachment theory predicts that emotion regulation mediates the relationship between attachment and peer relationships.
2. Internal working models of attachment are also believed to mediate the link between attachment and peer relationships; cognitive constructs such as mentalising and coherence are used to make inferences about IWM of attachment.
3. Attachment to parents may influence peer relationships through parental modelling of adaptive interactions.
4. Few studies have examined the association between internal representations of attachment relationships and peer relationships. Those that have, demonstrated links between children's representations of their relationship with their parents and their abilities in peer relationships.
5. Few studies have examined children's IWM of relationships, and even fewer have addressed this issue in middle childhood.
6. Studies into deprivation have yet to address this issue; most of the research has been conducted with middle class, non-clinical samples.

1.8.0 Early deprivation and patterns of attachment

1.8.1 Maltreatment and attachment

The long term effect of institutionalisation and deprivation on attachment is an area which has interested researchers for many years (Goldfarb, 1945) and is

an area of research which has much to offer regarding the association between deprivation and peer relationships. Given the link between attachment and peer relationships, information from the area of deprivation and attachment might provide useful insights into the link between deprivation and peer relationships.

Maltreated children show higher rates of insecure attachment patterns, and in particular, higher rates of disorganised/disoriented patterns of attachment (Carlson et al., 1989; Crittenden, 1985; Main & Hesse, 1990). In one study, 81% of maltreated children were classified as disorganised/disoriented (Carlson et al., 1989). The development of disorganised attachment behaviours has been linked to inconsistent care (Crittenden, 1981) and the experience of frightening or frightened parents (Main & Hesse, 1990). These findings demonstrate that maltreatment (as distinct from institutionalisation) changes the quality of attachment but does not prevent the development of attachment per se (Carlson et al., 1989). This is consistent with attachment theory; the evolutionary nature of attachment predicts an infant will form an attachment to a caregiver even if the caregiver exhibits inconsistent or frightening behaviour towards the child (Bowlby, 1973).

The majority of studies into groups of maltreated children examined outcomes in infancy and early childhood (to age 6). Little is known about the relationship between early maltreatment and the attachment patterns of children in middle childhood or beyond.

1.8.2 Institutionalisation and attachment

The traditional classifications of attachment (A, B, C, D) describe discriminating attachment relationships to a consistent caregiver. Attachment theory predicts that children who do not have a consistent caregiver will develop disordered attachment. Bowlby (1951; in Tizard & Rees, 1975) suggested that of all the factors associated with institutionalisation, one factor particularly damaging to the child's psychological well being is the presence of multiple caregivers.

Tizard and colleagues (cf Hodges & Tizard, 1989; Tizard & Hodges, 1978; Tizard & Rees, 1975; Tizard & Tizard, 1971) and Vorraia et al. (2003) studied children reared in group residential homes providing good quality care and observed different patterns of attachment. The institutionalised infants in Vorraia et al.'s study (2003) showed a much higher level of disorganised/disoriented attachment patterns than the non-institutionalised comparison group. In contrast, the infants in Tizard's study (Hodges & Tizard, 1989; Tizard & Hodges, 1978; Tizard & Rees, 1975; Tizard & Tizard, 1971) demonstrated atypical attachment behaviours, rather than disorganised/disoriented patterns or other traditional patterns of attachment. When the children were 2 years old, staff reported that the majority (70%) 'did not care deeply about anyone' (Tizard & Tizard, 1971). Indiscriminate displays of attachment behaviour were described, such as children running to be picked up if anyone familiar entered the room and crying when they left. At 4 years old, the same children demonstrated atypical attachment behaviours such as

overfriendliness and attention seeking behaviour towards strangers, and some children exhibited indiscriminately friendly behaviour toward all adults (Tizard & Rees, 1975). At follow-up at 8 years, overfriendliness and a desire for adult contact were still prominent behaviours.

The main difference in the institutional care described by the two studies was the number of caregivers that children experienced. According to Vorraia et al. (2003) there was a low turnover of carers; carers were encouraged to form selective attachments to the infants, akin to a mother-child attachment. Although there was consistency of care, Vorraia et al. (2003) proposed that the environment provoked insensitive care, with an emphasis on disciplining behaviour that might appear frightening to the infants. The environment described has clear similarities to the environments of maltreated children and the descriptions of attachment behaviours are consistent with those of maltreated infants. In contrast, the children studied by Tizard and colleagues were reared by multiple caregivers who were discouraged from forming selective attachments with the children. Tizard and Rees (1975) proposed that the attachment difficulties observed in this study were associated with the lack of a consistent caregiver.

1.8.3 Global deprivation and attachment security

Children who have experienced global deprivation as a result of institutionalisation do not easily fit traditional patterns of attachment and are

more likely to exhibit attachment disorder behaviours (Chisholm, 1998; Goldberg, 1997; O'Connor et al., in press).

Findings from the ERA study at age 4 (O'Connor et al., 2003) show that the Romanian adoptees were less likely to be securely attached than the non-deprived comparison group. Similarly, traditional insecure attachment patterns (insecure-avoidant, insecure-dependent, and insecure-disorganised/controlling), were not associated with deprivation.

1.8.4 Deprivation, attachment and long term development

Relatively little is known about the long term correlates of institutionalisation or about the potential to resolve the effects once children have been removed to a family environment. Findings from a follow-up study of the institutionalised children in Hodges and Tizard's study at age 16 (Hodges & Tizard, 1989) suggest the attachment patterns observed in early childhood might change as children mature. Hodges and Tizard (1989) reported that at age 16, although residual effects of institutionalisation remained, the ex-institutional children who were adopted (as distinct from the group who returned to their biological parents) demonstrated no significant differences in their family relationships to those of the comparison group. They suggested that the degree to which difficulties in attachment remained was related in part to the quality of post-institutional care: adoption by families who were eager for a child versus restoration to biological families, some of whom expressed ambivalence about

the return of their child (Hodges & Tizard, 1989). However, some difficulties related to attachment remained; it was postulated that the absence of a selective attachment figure in infancy was associated with social withdrawal in early adolescence (Hodges & Tizard, 1989). This suggests that early attachment experience could have a lasting effect on development by influencing social rather than attachment relationships.

More recently, the ERA study has concentrated on investigating disinhibited attachment disorder and has therefore focused for the most part on the Romanian adoptees. Little is known about the degree to which the Romanian adoptees' attachment relationships with their parents differ to those of the UK group, and whether the difficulties identified at age 4 have abated as the children have matured. Assessment of the children in the ERA study in middle childhood could shed light on this issue. However, one of the difficulties in assessing the security of children's attachment relationships is that until recently there has been a lack of reliable and valid measures of attachment in middle childhood.

1.8.5 Attachment disorder and disinhibited attachment behaviour

The Romanian adoptees in the ERA study were more likely to show atypical patterns of attachment behaviour than British adoptees; there was a dose-response association of duration of deprivation on development of attachment disorder behaviour at age 4, 6 and 11 (O'Connor et al., in press; O'Connor et al.,

2003; O'Connor & Rutter et al., 2000). Children reared in Romanian institutions lacked a consistent caregiver; they were reared by multiple caregivers and there was a high ratio of children to staff (Castle et al., 1999). The presence of atypical attachment behaviours in children reared in such circumstances is consistent with Tizard and Rees' findings (1975).

At 16 years, residual effects of institutionalisation such as attention seeking behaviour persisted for the two ex-institutionalised groups (the adopted and restored groups) studied by Hodges and Tizard (1989). The fact that the environment had radically changed but the difficulties remained suggests the continuing effects of early experience on later development independent of concurrent experience. In an earlier study, Tizard and Hodges (1978) concluded that although concurrent experience seemed to have an effect on some areas of the institutionalised child's development (cognitive development, emotional problems and attachment behaviour), institutional factors such as having multiple caregivers explained the long term difficulties, over and above concurrent experiences.

The atypical behaviours described in these studies include an absence of stranger wariness, disinhibited behaviour (e.g. apparent indiscriminate friendliness to adults, difficulties forming selective attachments), attention seeking behaviour and a lack of proximity seeking or checking back with the caregiver at times when this would be expected (e.g. on separation from the caregiver; Chisholm, 1998; Chisholm et al., 1995; O'Connor et al., in press;

Zeanah, 2000). These behaviours are largely consistent with the descriptions of attachment disorder in both the DSM-IV and ICD-10 (American Psychiatric Association, 1994 and World Health Organisation, 1992 respectively). Attachment disorder may therefore be a useful framework within which to understand the phenomenon observed in children who have experienced institutionalisation or global deprivation (O'Connor, 2002).

Attachment disorder, as described by both DSM-IV and ICD-10 (American Psychiatric Association, 1994; World Health Organisation, 1992), is divided into two types: inhibited and disinhibited. An inhibited child is described as withdrawn and hypervigilant to the caregiver's behaviour, whereas the disinhibited child displays indiscriminate sociability and no selective attachment relationships. Consistent descriptions of inhibited and disinhibited behaviour have been reported (Albus & Dozier, 1999; Chisholm, 1998; O'Connor et al., in press; O'Connor, 2002; Zeanah, 2000). The consensus is that the latter is by far the most common manifestation of attachment disorder.

Although attachment disorder behaviours are correlated with cognitive ability, conduct and attentional problems, it appears that the behaviours index a distinct set of symptoms (O'Connor & Rutter et al., 2000) and such difficulties are relatively enduring. The ERA study found notable stability in individual differences in attachment disorder behaviour between 4 and 6 years and later between 6 and 11 years (O'Connor et al., in press; O'Connor & Rutter et al., 2000).

1.8.6 Summary

1. Children who have suffered early severe deprivation are less likely to exhibit traditional patterns of attachment.
2. Deprivation, including the lack of a consistent caregiver, has been associated with attachment disorder behaviour.
3. The greater the period of deprivation experienced the greater the likelihood of exhibiting attachment disorder behaviours.
4. The effect of early deprivation and institutionalisation on attachment disturbances continues at least into adolescence, lending support to the hypothesis that early experience of deprivation has persisting effects on attachment behaviour independently of concurrent experience.

1.9.0 Measurement of attachment

1.9.1 Measurement of attachment beyond infancy

Studying attachment beyond infancy has led to a shift in attention from measuring behavioural indices of attachment to studying representations of attachment relationships. As children mature, they spend less time in proximity with their parents; security is achieved through accessing the internalised representations of the attachment figure rather than gaining physical access to the attachment figure. Therefore, behavioural indices of attachment such as those measured in the Strange Situation (Ainsworth et al., 1978) become less

meaningful as children do not experience the same anxiety at separation from the attachment figure (Cicchetti, Cummings, Greenberg & Marvin, 1990).

Attachment measures exist for infants (Strange Situation; Ainsworth et al., 1978) and adults (The Adult Attachment Interview; George, Kaplan & Main, 1985), but it is only recently that attention has shifted to developing reliable and valid measures to assess the IWM of attachment in children and adolescents. The Child Attachment Interview (CAI; Target, Shmueli-Goetz, Datta & Fonagy, 2000) has been developed for use with 7-12 year olds and is based on both the Strange Situation and the Adult Attachment Interview (AAI) paradigms and coding strategies. The CAI is coded from a video recording to enable the assessment of behavioural and representational indices of attachment.

1.9.2 Measurement of disinhibited attachment behaviour

The attachment behaviours identified in children who have experienced early severe deprivation do not conform to traditional descriptions of attachment patterns (A, B, C, D; Ainsworth et al., 1978; Main & Solomon, 1990) and therefore alternative methods of measuring attachment patterns in deprived groups need to be considered. Many ex-institutionalised children who exhibit disinhibited attachment behaviours also receive traditional ratings of secure or insecure attachment (Chisholm, 1998; Hodges & Tizard, 1989; O'Connor et al., in press; Zeanah, 2000). At age 11, ex-institutionalised Romanian adoptees demonstrate indiscriminate friendliness towards strangers, alongside apparently

secure attachment to the parents (O'Connor et al., in press). Such behaviours are paradoxical; secure attachment to the parent implies that the child's attachment system (including biologically programmed behaviours such as stranger wariness) is functioning well, but indiscriminate friendliness towards a stranger contradicts the current understanding of the attachment system (O'Connor, 2002). The co-existence of both disinhibited and secure attachment behaviour demonstrates that current measures of attachment do not adequately describe the attachment strategies of children who have experienced severe disturbances in early attachment relationships (O'Connor & Zeanah, 2003). Traditional measures assume a selective attachment to a consistent caregiver; something that the majority of institutionalised children were not fortunate enough to experience.

Questions have been raised about whether disinhibited attachment behaviour indicates a disturbance in concurrent attachment relationships or whether it indicates problems in social relationships given that it occurs between children and strangers rather than attachment figures (O'Connor et al., in press). Rutter (1981) proposed that infancy is a sensitive period in terms of relational development; the lack of opportunity to form a selective attachment during infancy has important implications for later relationships and may continue to affect the child even if subsequent opportunities arise to develop a discriminating relationship with a consistent caregiver. Given this argument, the lack of selective attachment in infancy might not prevent the child forming an attachment relationship in the future, should the opportunity arise, but it might

play a role in the development of disinhibited behaviour towards non-attachment figures and could play a causal role in phenomena such as lack of stranger wariness (O'Connor et al., in press). Thus the disinhibited behaviours could be related to difficulties in early rather than concurrent attachment relationships.

1.9.3 Assessment of disinhibited attachment behaviour in middle childhood

To date, the CAI has not been used with samples of children who have experienced institutionalisation or global deprivation and so it seems likely that the measure would need to be adapted to cover the assessment of attachment disorder.

O'Connor and Zeanah (2003) suggest that the core features of attachment disorder described in the DSM-IV and ICD-10 be included in future measures of attachment disorder or attachment disorder behaviour. Although they describe flaws within the diagnostic criteria, they support their use in order to encourage consistency in measurement between different studies. Any measure should therefore cover the two forms of disinhibited and inhibited attachment disorder, including measures of inappropriate approach to strangers, lack of stranger wariness, lack of appropriate physical boundaries, seeking out physical contact with unfamiliar adults and failure to approach the caregiver when distressed (O'Connor & Zeanah, 2003).

The current description of attachment disorder focuses primarily on behavioural indices taken from observations of infants. Excessive talking and persistent conversation have been identified as possible indicators of attachment disturbance in middle childhood (Tizard & Hodges, 1978; Tizard & Rees, 1975). Clinical observations of ex-institutional children identified the occurrence of intrusive or personal questions, persistent questioning, lack of awareness of social boundaries and notable deficits in social understanding and interpretation of social cues as possible indicators of attachment disturbance (O'Connor et al., in press).

Measures of attachment disorder in middle childhood would need to look at non-behavioural factors also, such as the cognitive indicators of attachment patterns described in the CAI (e.g. mentalising and coherence). Exploration of the attachment patterns of children who have suffered early deprivation might highlight patterns in the cognitive skills or deficits demonstrated by children exhibiting disinhibited attachment behaviour.

O'Connor et al. (2003) reported that at age 4, children were observed to have difficulty regulating or containing emotions, such as excitement. Behaviours reported included: 'extreme forms of emotional over exuberance, silliness, coyness and excessive playfulness more typical of a much younger child' (O'Connor et al., 2003, p. 33).

1.9.4 Summary

1. As attention shifts from studying attachment in infancy to middle childhood and beyond, measures have been developed to assess children's IWM of attachment relationships.
2. Ex-institutionalised children demonstrate strong attachment relationships alongside disinhibited attachment behaviour.
3. Disinhibited behaviour might be a disturbance of social rather than attachment relationships, resulting from the lack of a selective attachment relationship in infancy.
4. New measures need to be developed capable of assessing both cognitive indicators of attachment and disinhibited attachment behaviour which is characteristic of children who have experienced severe early deprivation.

1.10.0 Attachment stability

1.10.1 Continuity of attachment across the lifespan

Although attachment theory predicts stability of attachment relationships under conditions of environmental consistency, it acknowledges that IWM of attachment may be updated in response to conditions of sustained change (Sroufe et al., 1990; Weinfeld et al., 1999). If IWM of early attachment relationships influence later relationships, a degree of continuity of attachment patterns is expected. Overall continuity of attachment relationships from infancy to early and middle childhood has been found (Freitag et al., 1996; Howes et al.,

1998; Main & Cassidy, 1988). More recently an extended longitudinal study has examined the stability of attachment pattern across the lifespan by measuring attachment in infancy and again in adulthood (Waters, Merrick, Treboux, Crowell & Albersheim, 2000). Assessment of attachment patterns in infants and then at follow-up in adulthood 15-21 years later showed a 64% correspondence between attachment pattern ratings in the AAI and the Strange Situation. The relationship between attachment stability and stability of circumstances has been demonstrated empirically; stability of attachment classifications taken over two time points is higher in studies of stable, middle class families, but lower in families who have experienced stressful life events (Bar-Haim, Sutton, & Marvin, 2000; Howes et al., 1998; Waters et al., 2000). Some claim that stability of attachment may be the exception rather than the rule (Belsky, Campbell, Cohn & Moore, 1996).

The majority of studies into stability of attachment relationships in infants and preschoolers have rated attachment according to behavioural observations of infants and preschoolers with their caregivers. However, Main et al. (1985), argue that we should not assume that the behaviours observed provide us with a picture of the child's internal working model of the attachment relationship. In order to provide a more accurate picture of attachment relationships in middle childhood and in adolescence there is a need for the development of valid and reliable measures of attachment representations.

Studies which attempt to measure attachment representations then face the dilemma of how to separate out the effects of the early rather than the concurrent attachment relationship; what does the IWM represent? Howes et al. (1998) concluded that their measurement of child attachment to the mother at age 9 captured the concurrent relationship rather than a generalised working model of the attachment relationship formed in infancy. Bar-Haim et al. (2000) found agreement between mental representations of 4 _ year olds and concurrent attachment behavioural patterns but not attachment patterns rated in infancy, which supports the hypothesis that IWM reflect the current attachment relationship rather than early attachment relationships.

1.10.2 Summary

1. Attachment theory predicts stability of attachment relationships under conditions of environmental stability (through the operation of IWM).
2. There is a need to develop a measure of attachment representations to provide a more accurate picture of attachment relationships in middle childhood.
3. It is difficult to measure whether IWM of attachment represent early or concurrent experience.

1.11.0 Study aims

The present study has a number of aims. The first aim is to investigate the effect of early experience of severe deprivation on children's ability to form peer relationships in middle childhood (at age 11). The study has the advantage of being able to consider the effect of early experience on later experience independent of concurrent experience, as the Romanian adoptees experienced a radical change in circumstances when they were adopted. If effects of early experience on abilities in peer relationships are found in this group of children, consideration must then be given to the circumstances which mediate the link between deprivation and difficulties in peer relationships, given that this relationship cannot be explained by stability in the environment.

On the basis of findings from maltreated and institutionalised (but not deprived) populations we would expect the children in this study to exhibit marked difficulties in relationships with their peers. Although earlier data from the ERA study did not find a significant effect of early deprivation on peer relationships, as children mature and developmental tasks and demands change, peer relationship disturbances may emerge.

The second aim is to explore whether the relationship between deprivation and functioning within peer relationships is mediated by children's attachment relationships with their adoptive parents. Given that the children within this study were reared for some time by multiple caregivers, preventing the formation

of a selective attachment, it is expected that the children will demonstrate difficulties in the realm of attachment relationships. Considering the link between attachment relationships and peer relationships (due to the influence of IWM and emotion regulation on interactions with others) it is expected that the effect of deprivation on attachment relationships will mediate the link between deprivation and peer relationship difficulties.

This study focuses on a group of children aged 11 years. A measure of attachment will need to include measurement of internal representations of attachment as well as disinhibited and atypical attachment behaviours.

1.12.0 Hypotheses

1. A history of early severe deprivation through institutionalisation will predict difficulties in peer relationships in middle childhood.
2. A history of early severe deprivation will predict difficulties in attachment relationships.
3. Difficulties in attachment relationships will mediate the relationship between early severe deprivation and the quality of later peer relationships.

CHAPTER TWO: METHOD

2.1.0 Context

This study forms part of a larger, longitudinal study, the English and Romanian Adoptees (ERA) study, which is examining the effects of early deprivation on multiple aspects of child development. The research project is assessing the development of a group of children, who experienced institutional rearing in Romanian orphanages in infancy and early childhood and were then adopted by British families. The group are compared to a group of UK adoptees who did not experience early deprivation or institutionalisation (see Rutter et al., 1998 for details). The children's development has previously been assessed at 4 and 6 years of age. The present study is based on assessments carried out when the children were 11 years of age.

2.2.0 Participants

2.2.1 *Romanian sample*

Due to limitations of time available for this thesis, the current study examined data from a sub-sample of the participants. The selection process for the entire sample is described here as the same process applies to the sub-sample assessed in this study.

The sample was selected from 324 children adopted by UK families between February 1990 and September 1992 (figures from the Department of Health

and the Home office). The final sample was selected using a random stratified sampling design. The total sample consists of 165 children: 58 children (53% male) were adopted before the age of 6 months (termed 'early placed'); 59 children (44% male) were placed between 6-24 months (termed 'middle placed'); and 48 children (65% male) were placed between 24 and 48 months (termed 'late placed'). 81% of the adoptive parents who were approached at the start of the project (when the children were aged 4 and 6 years) agreed to participate (O'Connor et al., in press).

2.2.2 UK sample

The comparison group consists of 52 UK-born children (35% girls), who were placed into adoptive families between 0 and 6 months of age. Comparison adoptees were identified through social services departments and adoption agencies. None of the UK adoptees experienced severe deprivation. Names of comparison adoptees were provided by the adoption agencies or social services departments only after parents had consented to participate and therefore it was not possible to determine the precise rate of participation. However, from the information available it appears that about half of the families who were contacted agreed to participate (Rutter et al., 1998).

2.2.3 The sub-sample for this study

At the 11 year assessment, parent report data was available for 213 of the original 217 children (98.2%). Two of the families declined to participate and two of the families could not be located. All four of these children were from the Romanian sample; one was from a non-institutional environment.

The sub-sample for the current study was selected from the main ERA sample using a random stratified sampling design with the aim of obtaining 30 participants from each of the four groups. The final sample of the present study (hereafter referred to as the 'sample') comprised 120 children divided into four groups: early placed children who entered the UK before 6 months of age (n=30), middle placed children who entered the UK between 6-24 months (n=31), late placed adoptees who entered the UK between 24-48 months (n=29) and the UK controls (n=30), all of whom were adopted before 6 months of age. Of the 120 participants 57 were female, 63 were male. Table 1 presents the mean age of entry into the UK and child gender for each of the four groups. There was no significant difference in the number of boys and girls within the groups in the sub-sample ($\chi^2(3) = 7.21, p = .07$).

Table 1. Mean age of child's placement with adoptive parents by adoptee group and child gender

		Age child placed with parents (in months)		
Adoptee groups	Gender	N	Mean	SD
UK (0-6 months)	Female	17	2.24	1.56
	Male	13	2.38	1.50
	Total	30	2.30	1.51
Romanian (Entry 0-6 months)	Female	18	3.83	1.34
	Male	12	4.00	1.28
	Total	30	3.90	1.30
Romanian (Entry 6-24 months)	Female	9	12.22	5.81
	Male	22	14.09	4.78
	Total	31	13.55	5.07
Romanian (Entry 24-48 months)	Female	13	28.00	3.74
	Male	16	31.38	4.95
	Total	29	29.86	4.70

2.3.0 Demographics and family background

Data from the overall sample showed that adoptive families of both comparison and Romanian children were generally middle-class, were from a higher occupational level and had received a slightly better education than the general UK population (as is typical of adoptive families); there were no statistically significant differences between the two groups on these factors. The differences between case and comparison families are attributable to the UK adoption policies (parents of Romanian adoptees were older at time of adoption, already had biological children of their own and were less likely to have adopted before than adopting parents of UK children; see Rutter et al., 1998, for a more detailed account).

Of the Romanian sample, there was no association between family characteristics (e.g. socio-economic status) and child characteristics (e.g. age at entry into the UK). Early placed Romanian adoptees were similar to late placed adoptees on factors such as age placed in an institution and physical condition on entry into the UK.

The sub-sample was compared to the overall sample on a number of demographic variables: child gender, socioeconomic status of family, age of parents, educational attainment of parents, and parents' level of qualifications. There were no significant differences in demographic factors between those sampled in the current study and the remainder from the ERA sample. The sub-sample is therefore representative of the total sample. The

demographic factors within the sub-sample are discussed in the results section.

2.4.0 Conditions in Romanian orphanages

The children's significant physical and developmental delay at entry to the UK indicates that all the children adopted from Romania experienced severe global deprivation (Rutter et al., 1998). Castle and her colleagues (1999) report that in the orphanages children were often confined to a cot or spent hours sitting on potties; they had few or no toys and were washed by being held under a cold tap. Nutrition was very poor; children were fed gruel, sometimes from bottles with large teats which were left propped up in the child's cot. The staff to child ratio was very low, sometimes 20 children or more were looked after by one nurse. Very few of the children in the sample were adopted from the same institution which means that the quality of the care received may have differed depending on the institution. However, the quality of care in the orphanages ranged only from 'poor to appalling' (Castle et al., 1999) so for the purposes of this study the children are considered to have all experienced global deprivation.

There was little information regarding the reasons why the children were placed into orphanages, but it seems clear that overall, children in Romania were institutionalised due to extreme social and economic adversity (Castle et al., 1999; O'Connor & Rutter et al., 2000). The majority of the children (85%) entered institutions in the first month of life and so it seems unlikely that developmental delay or disability were reasons for the decision.

2.5.0 Ethics

Ethical approval for the whole ERA project was obtained in 1996 (from the Institute of Psychiatry and the Bethlem and Maudsley NHS Trust, reference number 59/92; see appendix 1 for most recent ethical approval verification). When the children were reassessed at age 11, families received information about the study and informed consent was obtained from both parents and children.

2.6.0 Procedure

The assessments described in this study were carried out as part of the ERA project. The assessment of IQ was carried out when the children were 6 years old by trained interviewers. Assessments of attachment and peer relationships were administered when the children were aged 11.

At age 11, two home visits were made by trained interviewers from the ERA study team. The first visit consisted of a tape-recorded interview with the primary caregiver (usually the mother). Questions from the parent interview relevant to this study are described below. About three months later, a second assessment was conducted consisting of standardised cognitive and developmental assessments, observations and an interview with the child regarding his/her parents. This latter interview, the Child Attachment Interview (CAI, version 2, cf. Target, Fonagy & Shmueli-Goetz, 2003) is described in the present study. The CAI was videotaped to allow for coding of behaviour during the interview as well as verbal responses. The CAI took between 10-55 minutes to administer (mean time 30 minutes).

The author was unable to participate in data collection, and thus participation in this study consisted of involvement in devising a coding scheme for the CAI (see below).

2.7.0 Design

The current study assesses children's representations of attachment to adoptive parents through observation and coding of the children's responses to the CAI. The design is a non-equivalent groups, posttest-only design of four levels. The dependent variables are attachment and quality of peer relationships. The main independent variable is deprivation, based on the categorical variable of children's membership of one of four groups (early, middle or late placed Romanian adoptees or UK controls). As children's age of entry into the UK corresponds to the time the Romanian adoptees left the depriving institution, duration of deprivation can also be assessed as a continuous variable. The UK adoptees did not experience early deprivation. Their use as a comparison group allows for the effects of adoption in the absence of early deprivation to be controlled.

2.8.0 Measures

2.8.1 Cognitive development

Cognitive development was assessed using the Wechsler Intelligence Scale for Children (WISC-III: UK Edition; Wechsler, 1992), the most commonly used standardised measure of children's intelligence. The WISC-III consists of several subtests each measuring a different facet of intellectual ability.

Five of the WISC-III subsets were administered: three subtests from the Verbal inventory – Vocabulary, Similarities and Digit Span – and two from the Performance inventory - Block Design and Object Assembly.

Verbal subtests tend to be aurally presented, responded to orally and therefore test children's verbal comprehension and expression and their ability to mentally represent and manipulate verbal concepts. The vocabulary subtest required the children to explain the meaning of words; in the similarities subtest the children were asked to describe in what way two concepts were alike (e.g. a banana and an orange). The digits forward subtest comprises a series of orally presented number sequences that the child is asked to repeat verbatim and then in reverse order and is designed to assess the child's working memory.

Performance subtests assess the children's visuospatial organization, visual-motor co-ordination and perceptual ability. In the block design subtest the children had to copy a pattern using coloured blocks and object assembly involved assembling cardboard puzzles of common stimuli (e.g. a car and a horse). The scores were prorated to give a full scale IQ score, which is used in the analyses below.

2.8.2. Attachment representations at age 11 years

The children were administered a modified version of the Child Attachment Interview (CAI, version 2, cf. Target, Fonagy & Shmueli-Goetz, 2003). The CAI is a semi-structured interview, conceptually based on the Adult

Attachment Interview (George et al., 1985) and designed to assess the internal representations of attachment in 7-12 year olds. The CAI assesses the child's style of attachment to each main caregiver, together with the child's overall state of mind regarding attachment. It is assumed (as in the coding of the Adult Attachment Interview) that the narrative obtained from the CAI reflects the child's internal representations ('internal working model') of attachment. The CAI scales analyse attachment-related narratives at the verbal rather than behavioural level. Cognitive indicators of attachment pattern, such as mentalising ability and coherence (see below) are inferred from the narrative.

The CAI consists of questions about the child's relationship with his/her parents. The questions are designed to activate the child's attachment system, for example, by asking about times when the child was hurt or needed help. The child is asked to give adjectives to describe their relationship with mum or dad, and to describe specific examples of relationship episodes to illustrate the adjectives given. The ERA Study modified the original CAI slightly (see appendix 2). For example, questions concerning loss were combined into a single question.

2.8.3 The development of the coding scheme for the CAI

Due to limitations of existing coding schemes in identifying attachment disorder behaviours (cf O'Connor & Zeanah, 2003), a new coding scheme was devised; one that would both assess children's representations of

attachment to parents and capture the atypical behaviours associated with attachment disorder. The formulation of the coding scale was driven by theory, empirical findings and clinical observations.

The development of the new coding scheme was undertaken by the current author and a second researcher, in discussion with members of the ERA study team. The coding scheme development involved three processes. Firstly, the new coding scheme was based on the existing coding and classification system for the CAI (Target, Shmueli-Goetz, Datta & Fonagy, 2000) and included the constructs coded by the original CAI in a modified form.

The reason for developing an alternative coding scheme was based on several considerations. One of the main aims was to separate out global ratings of attachment patterns (such as 'avoidant') into their component parts to enable more meaningful descriptions of children's attachment patterns. In order to achieve this, the second part of the process involved viewing videos of the CAI interview (with the children at age 11 years) to identify the behavioural and verbal analogues of the constructs described by the CAI coding scales. Having created a list of the predicted responses and behaviours from the CAI video, a new coding scheme was created by grouping the analogues into themes or domains of skills; coding scales were devised to capture each domain. The scales in the current coding scheme are therefore similar to but not the same as those described in the original CAI manual and provide specific descriptions of behaviour or cognitive

constructs rather than global descriptions of constellations of constructs. For example, 'coherence' (formerly rated on the basis of scores from four scales) became one scale in the current study and as such represents a narrower description of coherence to the previous, broader construct.

The development of the coding scheme had an exploratory nature; an important consideration in developing a new scheme was that the existing coding system did not account for a range of atypical behaviours that had been identified both in previous studies (Chisholm, 1998; O'Connor & Rutter et al., 2000; O'Connor et al., in press) and anecdotally by researchers involved in the ERA study. Thus a primary goal of the newly devised scheme was to account for not only individual differences in attachment (in)security, but also to describe a range of behaviour that might be connected with attachment disorder behaviour (known to exist in a sizeable sub-sample of the children adopted from institutions) and to establish whether any patterns exist.

In the third part of the development process, descriptions of atypical behaviours were used to compile further topographies of atypical behaviours and these were included in the coding system. The final coding scheme scales therefore relate to both behavioural and cognitive indicators of attachment patterns (see appendix 3). The scales are described below.

The coding of the videotapes did not begin until the team had agreed on the operational definition of all the items. A number of training sessions were

completed to ensure that the two coders (the author and a second researcher) understood all the items. The raters were blind to the children's group membership. Twelve videos were rated to check for reliability before coding the final sample of videos. Once reliability was obtained ($\kappa = >.7$), the sample of 120 videos was coded. Inter-rater reliability (see data analysis section) was established on 20/120 videos, randomly selected at regular intervals throughout the coding process. This allowed for continual monitoring of coding and guarded against coder drift (Barker, Pistrang & Elliot, 1994).

2.8.4 *The coding scheme scales*

2.8.4.1 *Sub-set of scales*

This study is just concerned with the domains of functioning that have previously been associated with quality of peer relationships (cf Allen & Land, 1999; Cassidy et al., 1996; Hay et al., 2004). The coding scheme scales of relevance to this study are: emotional non-containment, coherence and mentalising. The coding scheme also included a list of atypical behaviours. The scales are described in more detail below.

2.8.4.2 *Emotion non-containment*

Emotion regulation has been operationalised in different ways in the many studies investigating this concept (Contreras et al., 2000). The current scale was based on previous descriptions of emotion regulation but does not attempt to measure all the aspects of emotion regulation described in the

literature (such as attention regulation; Eisenberg, Guthrie et al., 1997). The scale concentrates on the ability to regulate and control emotion and therefore for clarity's sake it was labelled emotion non-containment. The emotion non-containment scale measures the child's ability to describe relationship episodes with the appropriate level of affect; to describe difficult emotions without appearing overwhelmed; to maintain a natural flow of affect, rather than rapidly oscillating from one emotion to another. Each item was rated on a five-point scale taking into account the whole interview narrative (0 = able to describe events with appropriate level of emotion, whether positive or negative; 1= generally able to regulate emotions although some evidence of difficulty; 2= moderately contained emotion; 3= difficulty containing emotions; 4= overwhelmed by emotions, extreme swinging of affect).

2.8.4.3 *Mentalising*

Mentalising describes the ability to take into account the intentions and feelings of others. The mentalising scale measures the quality of references made regarding mental and emotional states and the child's ability to understand the cause and effect of mental and emotion states. Mentalising ability was rated on a three-point scale (0= no references made, 1= basic references, 2= advanced references). The children's responses to each of 10 questions were rated individually for quality of mentalising.

2.8.4.4 *Coherence*

The coherence scale assesses the child's ability to present a coherent and organised narrative about relationship episodes and was based on Main's description of narrative coherence (Main, 1991). A coherence rating was given on a five-point scale on the basis of the whole interview (0 = very incoherent and disorganised responses with provision of irrelevant detail; 1= incoherent responses and evidence of tangential talking; 2= evidence of both coherent and incoherent responses; 3= coherent and organised responses which lack illustration; 4= very coherent, clear and organised responses given with appropriate detail).

2.8.4.5 *Atypical behaviour checklist*

This checklist consisted of 13 behaviours previously associated with severe early deprivation (Albus & Dozier, 1999; Chisholm, 1998; Chisholm et al., 1995; O'Connor et al., in press; Tizard & Hodges, 1978; Tizard & Rees, 1975; Zeanah, 2000) or observed in clinical observations during the interviewing process and identified as atypical within the context of the interview. The 13 behaviours included appearing frightened of the interview situation; exhibiting bizarre facial expressions; seeking physical contact with the interviewer; setting the agenda of the interview; appearing hyper aroused; exhibiting grossly immature behaviour; demonstrating overly concrete thinking; appearing excessively distracted; showing contempt for the interviewer and showing extreme swinging of emotions. Children were assessed on whether they appeared to unnerve the interviewer, i.e. whether their behaviour during the interview (such as asking off-task questions)

caused the interviewer to lose track of the interview, to repeat a question or appear frustrated. Zoning out, (looking very flat or absorbed elsewhere and then seeming to 'snap back' into attention) was assessed and finally, violation of the interview context was rated e.g. children did not adopt the norms of interviewer/interviewee roles or boundaries and asked the interviewer personal questions.

The presence of each atypical behaviour was scored on a three-point scale: (0= no evidence of behaviour, 1= slight occurrence of behaviour, 2= clear evidence of behaviour).

2.8.6 Quality of peer relationships at age 11 years

Parents were administered a semi-structured interview to elicit information about their child's level of functioning with peers (see appendix 4).

Difficulties in peer relationships were predicted for children exhibiting attachment disturbances. The difficulties with peers assessed here reflected the difficulties in interactions with strangers seen in children with attachment disorder (Chisholm, 1998; O'Connor, 2002; O'Connor et al., in press) i.e. difficulties concerned problems with differentiation and disinhibition rather than aggression and peer rejection as measured in studies of normative populations (Hay et al., 2004).

Parents were asked eleven questions about their child's peer relationships. The questions assessed the following dimensions of peer relationships:

difficulty making or keeping friends; ability to relate to other children; age preference of friends (i.e. whether child prefers friends who are younger or older, same age or no preference); differentiation of friends from non friends; evidence of over eagerness in interactions with children; evidence of unwanted physical contact towards children. Each item was rated on a three-point scale (0= no difficulty, 1= mild/moderate difficulty and 2= major difficulty). In addition, the parents were asked whether the child had a clear best friend, whether this friend was the same sex, whether the child used the friend as a confidante and finally, how important this friendship was to the child.

The peer interview measures at age 11 years were factor analysed by means of a principal components analysis, with varimax rotation. One factor with five loadings greater than .4 was found. This factor explained 30% of the total variance. This factor included the following items: difficulty making or keeping friends; ability to relate to other children; differentiation of friends from non friends; age preference of friends; over eagerness in interactions with children and unwanted physical contact towards children. The internal consistency for the six-item scale was $=.81$.

2.9.0 Inter-rater reliability

20 of the 120 videos of the CAI interview were coded by two raters blind to the children's group membership (early, middle or late placed and UK controls). Inter-rater reliability was based on correlations between raters for

the five point scales and weighted kappa scores for the three point scales. For the five point scales, reliability scores ranged from .48 – .98, mean = .79. Reliability scores for the three point scales ranged from .36 - .92, mean = .67. Reliability scores for the scales of relevance to this study are given in table 2. Variables with poor inter-rater reliability (less than .65) were dropped from further analyses. For the mentalising scale, this meant that the mentalising scores for four of the questions were dropped (question 2: tell me three words that describe yourself; question 8: what happens when you're ill or you hurt yourself?; question 10: have you ever been away from your parents for more than a day?; question 11: what happens when your parents argue?). The internal consistency of the mentalising scores was reasonable (alpha = .60) and therefore the remaining individual mentalising scores for each question were collapsed to give an overall score of mentalising ability.

Four of the atypical behaviours (AB) were dropped from further analyses due to inter-rater reliability of less than .65 (AB3: unnerving the interviewer; AB4: zoning out; AB6: showing overly concrete thinking; AB9: seeking physical contact with the interviewer). In order to further investigate whether the remaining atypical behaviours were all dimensions of the same construct, Cronbach's alpha and item-total correlations were performed to examine the internal consistency of the atypical behaviours. Although internal consistency was very high (alpha = .78, item-total correlation range $r = .43 - .62$) the item-total correlation score for atypical behaviour 1, was very low, ($r = -.11$). Atypical behaviour 1 was therefore dropped from the group; internal consistency for the remaining atypical behaviours increased, alpha = .82.

Table 2. Correlations for reliability analysis

Item	Inter-rater reliability (Correlation*/Kappa**)
<u>Emotion non-containment*</u>	.80
<u>Coherence*</u>	.79
<u>Mentalising**</u>	
Adjectives to describe self	.43
Adjectives to describe Mum	.67
Adjectives to describe Dad	.71
Mum upset with you	.76
Dad upset with you	.79
Your feelings are hurt	.80
You are physically hurt	.57
Someone moved away/died	.72
Away from parents	.36
Parents argue	.49
<u>Overall mentalising score*</u>	.71
<u>Atypical Behaviours**</u>	
Appearing frightened of the interview situation	.92
Exhibiting bizarre facial expressions	.69
Unnerving the interviewer	.42
Zoning out	.53
Exhibiting grossly immature behaviour	.69
Demonstrating overly concrete thinking	.56
Appearing excessively distracted	.71
Violating the interview context	.89

*Correlation was used to calculate inter-rater reliability for 5-point scales (emotion non-containment and coherence)

**Kappa was used to calculate inter-rater reliability for 3-point scales (mentalising and atypical behaviours)

Table 2 continued. Correlations for reliability analysis

Item	Inter-rater reliability (Correlation*/Kappa**)
<u>Atypical Behaviours**</u>	
Seeking physical contact with the interviewer	.49
Setting the agenda of the interview	.71
Appearing hyper aroused	.88
Showing contempt for the interviewer	.88
Showing extreme swinging of emotions	.83
<u>Overall atypical score*</u>	.98

**Correlation was used to calculate inter-rater reliability for 5-point scales (emotional non-containment and coherence)*

***Kappa was used to calculate inter-rater reliability for 3-point scales (mentalising and atypical behaviours)*

CHAPTER THREE: RESULTS

3.1.0 Research aims

The main aim of this study was to investigate a) whether early deprivation was associated with difficulties in peer relationships at age 11, and b) whether this association was mediated by attachment relationships to parents. Testing of the hypotheses proceeded in three stages: firstly the relationship between experience of severe early deprivation and peer relationship difficulties was examined; secondly the relationship between deprivation and difficulties in developing attachment relationships at age 11 was assessed; thirdly, the association between deprivation and peer difficulties was re-examined, controlling for the influence of attachment to assess whether attachment mediated the relationship between deprivation and peer relationship difficulties.

The results of this study are presented in six sections: firstly, the data analysis is described. In the second section, the demographic factors (IQ, SES, parent education and qualifications) of the four groups are compared in order to check for differences between the groups in terms of demographic make-up; additionally, the relationship between the demographic factors and each of the dependent variables (peer relationship difficulties, emotional non-containment, mentalising, coherence and atypical behaviours) is considered to check for background demographic factors that could potentially be confounded with an association between deprivation and the dependent variables. In the remaining

four sections, the analysis of each of the hypotheses is described in turn followed by a summary.

3.2.0 Data analysis

3.2.1 Hypothesis testing

In order to test the four hypotheses put forward in this study a number of one-way ANOVAs were performed to test for associations between the variables. In order to do this in a theory-driven manner, while controlling for type I error, planned comparisons were used. To test the effect of deprivation per se (rather than duration of deprivation) on the dependent variables (peer relationship difficulties, coherence, mentalising, emotional non-containment, atypical behaviours) the first planned comparison compared mean scores on the dependent variable for the Romanian group of adoptees (as a whole group) with those of the UK group. The second prediction was that there would be a dose-response effect of duration of deprivation on the dependent variables (level of peer relationship disturbance or attachment quality). The second and third planned comparisons aimed to test this prediction by comparing the scores for each dependent variable within the group of Romanian children. The second planned comparison compared the mean dependent variable scores for early placed adoptees with the mean scores for the late placed adoptees; the third comparison compared the mean scores for the middle placed adoptees with those of the late placed adoptees.

3.2.2 The mediational model

The proposed mediational effect of attachment on the relationship between deprivation and peer relationships was tested using the model described by Baron and Kenny (1986). In a mediational model three causal paths exist between the variables (Baron & Kenny, 1986): the first pathway links the predictor variable with the criterion variable; the second pathway is between the predictor and the supposed mediator variable; and the third pathway links the mediator and the criterion variable. In order to establish mediation, associations between all three pathways have to hold (Baron & Kenny, 1986). Having established all three pathways, mediation can be said to hold true if the association between the predictor and criterion variable is substantially reduced when the effects of the mediator variable on the criterion variable are controlled.

3.3.0 Demographic variables

3.3.1 Process of examining the variables

In order to screen for background demographic factors that could be associated with the adoption process, and which may also potentially confound associations between deprivation, peer relationship difficulties and attachment, it was necessary to do two things. Firstly, the demographics of each group were examined in order to establish whether there were any differences between the groups in terms of age of parents, socio-economic status and other demographic factors. Secondly, it was important to establish whether there

were any associations between the demographic factors and the dependent variables (peer relationship difficulties and the four attachment scales) which might need to be accounted for in later analyses of the relationships between deprivation, peer competence and attachment.

3.3.2 Distribution of demographic variables according to group membership

The means of the demographic variables of IQ, socio-economic status, parent age, parent education and parent qualifications were examined across the four groups (UK, early, middle and late placed Romanian adoptees). The corresponding means and frequencies are presented in table 3. A one-way analysis of variance was calculated for the demographic variables for which continuous or ordinal data was collected (t values and their significance are shown in table 3). Planned comparisons were computed to test for differences between the means for UK and Romanian adoptees, between early and late placed adoptees and finally between middle and late placed adoptees. The most notable difference between the Romanian and UK groups was that of level of intelligence. UK adoptees had a significantly higher IQ than the Romanian adoptees (UK mean IQ = 106.17, Romanian mean IQ = 88.94, $t = 4.96$, $df = 116$, $p < .01$). The range of UK Full Scale IQ equivalent scores was 65 to 128; Romanian IQ scores ranged from 46 to 121. Within the Romanian group, the mean IQ for early placed adoptees was significantly higher than that of late placed adoptees ($t = 2.93$, $df = 116$, $p < .01$); there was no significant difference

between the mean levels of IQ between the middle and late placed adoptees ($t = .48$, $df = 116$, $p = .63$). This indicates a dose-response effect of duration of deprivation on IQ.

Regarding the other demographic variables, there was no significant difference between the UK and Romanian groups in terms of parents' schooling or qualifications, but there was a significant difference in the age of mother's partners (usually the fathers); within the group of Romanian adoptees, the mother's partners tended to be older than partners who adopted UK children ($t = -2.14$, $df = 107$, $p = .03$). Furthermore, within the Romanian group, mother's partners in the early placed adoptees group had higher school attainment scores than late placed adoptees ($t = 2.65$, $df = 104$, $p < .01$).

The main focus of this study is on children's peer relationships at age 11. It may be that IQ is associated with difficulties in peer relationships, in which case the significant difference in level of IQ between the four groups of adoptees could partially, or wholly account for any differences found in level of peer relationship difficulties between the groups of children. In the next section, tests are conducted to see whether IQ is associated with any of the dependent variables, in order that such an association is accounted for in the analyses in later sections. The same consideration needs to be given to partner's age and partner's school attainment as there were also significant differences between the groups of Romanian adoptees on these demographic factors.

Table 3. Description of demographic variables according to group membership

Demographic variables	Adoptee group status				Planned comparisons: 1 = UK x Romanian 2 = Early x Late 3 = Middle x Late
	UK Means (SD)	Romanian Means (SD)			
	N=30	Early 0-6mths N=30	Middle 6-24mths N=31	Late 24-48mths N=29	
IQ	106.17 (13.65)	96.63 (19.76)	86.13 (13.78)	84.07 (17.98)	UK>Romanian**, Early>Late**
SES	2.23 (.82)	1.97 (1.10)	2.48 (1.15)	2.34 (1.11)	
MAge	44.77 (3.64)	48.23 (5.94)	46.29 (6.01)	46.14 (6.43)	
PAge	46.29 (4.32)	48.93 (5.73)	48.54 (5.75)	49.75 (7.54)	UK > Romanian*
MSchol	2.80 (1.35)	2.97 (1.40)	2.26 (1.59)	2.62 (1.37)	
PSchol	3.00 (1.33)	3.30 (1.20)	2.42 (1.45)	2.25 (1.80)	Early > Late**
MQual	1.83 (1.39)	2.03 (1.27)	1.84 (1.29)	1.59 (1.24)	
PQual	2.33 (1.30)	2.26 (1.32)	2.23 (1.18)	2.32 (1.39)	

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

IQ = Intelligence Quotient, SES= Socio-Economic Status (ordinal scale rated 1-6), MAge= Mother's Age, PAge= Partner's Age, MSchol= Mother's Scholastic Attainment (ordinal scale rated 0-4), PSchol= Partner's Scholastic Attainment (ordinal scale rated 0-4), MQual= Mother's Qualifications (ordinal scale rated 0-4), PQual= Partner's Qualifications (ordinal scale rated 0-4).

3.3.3 Correlations of demographic variables with dependent variables

The next stage of the analyses concerned the identification of any background demographic variables which might be related to the dependent variables so

that potential confounds could be accounted for in later analyses. A correlation matrix was computed to examine the relationship between the demographic variables and ratings of peer relationship difficulties and the attachment scales. Pearson's-r correlation coefficients and their significance are shown in table 4. As seen from the table, a number of significant associations were found. IQ was positively correlated with coherence ($r = .32, p <.01$), suggesting that higher cognitive ability is linked to a greater ability to present a coherent narrative in the CAI. IQ was also negatively associated with level of atypical behaviour and with rating of peer relationship difficulties ($r = -.31, p <.01$; $r = -.32, p <.01$) respectively, indicating that children who exhibit atypical behaviours, and children who have more difficulties in peer relationships also tend to score lower on IQ. Partner's age was significantly correlated with emotion non-containment ($r = .24, p = <.05$) indicating that children of older fathers (or mother's partners) tended to demonstrate a greater ability to regulate their emotions during the CAI. Partner's level of qualifications was negatively associated with child's rating of atypical behaviours and child's level of peer relationship disturbances ($r = -.25, p = <.01$; $r = .22, p = <.05$ respectively). These results indicate that the greater the partner's level of qualifications, the less likely the child is to demonstrate atypical behaviours and the lower the rating of peer relationship disturbances.

Table 4. Correlations among demographic variables, peer relationship difficulties and attachment scales

	Coh	Ment	AB	ENC	PRD
IQ	.32**	.06	-.31**	-.08	-.32**
SES	-.11	-.16	.13	-.06	-.10
MAge	.10	-.03	-.08	.10	.05
PAge	.01	-.04	.12	.24*	.06
MSchol	.14	-.03	-.14	-.09	.14
PSchol	.09	-.02	-.15	-.08	.09
MQual	.08	-.15	-.14	-.01	.09
PQual	.11	.06	-.25**	-.05	.22*

** Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Coh =Coherence (ordinal scale rated 0-4), Ment = Mentalising (ordinal scale rated 0-2), AB = Atypical Behaviour (ordinal scale rated 0-2), ENC = Emotion Non-containment (ordinal scale rated 0-4), PRD = Peer Relationship Difficulties (3-point scale: 0= no difficulty, 1= mild/moderate difficulty and 2= major difficulty), IQ = Intelligence Quotient, SES= Socio-Economic Status (ordinal scale rated 1-6), MAge= Mother's Age, PAge= Partner's Age, MSchol= Mother's Scholastic Attainment (ordinal scale rated 0-4), PSchol= Partner's Scholastic Attainment (ordinal scale rated 0-4), MQual= Mother's Qualifications (ordinal scale rated 0-4), PQual= Partner's Qualifications (ordinal scale rated 0-4).

Based on these correlations, and the analysis of the between group variance in demographic factors described in the previous section, the analyses in the following sections will need to account for the possible confounding effect of IQ on level of coherence, atypical behaviours and peer relationship difficulties and the potential effect of partner's age on children's level of emotion non-containment.

3.4.0 Hypothesis 1: Early deprivation and difficulties in peer relationships

3.4.1 Association between early deprivation and peer relationship difficulties

The main aim of this study was to examine the relationship between early experiences of severe deprivation and children's abilities to form relationships with peers at age 11. In order to test the effect of deprivation on level of peer relationship disturbances a one-way ANOVA was performed (means and contrast values are given in table 5). Planned comparisons revealed that there was a significant difference in quality of peer relationships between the UK adoptees and the Romanian group of children (means: .26 and .60 respectively; $t = -2.89$, $df = 93$, $p < .01$). Within the Romanian group, a significant difference was found between the mean scores on the peer scale for the early placed and late placed Romanian adoptees (means: .32 and .79 respectively; $t = -3.45$, $df = 93$, $p < .01$) but no significant difference was found between the peer difficulty scores for middle and late placed Romanian children (means: .67 and .79 respectively; $t = -1.02$, $df = 93$, $p = .31$).

The results indicate that the experience of deprivation per se had a detrimental effect on children's ability to relate well with peers. In addition, children who suffered severe deprivation for a longer period of time demonstrated greater difficulties with peers than those who were rescued from deprivation before the age of 6 months. The fact that there was a difference between the early and late placed adoptees but not between the middle and late placed children

suggests that the size of the dose-response effect of duration of deprivation on difficulties in peer relationships diminishes as the length of deprivation increases. The results indicate that although the Romanian children adopted after 24 months had higher mean scores of peer relationship difficulties than the children adopted between 6-24 months, the increase in scores was not significant.

In order to look directly at the linear relationship between deprivation and peer relationship difficulties, an analysis was performed within the Romanian group of adoptees only. The aim was to look at the relationship between duration of deprivation on level of peer relationship disturbances. In the above analyses, a categorical measure of deprivation was used as this allowed for both a test of deprivation, through the comparison of the UK and Romanian adoptees, and a comparison of duration of deprivation through the comparison of the three groups of Romanian adoptees. However, this does not allow for a direct test of the form of the relationship between deprivation and outcome (or at least, only a very limited one based on three ordinal categories). Accordingly, a correlational analysis, using a continuous measure of age of entry into the UK (equivalent to the age at which the child left the Romanian institution), was also conducted. As was mentioned above, it seemed that the effect of duration of deprivation on difficulties in peer relationships was not a completely linear relationship; there was a greater difference in scores of peer relationship difficulties between the early and late placed adoptees than between the middle and late placed adoptees suggesting that the effect of deprivation on level of peer relationship

difficulties was not directly proportionate to the length of deprivation experienced. In order to examine this idea more closely, a correlational analysis was performed to look at the curve estimate of the relationship between deprivation and peer relationship difficulties. The results show that in fact there was a positive linear effect of deprivation on peer relationship difficulty ($r = .33$, $p < .01$) but no quadratic effect ($t = -.69$, $p = .49$). These results indicate that there is no significant tailing off of the effect of deprivation on difficulties in peer relationships; the longer the period of deprivation experienced, the greater the chance that difficulties will be experienced in peer relationships.

3.4.2 Early deprivation, peer relationship difficulties and the effect of IQ

As described in earlier sections, significant differences were found between the groups in terms of IQ, and difficulties in peer relationships was also found to be associated with IQ. Given these factors, an ANCOVA was calculated to test whether the background factor of IQ was influencing the relationship between deprivation and difficulties in peer relationships (adjusted means for each group are given in table 5).

After adjusting for the effect of IQ on peer relationship difficulties, the significant effect of duration of deprivation on difficulties in relationships with peers remained; there was still a main effect of group (UK, Early, Middle or Late placed) on level of peer relationship difficulties ($F(3,92) = 4.08$, $p = .01$). Indeed, the effect of IQ on peer relationship disturbances was no longer significant once

the effect of group was controlled for ($F(1,92) = 1.76, p=.19$) which indicates that the effect of IQ on peer relationship difficulties overlaps with the effect of experience of deprivation.

Table 5. The effect of deprivation on peer relationship difficulties

Dependent Variable	Adoptee Group Status				Planned comparisons: 1 = UK x Romanian 2 = Early x Late 3 = Middle x Late
	Means				
	(SD)				
	<u>Adjusted Means</u>				
	UK	Romanian			
		Early	Middle	Late	
		0-6mths	6-24mths	24-48mths	
	N=30	N=30	N=31	N=29	
PRD	.26	.32	.67	.79	UK>Romanian**, Early>Late**
	(.33)	(.41)	(.47)	(.56)	
PRD controlling for					
IQ	<u>.32</u>	<u>.34</u>	<u>.64</u>	<u>.76</u>	

PRD = Peer Relationship Difficulties (3-point scale: 0= no difficulty, 1= mild/moderate difficulty and 2= major difficulty),

The results to the planned comparisons remained the same as before; there was a significant difference between the UK and Romanian adoptees' ratings of peer relationship difficulties ($t = .78, df = 92, p = .05$) and also between the ratings given for the early placed adoptees compared to those given to the late placed group ($t = -4.2, df = 92, p < .01$) but no significant difference between the

levels of peer relationship difficulties of the middle and late placed children ($t = -.12$, $df = 92$, $p = .33$).

3.5.0 Hypothesis 2: Early deprivation and attachment

3.5.1 Testing the association between deprivation and the attachment scales

The first of the study's main aims was to examine whether deprivation had a significant effect on peer relationships. Given that a significant relationship has been demonstrated between deprivation and peer relationship difficulties the second aim can be considered, namely whether attachment mediates the relationship between deprivation and peer relationship disturbances. To this end, the next section tests the relationship between deprivation and attachment. The second hypothesis predicted that the experience of deprivation would have an effect on children's attachment as measured by the CAI scales of coherence, mentalising, emotional non-containment and atypical behaviours.

A one-way ANOVA was performed to test the association between deprivation and each of the attachment variables. Planned comparisons as described above were also computed to examine the dose-response effect of deprivation on attachment.

3.5.2.1 Early deprivation and coherence

The results to the one-way ANOVA indicate a significant effect of deprivation on level of coherence between the UK group of children and the Romanian group as a whole (means: 2.93 and 2.40 respectively; contrast 1: $t = 2.48$, $df = 116$, $p = .01$; see table 6). The experience of deprivation seems to have had a deleterious affect on the Romanian children's ability to describe attachment relationships with parents in a coherent and organised way. Within the group of Romanian adoptees there were no significant effects of duration of deprivation on the coherence variable (early vs. late placed adoptees: $t = .84$, $df = 116$, $p = .40$; middle vs. late placed adoptees: $t = -.21$, $df = 116$, $p = .84$).

Although there appears to be no significant effect of duration of deprivation on level of coherence within the Romanian sample, a Pearson's r correlational analysis was conducted using the continuous variable of age of entry into the UK in order to further examine the linear relationship between length of deprivation and coherence. The association between duration of deprivation and level of coherence was not significant ($r = -.06$ $p = .59$), supporting the above findings that although deprivation per se inhibits the child's ability to describe a coherent account of the relationship with the parents, this difficulty is not further exacerbated by the length of deprivation experienced.

3.5.2.2 *Early deprivation, coherence and the effect of IQ*

Given the significant differences in IQ between the four groups of children, and given also that coherence has been shown to be associated with IQ ($r = .32$, $p < .01$), an analysis of covariance was performed, with IQ treated as the covariate, in order to test the effect of deprivation on level of coherence whilst partialling out the effect of IQ (see table 6). After adjusting for IQ, there was no longer a significant effect of group on level of coherence ($F(3,115) = .53$, $p = .67$). It appears that the association between deprivation and the ability to present a coherent account of the relationship with the parents is confounded by IQ.

The adjusted means illustrate that coherence levels of the UK children reduce and those of the Romanian children increase when the effect of IQ is controlled for. The results indicate that IQ mediates the relationship between early deprivation and coherence. The mediational model (based on Baron & Kenny, 1986; see data analysis section) describing the relationship between deprivation, IQ and coherence is presented in figure 1. The three causal paths in the mediational model are: firstly, between deprivation and coherence at 11 years; secondly between deprivation and IQ as measured at 6 years and thirdly, between IQ and coherence.

Table 6. Group differences on coherence and mentalising scales, controlling for effects of IQ

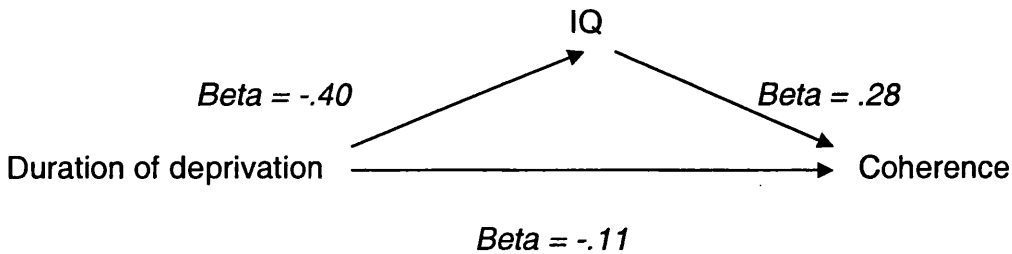
Dependent Variables	Adoptee Group Status				Planned comparisons: 1 = UK x Romanian 2 = Early x Late 3 = Middle x Late
	Means (SD)				
	<u>Adjusted Means</u>				
	UK	Romanian			
	Early 0-6mths N=30	Middle 6-24mths N=31	Late 24-48mths N=29		
Coherence ¹	2.93 (.98)	2.57 (.86)	2.29 (1.27)	2.34 (.90)	UK > Romanian**
Coherence ¹ controlling for IQ	<u>2.74</u>	<u>2.52</u>	<u>2.40</u>	<u>2.48</u>	
Mentalising ²	1.63 (.32)	1.42 (.49)	1.39 (.60)	1.45 (.61)	

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

¹ = Rated 0-4

² = Rated 0-2

Figure 1. The mediational model: Deprivation, coherence and IQ



In order to establish mediation, the following three conditions have to hold (Baron & Kenny, 1986). First, early deprivation has to be linked to coherence (this has been established in this section: $t = 2.48$, $df = 116$, $p = .01$). Second, early deprivation should be associated with IQ (this has been shown to hold true: $t = 4.96$, $df = 116$, $p < .01$), and thirdly, IQ should be linked to coherence (this has also been established: $r = .32$, $p < .01$). Having established all three conditions, mediation can be said to hold true if duration of deprivation is demonstrated to have no effect or a reduced effect upon coherence levels when the effect of IQ is controlled for (Baron & Kenny, 1986). This finding was demonstrated by the ANCOVA. The effect of UK versus Romanian children in terms of deprivation on level of coherence was equivalent to an effect size (Beta) of $-.11$ compared to $.28$ when IQ was not controlled. A formal test of mediation has been provided by Sobel (cf Preacher, & Leonardelli, 2004). Sobel's test of the mediating role of IQ in the relationship between deprivation and coherence was significant (Sobel test = -2.61 , $p < .01$).

3.5.3 *Early deprivation and mentalising*

The relationship between the experience of deprivation and the ability to take into account the mental states of others was tested using a one-way ANOVA. The results suggest that the experience of deprivation may be associated with mentalising ability; the UK group of children attained higher mentalising scores on the whole than the Romanian group, although this difference did not reach significance ($t=1.90$, $df = 116$, $p=.06$). The within group planned comparisons indicated no significant effect of duration of deprivation on mentalising ability ($t=-.26$, $df = 116$, $p=.80$ and $t = -.44$, $df = 116$, $p=.66$ for planned comparisons 2 and 3 respectively; see table 6).

3.5.4.1 *Early deprivation and atypical behaviour*

The results of the one-way ANOVA show that the group of Romanian adoptees exhibited a significantly higher level of atypical behaviour than the UK adoptees ($t = -2.77$, $df = 116$, $p<.01$). This indicates that the experience of deprivation leads to a greater likelihood of developing atypical behaviour. There was no significant difference on rating of atypical behaviour between the three groups of Romanian adoptees (see table 7). The mean atypical behaviour rating was lower for early placed compared to middle and late placed adoptees but this difference did not approach significance ($t = -1.9$, $df = 116$, $p = .28$ and $t = -.34$, $df = 116$, $p = .73$ for planned comparisons 2 and 3 respectively).

In order to look directly at the linear relationship between deprivation and level of atypical behaviour, a correlational analysis was conducted using the continuous measure of age of entry into the UK. There was no significant effect of duration of deprivation on the presence of atypical behaviour ($r = .12$, $p = .25$) indicating that children who were institutionalised for longer periods were no more likely to demonstrate atypical behaviour than those removed from institutions at an earlier age.

3.5.4.2 *Early deprivation, atypical behaviours and the effect of IQ*

It was previously found that there was a significant relationship between IQ and rating of atypical behaviour (see table 4). Given this finding, an ANCOVA was computed to examine whether the established group differences found in level of atypical behaviour were independent of children's IQ. The results from the ANCOVA show that when IQ is controlled for, the difference between the groups of children in terms of the level of atypical behaviour observed is no longer significant ($F(3,115) = .85$, $p = .47$; table 7). The difference in the level of atypical behaviour displayed by the two groups of Romanian and UK adoptees seems to be associated with differences in level of IQ rather than due to the level of deprivation experienced.

Table 7. Group differences on atypical behaviour, controlling for IQ and partner's qualifications

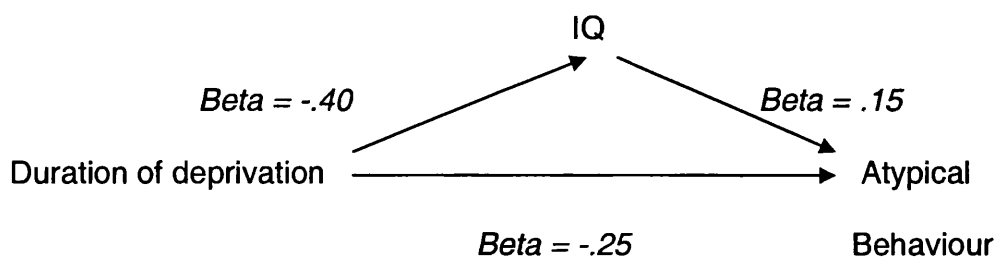
Dependent Variables	Adoptee Group Status			Planned comparisons: 1 = UK x Romanian 2 = Early x Late 3 = Middle x Late	
	Means (SD)				
	<u>Adjusted Means</u>				
	UK	Romanian			
	Early 0-6mths N=30	Middle 6-24mths N=31	Late 24-48mths N=29		
AB	.06 (.17)	.22 (.35)	.29 (.40)	.32 (.50)	UK > Romanian **
AB controlling for IQ	<u>.12</u>	<u>.23</u>	<u>.26</u>	<u>.28</u>	

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

AB = Atypical Behaviour (ordinal scale rated 0-2)

Following Baron and Kenny's guidelines (1986) as described above, it is possible to demonstrate that IQ mediates the association between deprivation and level of atypical behaviour (see figure 2).

Figure 2. The mediational model: Deprivation, atypical behaviour and IQ



The three conditions that must hold in order to establish mediation are: that early deprivation is related to rating of atypical behaviour; that early deprivation is linked to IQ, and that IQ is associated with rating of atypical behaviour. These three conditions have been established in the previous sections ($t = 4.96$, $df = 116$, $p < .01$; $t = -2.77$, $df = 116$, $p < .01$; and $r = -.31$, $p < .01$ respectively). The final stage in assessing the mediational model is to establish whether the difference in the ratings of atypical behaviour between the UK and Romanian adoptees reduces substantially when IQ is controlled for; the ANCOVA results illustrated that the difference disappears, with an effect of UK versus Romanian equivalent to an effect size (Beta) of $-.25$ (compared to $.15$ when IQ was not controlled). The results demonstrate that IQ mediates the relationship between deprivation and level of atypical behaviour. Sobel's test was performed to further assess the mediating role of IQ in the relationship between deprivation and level of atypical behaviour. Sobel's test of mediation was significant (Sobel test = -2.27 , $p = .02$).

3.5.5 Early deprivation and emotion non-containment

The results from the emotion non-containment scale were significantly skewed (z-score = 6.58, $p < .05$). This was primarily a result of a substantial number of cases scoring zero so transformations (square roots, log etc) would not effectively normalise the data. Therefore, the emotion non-containment scale was converted from a 5-point scale to a binary scale, with children given a positive or negative score according to whether there was no evidence of emotional non-containment or whether the children did show some evidence of emotional non-containment. In order to examine the relationship between deprivation and emotion non-containment, a logistic regression analysis was carried out with emotion non-containment as the dependent variable and duration of deprivation (UK, early, middle, late) as the predictor variable. The full model was not significant. Table 8 gives the coefficients, the Wald statistic and the associated degrees of freedom and probability values for each of the predictor variables.

Table 8. Deprivation and emotion non-containment

	B	Wald statistic	Degrees of Freedom	Probability value
UK x Romanian	-.67	.99	1	.32
Early x Late	-.53	.56	1	.46
Middle x Late	-.08	.65	1	.90

3.6.0 Hypothesis 3: Attachment as a mediator of the relationship between early deprivation and peer relationship difficulties

3.6.1 The mediational model

The third hypothesis proposed that attachment will mediate the relationship between deprivation and peer relationship difficulties. The mediational model is presented in figure 3. Hypotheses 1 and 2 tested the first two pathways of the model: that deprivation would be significantly associated with peer relationship difficulties (hypothesis 1) and that there would be a relationship between deprivation and differences on the attachment scales (coherence, mentalising, emotion non-containment and atypical behaviour; hypothesis 2). The third pathway concerns the relationship between attachment and peer relationship disturbances.

3.6.2 Attachment and peer relationship difficulties

For attachment to mediate the link between deprivation and peer relationship difficulties there must be a significant association between attachment and peer relationship difficulties. In order to compare the continuous dependent variables a correlational analysis was conducted in order to evaluate the relationship between the four attachment scales and difficulties in peer relationships. The correlation matrix containing correlation coefficients and their significance are presented in table 9.

The association between peer relationship difficulties and both coherence and atypical behaviour was significant ($r = -.22, p < .05$; $r = .22, p = < .05$ respectively). There is a positive linear relationship between the child's ability to present a coherent narrative account of the attachment relationship with the parent and the ability to relate well with peers and a positive linear relationship between peer relationship difficulties and atypical behaviour. Children who are rated as having greater difficulty in relationships with peers tend to present a less coherent account of attachment relationships and tend to exhibit greater levels of atypical behaviour.

Table 9. Correlations among dependent variables (peer relationship difficulties, coherence, mentalising, emotion non-containment, atypical behaviour)

	Coh	Ment	AB	ENC	PRD	
Coh	1.00	.30**	-.36**		-.11	-.22*
Ment	.30**	1.00	-.15		-.02	-.16
AB	-.36**	-.15	1.00	.41**	.22*	
ENC	-.11	-.02	.41**	1.00	.01	
PRD	-.22*	-.16	.22*	.01	1.00	

** Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

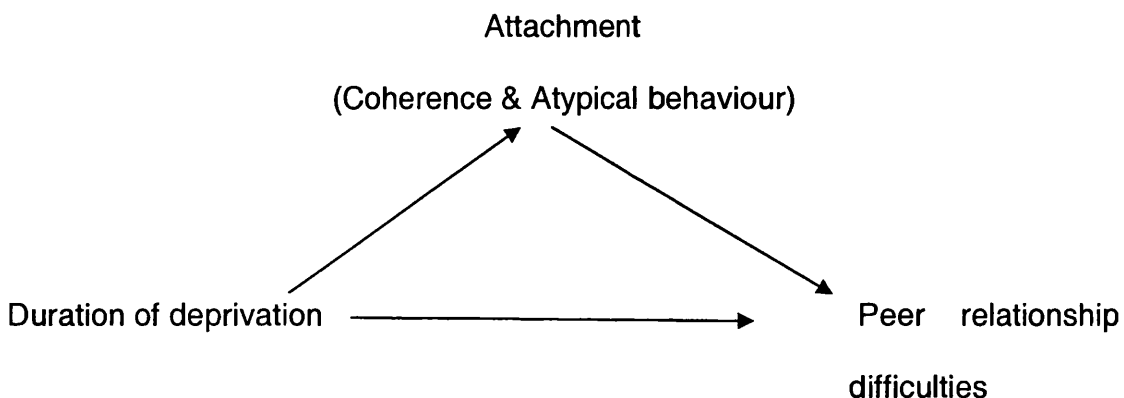
Coh = Coherence (ordinal scale rated 0-4), Ment = Mentalising (ordinal scale rated 0-2), AB = Atypical Behaviour (ordinal scale rated 0-2), ENC = Emotion Non-containment (ordinal scale rated 0-4), PRD = Peer Relationship Difficulties (3-point scale: 0= no difficulty, 1= mild/moderate difficulty and 2= major difficulty),

There was no significant relationship between level of peer relationship difficulties and mentalising ($r = -.16, p > .05$) and emotion non-containment ($r = .087, p > .05$). It appears that the ability to control affect and ability to reflect on the mental states of others are not significantly associated with the ability to form peer relationships.

3.6.3.1 The mediational role of attachment

Hypothesis 3 predicted that attachment (as measured by scales of coherence, emotion non-containment, mentalising and atypical behaviour) would mediate the relationship between early deprivation and difficulties in peer relationships at age 11 years.

Figure 3. The mediational model: Deprivation, attachment and peer relationship difficulties

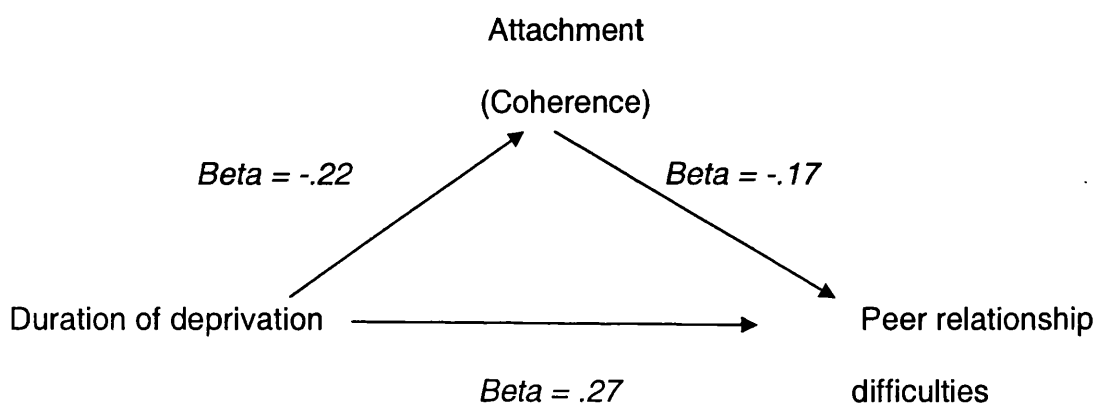


The three causal pathways in the mediational model have been tested. There is a significant relationship between deprivation and peer relationship difficulties (hypothesis 1), between deprivation and attachment constructs (coherence and atypical behaviour; hypothesis 2) and between attachment (coherence and atypical behaviour) and peer relationship difficulties (see above). Having established all three pathways, mediation can be said to hold true if the association between deprivation and peer relationship difficulties is substantially reduced when the effects of coherence and atypical behaviour on peer relationship difficulties are controlled.

3.6.3.2 *The mediating role of coherence*

An ANCOVA was computed with coherence as the covariate to test the mediating effect of coherence (table 10; see figure 4 for mediational model and beta values).

Figure 4: *The mediational model: Deprivation, coherence and peer relationship difficulties*



After controlling for coherence level, there remained a significant relationship between deprivation and peer relationship difficulties, $F(3,92) = 6.28$, $p = <.01$, with an effect of UK versus Romanian equivalent to an effect size (Beta) of .27 (compared to -.17 when attachment was not controlled). After controlling for the effect of group (UK, Early, Middle and Late), coherence was no longer significantly associated with peer relationship difficulties ($F(1,92) = 1.84$, $p = .18$, effect size $\beta = -.17$). Sobel's test of mediation supported the finding that there was no significant effect of coherence on the relationship between deprivation and peer relationship difficulties (Sobel test = 1.44, $p = .15$).

3.6.3.3 The mediating role of atypical behaviour

A second ANCOVA was calculated with level of atypical behaviour as the covariate to test whether atypical behaviour mediates the association between deprivation and peer relationship difficulties (see figure 5).

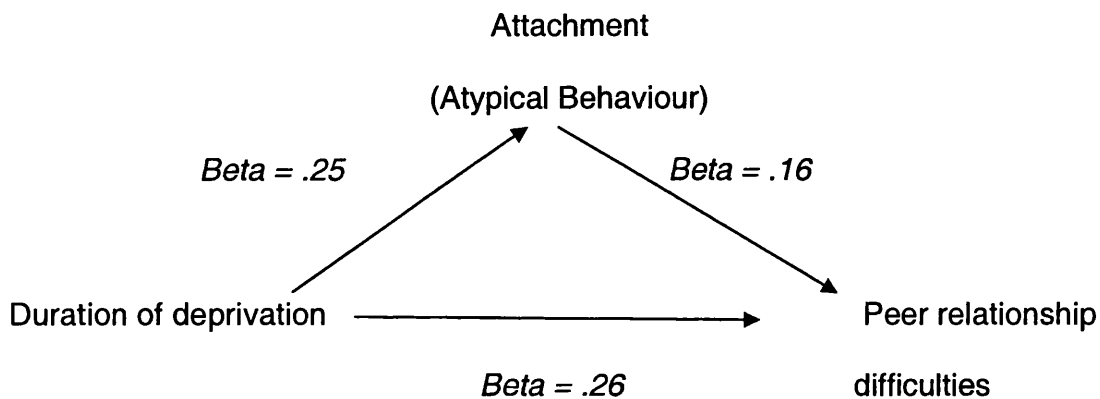
Table 10: Group differences on peer relationship difficulties controlling for coherence and atypical behaviour

Dependent Variables	Adoptee Group Status				Planned comparisons:
	Means (SD)				1 = UK x Romanian 2 = Early x Late 3 = Middle x Late
	<u>Adjusted Means</u>				
	UK	Romanian			
		Early	Middle	Late	
		0-6mths	6-24mths	24-48mths	
	N=30	N=30	N=31	N=29	
PRD	.26 (.33)	.32 (.41)	.67 (.47)	.79 (.56)	UK>Romanian**, Early>Late**
PRD controlling for					
Coherence	<u>.28</u>	<u>.34</u>	<u>.65</u>	<u>.79</u>	UK>Romanian**, Early>Late**
PRD controlling for					
AB	<u>.29</u>	<u>.32</u>	<u>.66</u>	<u>.78</u>	UK>Romanian**, Early>Late**

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

PRD = Peer Relationship Difficulties (3-point scale: 0= no difficulty, 1= mild/moderate difficulty and 2= major difficulty), AB = Atypical Behaviours (ordinal scale rated 0-2).

Figure 5. The mediational model: Deprivation, atypical behaviour and peer relationship difficulties



The findings were as for coherence: having adjusted for the effect of atypical behaviour, the significant relationship between deprivation and peer relationship difficulties remained, $F(3,92) = 6.50$, $p < .01$, with an effect of UK versus Romanian equivalent to an effect size (Beta) of .26 (compared to .16 when attachment was not controlled). Sobel's test of mediation demonstrated that rating of atypical behaviour does not mediate the link between deprivation and peer relationship difficulties (Sobel's test = 1.34, $p = .18$).

Adjusted mean scores of peer relationship difficulties for both ANCOVAS demonstrate that deprivation is associated with greater difficulties in peer relationships (see table 10) after controlling for the effect of attachment.

3.7.0 Summary

1. There is a dose-response effect of duration of deprivation on level of IQ.
2. Children who have a higher IQ are more likely to present a coherent account of their relationship to their parents, and less likely to exhibit atypical behaviour than children with lower IQs.
3. UK adoptees demonstrated significantly fewer peer relationship difficulties than Romanian children; there was a positive linear relationship between deprivation and peer relationship difficulties which was not accounted for by the differences in IQ between the groups.
4. UK adoptees presented a significantly more coherent narrative account of their relationship with their parents than Romanian adoptees; this relationship was accounted for by the differences in level of IQ between the groups.
5. Romanian adoptees demonstrated significantly more atypical behaviours than UK children; the relationship between deprivation and atypical behaviour was accounted for by the difference in level of IQ between the groups.
6. Children who were rated as having more difficulties in relationships with peers were more likely to exhibit atypical behaviour, and less able to present a coherent account of their relationship with their parents.
7. Attachment (measured by coherence and level of atypical behaviour) does not mediate the relationship between deprivation and peer relationship difficulties.

CHAPTER FOUR: DISCUSSION

4.1.0 Overview

The overall aim of this study was to investigate the relationship between experiences of early severe deprivation and peer relationship difficulties in 11 year olds. Within this main focus, the study had a number of objectives, the first being to investigate the extent to which early experience continues to impact on later development independent of concurrent experience. This was assessed by examining a group of children who had been removed from deprived circumstances within institutions in infancy or early childhood to much more positive circumstances within adoptive families. In examining the differences in peer relationship difficulties between ex-institutionalised children and a comparison group of adopted children who had not experienced deprivation, the study sought to examine the effect of early deprivation on children's peer relationships independent from their later experience within adoptive families.

The second objective was to assess whether the association between early deprivation and peer relationship difficulties could be understood in terms of a long lasting effect of deprivation on attachment. To investigate whether attachment pattern mediates the relationship between deprivation and peer relationship difficulties, the study examined the association between children's peer relationships at age 11 and their concurrent attachment relationships with their parents.

Four main findings emerged from this study:

1. The experience of deprivation has a detrimental effect on children's ability to develop adaptive peer relationships at age 11. The nature of the association was a dose-response connection, with children who were adopted at an earlier age demonstrating fewer difficulties in peer relationships than children who were adopted later.
2. Two indicators of attachment (coherence and atypical behaviours) were related to the experience of deprivation. However, the relationship between deprivation and level of coherence or presence of atypical behaviours was mediated by cognitive ability. There was no significant relationship between deprivation and mentalising, although there was a non-significant trend for higher levels of deprivation to be associated with lower scores on mentalising.
3. There was a significant relationship between aspects of attachment (narrative coherence and atypical behaviour) and peer relationship difficulties. Children who showed a greater capacity to present a more coherent account of their attachment relationship, and those who demonstrated fewer atypical attachment behaviours during the interview were more likely to be rated as having fewer difficulties in peer relationships by parents.
4. No support was found for the hypothesis that attachment relationships mediate the link between deprivation and peer relationship difficulties.

This chapter is divided as follows: in the first three sections, the main findings of the study are discussed; following this, the limitations and methodological considerations resulting from this study are considered; finally, the discussion concludes with a consideration of the wider clinical implications of this research.

4.2.0 Deprivation and peer relationship difficulties

4.2.1 General findings

The findings from this study indicate the deleterious effect of early severe deprivation on children's ability to relate with peers at age 11. Based on previous observations of peer difficulties in children who have experienced caregiving deprivation (Hodges & Tizard, 1989; Tizard & Hodges, 1978), it was expected that the peer difficulties demonstrated by the children in this sample would involve difficulties in differentiation and disinhibition rather than problems of aggression or negative emotionality which are more generally described in normal or high-risk populations. The peer difficulties assessed in the present study were based partly on the aforementioned descriptions of peer difficulties in institutionalised children (Hodges & Tizard, 1989; Tizard & Hodges, 1978) as well as on atypical behaviours identified in children's interactions with strangers in studies of disinhibited attachment behaviour (Chisholm, 1998; O'Connor, 2002; O'Connor et al., in press). The aspects of peer relationships assessed were: difficulty making friends, difficulty differentiating between friends and non friends, preferring to play with older or younger children, over eagerness in interactions with friends and unwanted physical contact towards other children.

That deprivation had a dose-response effect on children's abilities in peer relationships at age 11 is consistent with findings from previous studies (Hodges & Tizard, 1989; Tizard & Hodges, 1978; Tizard & Rees, 1975). In an earlier study with this sample at a younger age, no relationship was found between deprivation and children's peer relationship difficulties (Rutter et al., 2001). Nonetheless, the study demonstrated that at age 6, the institutionalised children exhibited twice as many difficulties in peer relationships as the UK sample. Rutter et al. (2001) postulated that such difficulties might become more pronounced as the children matured to a developmental stage during which peer relationships assumed a greater significance, as happens from middle childhood onwards. It appears that this prediction was accurate. That the Romanian adoptees demonstrated greater difficulties with peers at 11 years old than they did when assessed at age 6 suggests that as peer relationships become more complex, so the impact of early deprivation on peer relationship disturbances becomes more significant.

Difficulties in peer relationships might become more manifest in middle childhood due to the increasing complexity of the skills required within peer relationships as children mature. In middle childhood, peer relations become less focussed upon concrete, practical matters like shared play, and peers become an important source of emotional support (Mueller & Silverman, 1989). Interactions become more complex, and require an understanding of intentionality and the consideration of multiple sources of information such as the social rules of a situation and behavioural feedback from the other (Hartup,

1983). Difficulties in recognising emotions and empathising with others, found in samples of institutionalised children (Sloutsky, 1997) might therefore increasingly limit children's abilities in peer relationships. Children who previously had managed to 'get by' playing physical games and engaging in shared play might struggle as the demands of peer relations shift, requiring the ability to interpret and understand the social rules of a situation or conversation and the ability to engage in reciprocal emotional support and shared interests.

4.2.2 Influence of IQ

The underlying mechanisms mediating the relationship between deprivation and peer relationship difficulties need to be explored. The present study found that this relationship is mediated in part by IQ. Deprivation is negatively associated with IQ, which is in turn negatively associated with peer relationship difficulties. The finding that children who have experienced deprivation are more likely to demonstrate lower scores on general intelligence measures has been widely reported (Castle et al., 1999; Kaler & Freeman, 1994; O'Connor, Rutter, Beckett et al., 2000; Rutter et al., 1998). Furthermore, Kaler and Freeman (1994) reported that institutionalised children's level of interaction with peers was positively correlated with intellectual functioning. The increased difficulties in peer relationships associated with more prolonged deprivation were in part a result of the reduced intellectual capabilities associated with longer periods of deprivation.

Peer interactions in middle childhood are linked to increased cognitive skills such as the ability to take the other's perspective and understand intentionality (Hartup, 1983). Low IQ can prevent the development of more complex or subtle social skills thereby limiting children's abilities in social relationships (Lefkowitz, Huesman & Eron, 1978). Again, this links with the idea that children's difficulties in peer relationships might be masked until an age at which increasingly complex cognitive abilities become more necessary to successful peer interaction.

In future, it might be useful to examine children's social cognitive skills and directly observe the children's behaviour with peers in order to assess to what extent the behaviour is linked to IQ and associated deficits in metacognitive skills and which deficits in social cognition are particularly implicated in the peer relationship difficulties described here.

Roff, Sells and Golden (1972) reported that IQ is related to popularity with peers (Hartup, 1983), which also seems consistent with the findings from the present study. However, it is difficult to contrast the current findings with those from other studies; most studies of peer relationships have looked at peer acceptance or rejection, and behavioural indices of peer relationship difficulties such as aggression rather than the problems of differentiation or disinhibition measured here. It may be more appropriate then to contrast the present findings with those of studies looking at disinhibited attachment behaviour. The association between peer relationship disturbances (as measured here) and IQ seems

consistent with previous findings that disinhibited attachment behaviours are negatively associated with IQ at age 11 (O'Connor et al., in press).

The findings demonstrate that many years (in some cases over 10 years) of care within a low risk family environment does not negate the effect of early deprivation on difficulties in peer relationships in middle childhood. The Romanian and UK adoptee groups were comparable on almost all the demographic variables measured, with the exception of those specifically related to the adoption process. The finding that early deprivation was associated with greater difficulties in peer relationships suggests that early experience has an impact on peer relationships independent from the influence of concurrent experience.

However, the findings do not negate the influence of concurrent experience. Despite the radical change in environmental circumstances experienced by the Romanian adoptees, differences between this group and controls could still be mediated by ongoing environmental circumstances or indirect chain effects (Rutter & Rutter, 1993). Children's peer relationships might be affected by the extent to which parents encourage interaction with peers, whether parents support and facilitate contact with peers or offer advice about problems in peer relationships (Kerns, Cole & Andrews, 1998). The social network model proposes that if parents do not facilitate contact with peers, children might experience peer relationship difficulties due to the lack of experience in which to develop skills (Mueller & Silverman, 1989). Experience of deprivation might be

associated with moderate difficulties in IQ or in emotion regulation; however, children's current difficulties in peer relationships might also be influenced by concurrent circumstances, such as parental encouragement of peer interaction. The extent to which parents are able to support a child with specific difficulties might further impact on the deficits related to deprivation. Information about concurrent parental factors such as whether parents support their children in their peer relationships and encourage them to interact with other children was not gathered in this study. The influence of concurrent factors needs further exploration.

4.3.0 Deprivation and attachment

Children's attachment patterns were assessed by coding their verbal responses and their behaviour during the CAI. Narrative responses to the CAI were scored on three scales: coherence, emotion non-containment and mentalising. Children were also given a rating of level of atypical behaviour demonstrated in the interview.

The negative association between attachment security (as measured by coherence and atypical behaviours) and deprivation is consistent with previous findings that deprivation is related to disturbances of attachment and attachment disorder behaviour (Chisholm, 1998; Hodges & Tizard, 1989; O'Connor et al., in press, 2003; O'Connor & Rutter et al., 2000, Tizard & Hodges, 1978; Tizard &

Rees, 1975). The next sections consider the four different indicators of attachment pattern in turn.

4.3.1 Coherence

Initial analyses of the data indicated that children's level of narrative coherence was related to deprivation. Although there was no dose-response effect of duration of deprivation on children's level of narrative coherence, there was a clear relationship between the experiences of deprivation per se versus no deprivation on children's abilities to describe their relationship with their parents in an organised and coherent manner. Romanian adoptees were less likely to provide an organised account of their relationship with their parents and were more likely to contradict themselves in the course of the interview. Their narratives tended to be harder to follow and to contain more irrelevant detail about experiences. Romanian adoptees tended to require more guidance in answering questions and the interviewer may have had to make more effort to keep the child on track in answering the question.

A coherent account of early attachment experiences is thought to be indicative of an 'integration of information relevant to attachment' (Main et al., 1985) and suggests that the narrator is working with a singular model of attachment (Main, 1991). Incoherent and disorganised narratives suggest that information regarding attachment experiences is not easily accessible or well integrated and so narratives therefore appear as a 'jumble of contradictory thoughts, feelings

and intentions' (Main, 1991, p. 132); this suggests that the child has multiple models of attachment rather than a singular model. The incoherent, disorganised accounts of attachment relationships associated with the Romanian group of children in the present study suggests that they are working from multiple models of attachment rather a singular, organised model.

It is difficult to compare the current findings with previous research into attachment patterns of institutionalised or deprived children as most of the research to date has focused on behavioural markers of attachment as measured by tests such as the Strange Situation procedure (Ainsworth et al., 1978). There are no studies of internal representations of attachment in institutionalised or deprived groups of children with which to compare the current findings. One piece of evidence that might be consistent with the present finding that institutionalisation is related to lower levels of narrative coherence comes from Tizard and colleagues (Tizard & Hodges, 1978; Tizard & Rees, 1975). An aspect of coherence as rated in the present study involves tangential talking and overly long discussion of topics. Tizard and colleagues reported that the institutionalised children in their study talked excessively and identified this as a possible marker of attachment disturbance (Tizard & Hodges, 1978; Tizard & Rees, 1975).

4.3.2.1 *Atypical behaviour*

Children who experienced early deprivation were more likely to demonstrate atypical behaviours during the course of the interview. The atypical behaviour checklist included behaviours previously associated with institutionally reared children (Albus & Dozier, 1999; Chisholm, 1998; Chisholm et al., 1995; O'Connor et al., in press; Tizard & Hodges, 1978; Tizard & Rees, 1975; Zeanah, 2000); these behaviours have been associated with attachment disorder (O'Connor et al., in press). In addition, behaviours were included in the checklist that were observed in clinical observations during the interviewing process within the ERA study, and identified as atypical within the context of the interview. The atypical behaviours related to a number of factors including children's ability to understand the rules of the interview, the reciprocal nature of the interaction and the role of the interviewer in setting the interview boundaries and asking the questions. Some children violated these boundaries through asking personal questions of the interviewer or going off on a tangent during their responses and providing excessive detail. Other children treated the interviewer with disdain, refused to answer questions or required a lot of prompting for each question, or behaved as if they were in charge and the interviewer were the child. Children were rated according to level of distraction, whether they constantly fidgeted or moved about excessively. Bizarre facial expressions, excessively childish behaviour or showing sudden swings in emotion, for example from excited to sad, were also of relevance.

Children who experienced early severe deprivation were more likely to demonstrate atypical behaviours than non-deprived children. The longer the experience of deprivation, the more likely the child was to exhibit atypical behaviours. The implications of these findings, in relation to children's experiences with peers are described below.

As has already been mentioned, there are no studies of attachment representations in deprived populations with which to compare these findings. The relationship between deprivation and atypical behaviours appears consistent with existing studies examining deprivation and disinhibited attachment patterns (O'Connor, 2002; O'Connor et al., in press; O'Connor & Rutter et al., 2000; Tizard & Hodges, 1978; Tizard & Rees, 1975). However, it is difficult to make a direct comparison; ratings of attachment disorder behaviours reported by O'Connor and colleagues (in press) were based on parent reports of children's behaviour towards them and towards strangers. The present study rated atypical attachment behaviours according to observations of children's behaviour in the CAI. It is encouraging that the outcomes of the two studies are consistent; that atypical behaviours, believed to be related to disturbances of attachment, are associated with experience of deprivation (this study) just as attachment disorder behaviour is related to duration of deprivation (O'Connor et al., in press). Further work might be to compare parent reports with the individual ratings of atypical behaviour to see if children rated as demonstrating attachment disorder behaviour were also more likely to exhibit atypical behaviours. This would lend more support to the notion that atypical behaviours

are a marker of attachment disorder in children who have experienced deprivation.

4.3.2.2 *Atypical behaviour and autistic spectrum disorder*

An alternative explanation for the occurrence of atypical behaviour is that rather than being connected to attachment disturbances, such behaviour is related to underlying biological difficulties associated with autistic spectrum disorder (ASD). Many of the atypical behaviours such as lack of understanding of reciprocity of interaction and difficulty in understanding social rules are consistent with features of ASD. Quasi-autistic features were identified in a minority of the Romanian children in the ERA study at age 6 (Rutter et al., 1999) and the possibility that the features constituted a form of deviant development of attachment relationships was acknowledged. There was a significant association between quasi-autistic features and cognitive ability (Rutter et al., 1999). It seems that the similarity between the atypical behaviours and autistic features should be further explored. It may be that experience of deprivation leads to brain damage resulting in autistic features (Rutter, Bailey, Bolton & Le Couteur, 1994, in Rutter et al., 1999); this might also explain the link between intellectual impairment and atypical behaviours.

4.3.3 Mentalising

Children were rated on the ability to consider their parent's thoughts and emotions in their descriptions of attachment relationships, and the ability to understand the cause and effect of emotional and mental states. The relationship between deprivation and mentalising ability did not reach significance, although a non-significant trend emerged of the negative association between deprivation and children's ability to consider the mental states of others.

This finding is surprising given the relationship between mentalising ability and IQ (Happe, 1995; Humfress et al., 2002) and the differences in IQ between the groups. We might expect children who have been deprived to demonstrate deficits in mentalising ability due to the increased likelihood that they will also have lower general ability related to their experience of deprivation. In addition, the possibility that the atypical behaviour is related to difficulties associated with ASD would also suggest that children who exhibited atypical behaviour would demonstrate difficulties in mentalising due to the links between ASD and theory of mind deficits (Baron-Cohen, Leslie & Frith, 1985). The atypical behaviours could be understood in terms of a lack of mentalising ability; for example deficits in understanding social rules could explain behaviours which violate the social norms of the interview such as asking the interviewer personal questions.

The lack of significant association between deprivation and mentalising and between mentalising and IQ could be because the mentalising scale is not adequately capturing mentalising skills. The emergence of a non-significant trend suggests that the measure might be capturing some elements of mentalising but requires modification. Alternatively, using the scale with a larger sample might highlight difficulties in this domain of functioning.

4.3.4 *Emotion non-containment*

Deprivation was not associated with children's ability to contain emotion during the Child Attachment Interview (CAI). Experience of deprivation was not linked with deficits in ability to describe events, either positive or negative, without becoming overwhelmed by emotion; it was not associated with high levels of emotional arousal or rapid oscillations in emotion.

The current measure of emotion non-containment focused on exactly that - containment of emotion, rather than on the wider spectrum of skills associated with some definitions of emotion regulation such as attention shifting, constructive coping ability and behavioural regulation (Contreras et al., 2000; Eisenberg, Fabes et al., 1997, Eisenberg, Guthrie et al., 1997). Few children were observed to demonstrate difficulties in emotion non-containment, which might suggest that the measure is not sensitive enough to pick up difficulties in this regard, or alternatively, that problems related specifically to emotion containment, are not related to deprivation. It may be that this narrower

definition of emotion non-containment missed important information about underlying mechanisms of atypical attachment behaviour. One possible explanation for the occurrence of some of the behaviour observed is impairment in attentional control and ability to regulate behaviour. Children's level of distractibility, fidgeting and hyper-arousal, exhibition of bizarre facial expressions and performance of immature behaviour could be explained by a lack of behavioural regulation and inhibition control. Difficulties in maintaining a coherent narrative could similarly be explained by deficits in organisational skills and impairment in attentional and behavioural regulation. Future studies might wish to assess a wider definition of emotion regulation in order to assess whether such regulatory processes can help to explain the attachment features observed in institutionalised and deprived children.

4.3.5 IQ and attachment

Within the current sample the relationship between deprivation and both coherence and atypical behaviour was accounted for by individual differences in general intelligence between the four groups of children (UK adoptees and early, middle and late placed Romanian children); IQ was itself related to length of deprivation experienced. Children who experienced shorter periods of deprivation were more likely to have higher IQs and children with higher IQs were more likely to be able to relate a coherent account of their relationship experiences with their parents. Children who were exposed to longer periods of

deprivation were more likely to have lower IQs and to demonstrate more atypical behaviour.

Children's ability to present a coherent account of attachment experiences is partly related to underlying cognitive ability (Main, 1991). According to Main (1991), it is likely that difficulty integrating attachment experience is due to a lack of metacognitive ability. In order to reflect on conflicting attachment experiences and to update attachment representations into a coherent, organised, single model, a child needs to understand the representational nature of memory, that representations can be changed and may not accurately reflect reality. In addition, in order to integrate a variety of attachment experiences into a single model, children need to be able to understand that a single person can have different characteristics e.g. they may be both good and mean (Main, 1991). It may be that children with lower IQs as a result of deprivation have greater difficulty in organising their attachment representations due to deficits in metacognitive ability. Although at 11 years the children might be expected to have acquired the above described metacognitive abilities, this may not be true for those children with particularly low IQs; the Romanian children's IQ scores ranged from 46 to 121 (expected range within the general population is 75 to 125). Low IQ may therefore mediate the link between deprivation and coherence through its influence on metacognitive abilities which enable children to reflect on and integrate representations of attachment experiences into an organised account.

Alternatively, it may be that the measure of coherence is contaminated by verbal IQ; the results reported here might not be related to differences in attachment patterns but simply a reflection of IQ level. Rather than assessing the extent to which children's attachment representations are integrated and organised (the measure's aim), the coherence scale might be simply measuring children's verbal fluency. Incoherent narratives as assessed here might be a result of lower IQ rather than a reflection of children's internal working models of attachment.

There is some support for the finding that attachment disturbances are correlated with IQ (O'Connor et al., in press). In the ERA study, assessment at 11 years found a significant association between disinhibited attachment behaviours and IQ (O'Connor et al., in press). This association had not been evident when the children were assessed at 4 and 6 years (O'Connor et al., 2003; O'Connor & Rutter, et al., 2000). The findings at age 11 are consistent with the outcomes reported here.

A meta-analysis of studies looking at the relationship between IQ and attachment (as measured by the Strange Situation procedure in infancy) found a weak, positive association between attachment and IQ and found that attachment predicted later intelligence (van IJzendoorn, Dijkstra, & Bus, 1995). All but one of the studies reviewed by van IJzendoorn et al. (1995) measured attachment at an earlier age than IQ whereas in this study, IQ was assessed at an earlier age than attachment. The present study did not investigate whether

IQ predicted attachment in this population but this might be a useful area to investigate further. It may be that children's intelligence level influences their ability to convey their attachment needs to parents which in turn influences parent's responses to children (van IJzendoorn et al., 1995).

Other studies looking at attachment representations (using the CAI and AAI) have reported limited association between IQ and attachment (Crowell, Fraley & Shaver, 1999; Target et al., 2003; van IJzendoorn, 1995). Clearly it is not possible to directly compare the findings from this study with those relating to either the CAI or the AAI. However, the current coding scheme measured similar constructs to those measured by both the CAI and AAI. Given the difference between the findings, it may be that the current measure assesses IQ level as well as attachment representations.

The studies mentioned (Crowell et al., 1999; Target et al., 2003; van IJzendoorn, 1995) have reported the relationship between IQ and overall attachment classification (A, B, C or D); rather than individual sub-scales such as coherence. One study which examined the relationship between IQ and coherence alone (rather than overall attachment pattern) found an association between verbal IQ and attachment coherence (Humfress et al., 2002), consistent with the current findings. Attachment security, considered as an overall classification, may not be related to IQ, but the present findings suggest that individual indicators of attachment such as coherence might be within this population.

Alternatively, it may be that in the present sample it is difficult to separate out the effects of IQ from the other variables measured. It seems plausible that experience of global deprivation, to the extent that it was experienced by children reared in Romanian institutions, would have a widespread effect on children's development and affect multiple brain systems. Deprivation has been shown to have a marked impact on level of intelligence; other systems and abilities might be affected to a similar degree and the interrelated effects of these deficits might be very difficult to partial out. The results described here might reflect the fact that the experience of deprivation was so pervasive that it continues to have a lasting effect on many areas of children's functioning even years after removal from the depriving circumstances.

4.3.6 Summary

1. Experience of deprivation seems to lead to difficulties in integrating and organising representations of attachment relationships into coherent narratives. This is related to general intelligence and may reflect underlying deficits in metacognitive ability.
2. Children who experienced institutionalisation and deprivation demonstrated greater levels of atypical attachment behaviours, which is consistent with previous findings. The current findings suggest that observations of children's behaviour when talking about attachment experiences are able to capture disinhibited attachment behaviours associated with experience of institutionalisation.

3. Future studies may wish to explore the possible overlap between ASD and atypical attachment behaviours.
4. The surprising finding that mentalising is not related to deprivation (given the differences in IQ between the groups and the possible overlap between atypical behaviour and ASD), suggests that the mentalising scale is not adequately capturing mentalising ability; this needs further exploration.
5. Future studies might wish to include a broader measure of emotion regulation in order to investigate whether the atypical attachment behaviours observed are a reflection of underlying impairments in regulatory processes.
6. The association between IQ and both coherence and atypical behaviours suggests that the attachment scales might be measuring IQ. Alternatively, the findings might be a reflection of the long lasting and widespread deficits related to an experience of global, severe, early deprivation and the inherent difficulties in partialling out independent effects of particular deficits.

4.4.0 Early deprivation, peer relationship difficulties and attachment relationships

4.4.1 Attachment and peer relationship difficulties

The present study found that attachment patterns did not mediate the relationship between deprivation and peer relationship difficulties. In other

words, difficulties in peer relationships at age 11 were not associated with early deprivation through the disturbances in concurrent attachment patterns associated with early deprivation.

The association between peer relationship difficulties and attachment (in terms of mentalising, emotional non-containment, coherence and atypical behaviours) was investigated before the mediating role of attachment could be examined. Across the sample as a whole, there was a negative association between peer relationship difficulties and narrative coherence and a positive association between difficulties in peer relationships and level of atypical behaviours. The findings are consistent with the notion that attachment pattern predicts peer relationships (Main et al., 1985).

Children who were able to present a coherent, organised description of their relationships with their parents were less likely to be rated by parents as having difficulties in peer relationships. This is consistent with previous findings that coherence is associated with quality of peer relationships (Allen & Land, 1999; McElwain & Volling, 2002; Weinfeld et al., 1999). This demonstrates that children who are able to integrate and organise their representations of attachment relationships with their parents are less likely to be rated by their parents as having difficulties in peer relationships; children who present an incoherent narrative account are more likely to show a lack of differentiation between peers or may find it easier to get on better with younger or older children. Such children might be overeager in their interactions with peers and

make unwanted physical contact and might generally have difficulty in making or keeping friends.

Many studies looking at attachment and peer relationships have not reported attachment patterns in terms of the underlying scales, but in terms of the overall level of security (attachment patterns A, B, C or D). Positive associations have been found between peer relationships in middle childhood and attachment security as measured by observations of behaviour (Weinfeld et al., 1999) and ratings of internal working models of attachment (Kobak & Sceery, 1988). It is encouraging that the measure of coherence in this study produced findings similar to previous research.

Children who exhibit atypical behaviour were rated as having greater difficulties in relationships with peers. Children who struggle to understand social norms of interaction and who demonstrate immature, hyper-aroused behaviour are more likely to have peer relationship difficulties at age 11. It might be that the underlying mechanisms of atypical behaviour generalise to cause peer relationship difficulties. Alternatively, atypical behaviour might mark children as different from their peers, thus distancing them from others. At 11, children may be less tolerant of difference in others and be less keen to engage in relationships with children who exhibit unusual behaviour such as bizarre facial expressions.

It is noteworthy that outcomes from the mentalising and emotion non-containment scales were not consistent with the theory that attachment predicts peer relationships; as has already been raised, the content of the two scales might require further consideration. Previous studies have reported associations between emotional regulation and children's behaviour with peers in non-clinical populations (Contreras et al., 2000; Eisenberg, Fabes et al., 1997, Eisenberg, Guthrie et al., 1997). Emotional control is believed to be particularly important in peer relationships in middle childhood (Parker & Gottman, 1989), making the current findings all the more surprising. The different findings may be due to the differences in the measurement of emotional regulation across studies as described earlier. The current findings suggest that difficulty containing emotion (e.g. not becoming overexcited or not being overwhelmed by negative emotion) was not associated with difficulties in peer relationships. The difficulties in peer relationships measured in the present study are more akin to problems of behavioural inhibition and regulation, factors not assessed by the measure of non-containment employed here.

Mentalising has also been linked to peer relationship difficulties in previous studies (Hay et al., 2004; McElwain & Volling, 2002) and once again, the lack of support for this link here is surprising. It makes intuitive sense that ability to consider another's thoughts and feelings would be an important skill in peer relationships, and therefore impairment in this regard might lead to peer relationship difficulties. That this was not supported in this study throws further doubt on the validity of the mentalising scale.

4.4.2 *The mediation model*

The findings indicate that the relationship between early deprivation and concurrent peer relationship difficulties is not mediated by concurrent attachment relationships. This means that difficulties in peer relationships in children who have experienced early deprivation cannot be understood in terms of difficulties in concurrent attachment relationships resulting from early deprivation.

The findings are consistent with those from Hodges and Tizard (1989) which indicated that at 16 years old, adolescents did not demonstrate difficulties in concurrent attachment relationships with parents, but nonetheless showed difficulties in peer relationships.

There are a number of ways to interpret the findings although the evidence is not sufficient to definitively support or reject any of the models proposed to describe the influence of IWM of attachment on later relationships (hierarchical, independent, integrative or transactional). However, the available evidence here does not appear consistent with the idea of there being an independent model for each relationship, given the association between attachment constructs and peer relationships observed in this population. The relationship between attachment constructs and peer relationship difficulties could indicate that current difficulties in peer relationships are related to the parent-child relationship, even if underlying representations of attachment are not implicated.

The lack of a selective attachment with a caregiver in infancy as a result of deprivation might result in a skills deficit; it seems likely that institutionalised children would have fewer opportunities to learn social rules and develop interpersonal skills and therefore would be less well equipped to engage with peers.

That concurrent attachment does not mediate the association between deprivation and peer relationship difficulties could be construed as evidence that attachment does not predict all relationships (evidence against the hierarchical model). However, it is possible that early attachment experience (or lack of experience) influences the relationship between deprivation and peer relationship difficulties even though concurrent attachment appears not to be implicated. Rutter (1981) proposed that lack of a selective attachment in infancy and early childhood might have long term implications in social relationships rather than causing difficulties in attachment relationships. We do not have a measure of children's attachment patterns in infancy, but it seems plausible that the experience of global deprivation involved a complete compromise of the attachment system. Although children were subsequently able to develop attachment relationships with adoptive parents (O'Connor et al., in press) their early attachment experience as a result of deprivation might have a long lasting impact on their concurrent peer relationships.

4.5.0 Methodological considerations

There are a number of aspects to the study design which warrant discussion. A positive feature of the design was the use of a random stratified sampling design which ensured that adjustment problems associated with children's adoption from Romania to the UK were neither over- nor under-represented. The use of different scales to measure the underlying indicators of attachment rather than producing an overall description of a constellation of features is a useful start in describing the features particular to attachment difficulties associated with deprivation. However, it can be more difficult to achieve reliability on ratings of individual scales and it might be useful to develop a composite rating of the individual scales in addition to the individual scales themselves.

The use of the parent report of children's difficulties with peers ensured that the peer relationship data was not directly confounded by children's verbal IQ interacting with the measure. Having said this, it might be useful in future to compare children's attachment representations with their representations of peer relationships. The present study compared parent reports based on their knowledge of their children's interactions with peers. A comparison of cognitive indicators of representations of relationships might shed light on the extent to which peer and attachment relationships involve the same underlying constructs.

The attachment measure used in the present study measured constructs relating to attachment representations and attachment disorder which have still not been well defined or developed within this field. This study makes a start at defining indicators of attachment disorder and the phenomena described in previous research into deprivation and its effect on attachment, but further work is needed, such as comparing the measure with other measures of mentalising and emotion regulation, to establish reliability and validity of the constructs defined.

There are issues of generalisability to be considered. The measure considered aspects of peer relationship difficulties that are not generally measured in normally developing populations, such as lack of differentiation between peers, and unwanted physical contact with peers. The extent to which these peer difficulties differ to those experienced by children in low-risk populations has not been examined and therefore it remains unclear to what extent the current findings can be generalised to non-deprived populations. Having said that, it seems unlikely that some of the same processes are not taking place in peer relationship difficulties in both this deprived population, and in normally developing populations. For example, one of the aspects of peer difficulties assessed concerned difficulty making friends, which can surely be a problem for children no matter what their background. Children who are over-eager in their interactions with others might conceivably experience peer rejection. It may or may not be the case that there is a lot of overlap between the sorts of difficulties measured here, and the difficulties measured in normally developing groups of

children. It would be useful to look at the individual aspects of peer difficulties in order to examine more closely the difficulties specific to this population. Use of the measure outside of this population would shed further light on the extent to which such difficulties are distinct to populations of ex-institutionalised children.

The population examined within this study concerned children who had experienced gross deprivation. It may be that some of the difficulties in peer relationships result from the lack of selective caregiver in infancy, and therefore the findings might be applicable to other samples such as children in foster care. However, it is difficult to separate out the effects of a lack of caregiver from the other aspects of severe global deprivation experienced. The range of IQ observed in this sample is further evidence for the need for caution in extrapolating findings from this study to normally developing samples.

The present study examined peer relationship difficulties in the context of attachment, and did not examine surrounding factors such as parenting style, experience of negative life events or school environment. Extraneous features within the child's environment might have contributed to their experiences with peers. Future studies might wish to examine the relationship between deprivation and attachment accounting for factors also known to influence attachment pattern such as the experience of negative life events (Bar-Haim et al., 2000; Howes et al., 1998).

4.6.0 Clinical implications

The findings from the present study provide further evidence of the long lasting effects of early deprivation on children's development. Further research is needed to assess the permanency of the peer relationship and attachment difficulties described here. Hodges and Tizard (1989) found that the difficulties in peer relationships experienced by the children in their sample had not abated by age 16. Findings from the follow-up assessment currently being carried out with the ERA sample at age 15 should provide valuable information regarding whether the children continue to experience difficulties in peer relationships in adolescence, and indeed, whether such difficulties have increased. The difficulties in the peer relationships experienced by the children in this sample appear to have become more manifest as they have matured and it has been postulated that this is due to the increasing complexity of peer relationships. As children enter adolescence, peer relationships assume an increasingly important position in their lives, and the use of peers as a source of emotional support becomes ever more important (Mueller & Silverman, 1989). Therefore, it might be expected that the difficulties demonstrated by the current sample actually worsen as they mature and are required to engage in increasingly complex relationships. A lack of differentiation among peers might preclude difficulties in forming selective intimate relationships in future.

Many attachment based interventions exist for use with children with attachment disorder but questions remain about their effectiveness (O'Connor, in press;

O'Connor & Zeanah, 2003). The relationship between attachment and peer relationships in normally developing populations might suggest that the effects of attachment based therapies are generalisable to difficulties in social relationships. However, the current finding that the relationship between deprivation and difficulties in peer relationships is not mediated by difficulties in attachment suggests that treatments need to be focused on children's social relationships with peers. The potential overlap between features of ASD and difficulties associated with deprivation suggest that interventions used with children on the autistic spectrum might be appropriate with the children in the current sample. Intervention focusing on rules of social interaction for example might support children in developing peer relationships.

It is not clear to what extent parents play a role in children's ongoing difficulties following removal from depriving circumstances and therefore to what extent parents can help in ameliorating the difficulties (O'Connor, 2002). Clearly, the parents within this study did not play a causal role in the children's difficulties. Further research is needed to establish the best way to involve parents in supporting the children with their difficulties; it is known that parents can influence peer relationships through encouraging and facilitating interaction with peers (Kerns et al., 1998) and therefore parent education and support about the usefulness of such involvement in their children's peer relationships might be beneficial. It seems likely that the parents themselves could benefit from support in dealing with the personal impact of some of the children's difficulties.

Much of the research into peer relationships in normally developing populations has focused on difficulties such as aggression and peer rejection (Bretherton, 1985; Lyons-Ruth, 1996) and the interventions for peer relationship difficulties reflect this (Lochman, Coie, Underwood & Terry, 1993). Further interventions need to be developed to address the specific difficulties of children from deprived backgrounds in dealing with peers.

4.7.0 Conclusion

In accordance with previous research this study provides further evidence of the long standing effects of early global deprivation on children's socioemotional and cognitive development. This study highlights the persisting effects of early severe deprivation on children's ability to interact with and form relationships with peers. Further exploration of the mechanisms underlying the children's peer relationship difficulties is required in order to clarify the extent to which the current findings can be generalised to situations of less extreme deprivation. In addition, greater understanding of the peer relationship difficulties can help to inform the content and focus of suitable interventions. Given the persistence of the effects of deprivation observed to date, even years after the children's removal from depriving circumstances to a family environment, it remains unclear to what extent the deleterious effects of early adverse experience can be resolved.

References

- Ainsworth, M. D. S. (1967). *Infancy in Uganda*. Baltimore: Johns Hopkins University Press.
- Ainsworth, M. D. S. (1990). Epilogue: Some considerations relevant to attachment theory and assessment regarding attachment beyond infancy. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 463-488). Chicago: University of Chicago Press.
- Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Albus, K. E., & Dozier, M. (1999). Indiscriminate friendliness and terror of strangers in infancy: Contributions from the study of infants in foster care. *Infant Mental Health Journal*, 20 (1), 30-41.
- Allen, J. P., & Land, D. (1999). Attachment in adolescence. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 319-335). The Guilford Press, New York, London.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th Ed). American Psychiatric Association, Washington, DC.
- Bar-Haim, Y., Sutton, D. B., Fox, N. A., & Marvin, R. S. (2000). Stability and change of attachment at 14, 24 and 58 months of age: Behaviour, representation and life events. *Journal of Child Psychology and Psychiatry*, 41, 391-388.

- Barker, C., Pistrang, N., & Elliot, R. (1994). *Research methods in clinical and counselling psychology*. Chichester: Wiley.
- 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*, 25, 23-33.
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a 'theory of mind'? *Cognition*, 21, 37-46.
- Belsky, J., Campbell, S. B., Cohn, J. F., & Moore, G. (1996). Instability of infant-parent attachment security. *Developmental Psychology*, 32, 921-924.
- Belsky, J., & Cassidy, J. (1994). Attachment: Theory and evidence. In M. Rutter & D. Hay (Eds.), *Development through life: A handbook for clinicians* (pp. 373-402). Oxford: Blackwell.
- Bolger, K. E., & Patterson, C. J. (2001). Developmental pathways from child maltreatment to peer rejection. *Child Development*, 72 (2), 549-568.
- Bowlby, J. (1969 / 1982). *Attachment and Loss, Vol. 1: Attachment* (2nd Ed.). New York: Basic Books.
- Bowlby, J. (1973). *Attachment and Loss, Vol. 2: Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1979). *The making and breaking of affectional bonds*. London: Tavistock.
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.

- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50 (1-2, Serial No. 209).
- Bretherton, I. (1990). Open communication and internal working models: Their role in the development of attachment relationships. In R. A. Thompson, (Ed.), *Nebraska Symposium on Motivation: Vol. 36. Socioemotional development* (pp. 59-113). Lincoln: University of Nebraska Press.
- Bretherton, I., & Munholland, K. A. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications*, (pp. 89-111). The Guilford Press, New York, London.
- Bronfenbrenner, U. (1970). Reaction to social pressure from adults versus peers among Soviet boarding school pupils in the perspective of an American sample. *Journal of Personality and Social Psychology*, 15, 179-189.
- Caldwell, B. M. (1970). The effects of psychosocial deprivation on human development in infancy. *Merrill-Palmer Quarterly*, 16 (3), 260-277.
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. G. (1989). Finding order in disorganisation: Lessons from research on maltreated infants' attachments to their caregivers. In D. Cicchetti, & V. Carlson (Eds.), *Child Maltreatment: Theory & research on the causes and consequences of child abuse and neglect* (pp. 494-528). New York, NY, US: Cambridge University Press.

- Cassidy, J., Kirsch, S. J., Scolton, K. L., & Parke, R. D. (1996). Attachment and representations of peer relationships. *Developmental Psychology, 32* (5), 892-904.
- Castle, J., Groothues, C., Bredenkamp, D., Beckett, C., O'Connor, T., & Rutter, M. and the ERA Study Team (1999). Effects of qualities of institutional care on cognitive attainment. *American Orthopsychiatric Association, 424-437*.
- Chisholm, K., (1998). A three-year follow-up of attachment and indiscriminate friendliness in children adopted from Romanian orphanages. *Child Development, 69* (4), 1092-1106.
- Chisholm, K., Carter, M. C., Ames, E. W., & Morison, A. J. (1995). Attachment security and indiscriminately friendly behaviour in children adopted from Romanian orphanages. *Development and Psychopathology, 7*, 283-294.
- Cicchetti, D., Cummings, M., Greenberg, M. T., & Marvin, R. S. (1990). An organisational perspective on attachment beyond infancy: Implications for theory, measurement and research. In M. T. Greenberg, D. Cicchetti, E. M. Cummins (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 297-310). Hillsdale, NJ: Erlbaum.
- Cicchetti, D., & Wagner, S. (1990). Alternative assessment strategies for the evaluation of infants and toddlers: An organisational perspective. In S. Meisels & J. Shonkoff (Eds.), *Handbook of early childhood intervention*. (pp. 246-277). Cambridge: Cambridge University Press.
- Clarke, A. M., & Clarke, A. D. B. (2000). *Early experience and the life path*. London, England: Jessica Kingsley Publishers, Ltd.

- Contreras, J. M., Kerns, K. A., Weimer, B. L., Gentzler, A. L., & Tomich, P. L. (2000). Emotion regulation as a mediator of associations between mother-child attachment and peer relationships in middle childhood. *Journal of Family Psychology, 14* (1), 111-124.
- Crittenden, P. M. (1981). Abusing, neglecting, problematic and adequate dyads: Differentiating by patterns of interaction. *Merrill-Palmer Quarterly, 27*, 1-19.
- Crittenden, P. M. (1985). Support networks, quality of parenting and child development. *Child Development, 56*, 1299-1313.
- Crowell, J. A., Fraley, R. C., & Shaver, P. R. (1999). Measurement of individual differences in adolescent and adult attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 434-465). The Guilford Press, New York, London.
- Dunn, J., & McGuire, S., (1992). Sibling and peer relationships in childhood. *Journal of Child Psychology and Psychiatry, 33* (1), 67-105.
- Egeland, B., & Sroufe, L. A. (1981). Attachment and early maltreatment. *Child Development, 52*, 44-52.
- Egeland, B., Sroufe, L. A., & Erickson, M. (1983). The developmental consequence of different patterns of maltreatment. *Child Abuse and Neglect, 7*, 459-469.
- Eisenberg, N., Fabes, R. A., Shepard, S., Murphy, B. C., Guthrie, I. K., Jones, S., Friedman, J., Pulin, R., & Maszk, P. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development, 68* (4), 642-664.

- Eisenberg, N., Guthrie, I. K., Fabes, R. A., Reiser, M., Murphy, B. C., Holgren, R., Maszk, P., & Losoya, S. (1997). The relations of regulation and emotionality to resiliency and competent social functioning in elementary school children. *Child Development, 68* (2), 295-311.
- Erickson, E. (1968). *Identity, youth and crisis*. New York: Norton.
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behaviour problems in preschool in a high-risk a sample. *Monographs of the Society for Research in Child Development, 50*, (1-2, Serial No. 209).
- Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organisation. *Development and Psychopathology, 9*, 679-700.
- Freitag, M. K., Belsky, J., Grossmann, K., Grossmann, K. E., & Scheuerer-Englich, H. (1996). Continuity in parent-child relationships from infancy to middle childhood and relations with friendship competence. *Child Development, 67*, 1437-1454.
- George, C., Kaplan, N., & Main, M. (1985). *An Adult Attachment Interview: Interview protocol*. Unpublished manuscript, University of California, Berkley, Department of psychology
- George, C., & Main, M. (1979). Social interactions of young abused infants: Approach, avoidance and aggression. *Child Development, 50*, 306-318.
- Goldberg, S. (1997). Attachment and childhood behaviour problems in normal, at-risk and clinical samples. In L. Atkinson & K. J. Zucker (Eds.), *Attachment and Psychopathology* (pp. 171-195). New York: Guilford Press.

- Goldfarb, W. (1945). Effects of psychological deprivation in infancy and subsequent stimulation. *American Journal of Psychiatry*, 102, 18-33.
- Grossmann, K. E., & Grossmann, K. (1991). Attachment quality as an organiser of emotional and behavioural responses in a longitudinal perspective. In C. M. Parkes, J. Stevenson-Hinde & P. Marris (Eds.), *Attachment across the lifecycle* (pp. 93-114). London: Routledge.
- Happe, F. G. E. (1995). The role of age and verbal ability in the theory of mind task performance of subjects with autism. *Child Development*, 66, 835-855.
- Hartup, W. (1983). Peer relations. In P. Mussen (Ed.), *Handbook of child psychology*, (pp. 103-196). New York: Wiley
- Hay, D. F., Payne, A., & Chadwick, A. (2004). Peer relations in childhood. *Journal of Child Psychology and Psychiatry*, 45 (1), 84-108.
- Hesse, E. (1999). The Adult Attachment Interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.). *Handbook of attachment: Theory, research and clinical applications* (pp. 395-433). The Guilford Press, New York, London.
- Hodges, J., & Tizard, B. (1989). Social and family relationships of ex-institutional adolescents. *Journal of Child Psychology and Psychiatry*, 30, (1), 77-97.
- Howes, C., Hamilton, C. E., & Philipson, L. C. (1998). Stability and continuity of child-caregiver and child-peer relationships. *Child Development*, 69 (2), 418-426.

Humfress, H., O'Connor T. G., Slaughter, J., Target, M., & Fonagy, P. (2002).

General and relationship-specific models of social cognition: Explaining the overlap and discrepancies. *Journal of Child Psychology and Psychiatry*, 43 (7), 873-883.

Kaler, S. R., & Freeman, B. J. (1994). Analysis of environmental deprivation:

Cognitive and social development in Romanian orphans. *Journal of Child Psychology and Psychiatry*, 35 (4), 769-781.

Kerns, K. A., Cole, A. K., & Andrews, P. B. (1998). Attachment security, parent

peer management practices, and peer relationships in preschoolers. *Merrill-Palmer Quarterly*, 44 (4), 504-522.

Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working

models, affect regulation and representations of self and others. *Child Development*, 59 (1), 135-146.

Kreppner, J. M., O'Connor, T. G., Dunn, J. Anderson-Wood, L., and the English

and Romanian Adoptees Study Team (1999). The pretend and social role play of children exposed to early severe deprivation. *British Journal of Developmental Psychology*, 17, 319-332.

Kreppner, J. M., O'Connor, T. G., Rutter M., and the English and Romanian

Adoptees Study Team (2001). Can inattention/overactivity be an institutional deprivation syndrome? *Journal of Abnormal Child Psychology*, 29 (6), 513-528.

- Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment? *Child Development, 61*, 1081-1100.
- Lefkowitz, M. M., Huesman, L. R., & Eron, L. D. (1978). Parental punishment: A longitudinal analysis of effects. *Archives of General Psychiatry, 35*, 186-191.
- Lewis, M. L., & Schaeffer, S. (1981). Peer behaviour and mother-infant interaction. In M. L. Lewis & S. Schaeffer (Eds.), *The uncommon child*. New York: Plenum.
- Lochman, J. E., Coie, J. D., Underwood, M. K., & Terry, R. (1993). Effectiveness of a social relations intervention programme for aggressive and non-aggressive, rejected children. *Journal of Consulting and Clinical Psychology, 61*, 1053-1058.
- Lyons-Ruth, K. (1996). Attachment relationships among children with aggressive behaviour problems: The role of disorganised early attachment patterns. *Journal of Consulting and Clinical Psychology, 64* (1), 64-73.
- Main, M. (1991). Metacognitive knowledge, metacognitive monitoring and singular (coherent) vs. multiple (incoherent) model of attachment: Findings and direction for future research. In C. Murray-Parkes, J. Stevenson-Hinde & P. Marris (Eds). *Attachment across the lifecycle* (pp. 127-159). New York: Routledge.
- Main, M., & Cassidy, J. (1988). Categories of response to reunion with the parent at age six: Predictable from infant attachment classification and stable over a one month period. *Developmental Psychology 24*, 415-26.

- Main, M., & Hesse, E. (1990). Parent's unresolved traumatic experiences are related to infant disorganised attachment status: Is frightening parental behaviour the linking mechanism? In M. T. Greenberg, D. Cicchetti & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 161-182). Chicago: University of Chicago Press.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50 (1-2, Serial No. 209), 66-104.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganised/disoriented during the Ainsworth Strange Situation. In M. Greenberg, D. Cicchetti & M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp.121-160). Chicago: University of Chicago Press.
- Martin, H. P. (1980). The consequences of being abused and neglected: How the child fares. In C. H. Kempe & R. E. Helfer (Eds.), *The battered child* (3rd ed.). Chicago: University of Chicago Press.
- Martin, H. P., Beezely, P., Conway, E. F., & Kempe, C. H. (1974). The development of abused children. *Advances in Pediatrics*, 21, 25-73.
- McDowell, D. J., O'Neil, R., & Parke, R. D. (2000). Display rule activation in a disappointing situation and children's emotional reactivity: Relations with social competence. *Merrill-Palmer Quarterly*, 46 (2), 306-324.

- McElwain, N. L., & Volling, B. L. (2002). Relating individual control, social understanding and gender to child-friend interaction: A relationships perspective. *Social Development, 11* (3), 362-385.
- Morison, S. J., & Ellwood, A. L. (1997). Developmental milestones and intelligence. In E. W. Ames (Ed.), *The development of Romanian orphanage children adopted into Canada*. Final Report to Human Resources Development, Canada.
- Mueller, E., & Silverman, N. (1989). Peer relations in maltreated children. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 529-578). New York, NY, US: Cambridge University Press.
- O'Connor, T. G. (2002). Attachment disorders in infancy and childhood. In M. Rutter & E. Taylor (Eds.), *Child and adolescent psychiatry: Modern approaches*, (4th Ed., pp. 776-792) London: Blackwell Scientific
- O'Connor, T. G., Castle, J., Groothues, C., Beckett, C., Colvert, E., Kreppner, J., & Rutter, M., and the English and Romanian Adoptee Study Team (in press). Attachment disorder behaviour following early severe deprivation: Follow-up at age 11 years.
- O'Connor, T. G., Marvin, R. S., Rutter, M., Olrick, J. T., & Britner, P. A., and the English and Romanian Adoptees Study Team (2003). Child-parent attachment following early institutional deprivation. *Development and Psychopathology, 15*, 19-38.

- O'Connor, T. G., & Rutter, M., and the English and Romanian Adoptees Study Team (2000). Attachment disorder behaviour following early severe deprivation: Extension and longitudinal follow-up. *Journal of the American Academy of Child Adolescent Psychiatry*, 39 (6), 703-712.
- O'Connor, T. G., Rutter, M., Beckett, C., Keaveney, L., & Kreppner, J. M., and the English and Romanian Adoptees Study Team (2000). The effects of global severe privation on cognitive competence: Extension and longitudinal follow-up. *Child Development*, 71 (2), 376-390.
- O'Connor, T. G., & Zeanah, C. H. (2003). Attachment disorders: Assessment strategies and treatment approaches. *Attachment and Human Development*, 5 (3), 223-244.
- Park, K. A., & Waters, E. (1989). Security of attachment and preschool friendships. *Child Development*, 60, 1076-1081.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low accepted children at risk? *Psychological Bulletin*, 102, 357-389.
- Parker, J., & Gottman, J. M. (1989). Social and emotional development in relational context. In T. J. Berndt & G. W. Ladd. (Eds.), *Peer relationships in child development*. New York: Wiley.
- Piaget, J. (1932). *The moral judgement of the child*. Glencoe, Ill: Free Press.
- Preacher, K. J., & Leonardelli, G. J. (2004). Calculations for the Sobel's test: An interactive calculation tool for mediation tests. www.unc.edu/~preacher/sobel/sobel.htm

- Quinton, D., & Rutter, M. (1988). *Parenting breakdown: The making and breaking of inter-generational links*. Aldershot: Avebury.
- Roff, M., Sells, S. B., & Golden, M. M. (1972). *Social adjustment and personality development in children*. Minneapolis: University of Minnesota Press.
- Rogosch, F. A., Cicchetti, D., & Aber, L. (1995). The role of child maltreatment in early deviations in cognitive and affective processing abilities and later peer relationships problems. *Development and Psychopathology*, 7, 591-609.
- Rutter, M. (1989). Pathways from childhood to adult life. *Journal of Child Psychology and Psychiatry*, 150, 23-51.
- Rutter, M. (1981). *Maternal Deprivation Reassessed*, (2nd Ed). Harmondsworth, Penguin Books.
- Rutter, M., and the English and Romanian Adoptees Study Team (1998). Developmental catch-up and deficit following adoption after severe early privation. *Journal of Child Psychology and Psychiatry*, 39 (4), 465-476.
- Rutter, M., Anderson-Wood, L., Beckett, C., Bredenkamp, D., Castle, J., Groothues, C., Kreppner, J., Keaveney, L., Lord, C., & O'Connor, T. G., and the English and Romanian Adoptees Study Team (1999). Quasi-autistic patterns following severe early global privation. *Journal of Child Psychology and Psychiatry*, 40 (4), 537-549.

- Rutter, M. L., Kreppner, J. M., & O'Connor, T. G., on behalf of the English and Romanian Adoptees Study Team (2001). Specificity and heterogeneity in children's responses to profound institutional privation. *British Journal of Psychiatry*, 179, 97-103.
- Rutter, M., & Rutter, M. (1993). *Developing minds: Challenge and continuity across the life span*. Penguin Books.
- Slaughter, V., Dennis, M. J., & Pritchard, M. (2002). Theory of mind and peer acceptance in preschool children. *British Journal of Developmental Psychology*, 20 (4), 545-564.
- Sloutsky, V. M. (1997). Institutional care and developmental outcomes of 6- and 7-year-old children: A contextualist perspective. *International Journal of Behavioural Development*, 20 (1), pp. 131-151.
- Sroufe, L. A. (1979). The coherence of individual development. *American Psychologist*, 34, 834-841.
- Sroufe, L. A. (1999). One social world: The integrated development of parent-child and peer relationships. In Collins, W. A. & Laursen, B. (Eds.), Relationships as developmental contexts. *The Minnesota Symposium on Child Psychology*, 30 (pp.241-261). Mahwah, NJ, US: Lawrence Erlbaum Associates.
- Sroufe, L. A., Carlson, E., & Shulman, S. (1993). Individuals in relationships: Development from infancy through adolescence. In D. C. Funder, R. D. Parke, C. Tomlinson-Keasey & K. Widaman (Eds.), *Studying lives through time* (pp. 315-342). Washington DC: American Psychological Association.

- Sroufe, L. A., Egeland, B., & Carlson, E. A. (1999). One social world. In W. A. Collins & B. Laursen (Eds.), *The Minnesota Symposium in Child Psychology: Vol. 30. Relationships as developmental context*. Mahwah, NJ: Erlbaum.
- Sroufe, L. A., Egeland, B., & Kreuzer, T. (1990). The fate of early experience following developmental change: Longitudinal approaches to individual adaptation in childhood. *Child Development*, *61*, 1363-1373.
- Sroufe, L. A., & Rutter, M. (1984). The domain of developmental psychopathology, *Child Development*, *55*, 17-29.
- Sroufe, L. A., & Waters, E. (1977). Attachment as an organisational construct. *Child Development*, *48*, 1184-1199.
- Steele, H., Steele, M., Croft, C., & Fonagy, P. (1999). Associations among attachment classifications of mothers, fathers and their infants. *Child Development*, *67*, 541-555.
- Stefani, L. H., & Camaioni, L. (1983). Effects of familiarity on peer interaction in the first year of life. *Early Development and Care*, *11* (1), 45-54.
- Suess, G., Grossmann, K., & Sroufe, L. A. (1992). Effects of infant attachment to mother and father on quality of adaptation in social competence. In C. Izard, J. Kagan, & R. Zajonc (Eds.), *Emotions, cognition, and behaviour* (pp. 289-319). Oxford, England: University Press.
- Target, M., Fonagy, P., & Shmueli-Goetz Y. (2003). Attachment representations in school age children: The development of the Child Attachment Interview (CAI). *Journal of Child Psychotherapy*, *29* (2), 171-186.

- Target, M., Shmueli-Goetz, Y., Datta, D., & Fonagy, P. (2000). *Child Attachment Interview (CAI): Coding and classification manual, version III- January 2000.*
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. In N. A. Fox (Ed.), *The development of emotion regulation* (pp. 25-32). *Monographs of the Society for Research in Child Development, 59*, (2-3, Serial No. 240).
- Tizard, B., & Hodges, J. (1978). The effect of early institutional rearing on the development of eight year old children. *Journal of Child Psychology and Psychiatry, 19*, 99-118.
- Tizard, B., & Rees, J. (1974). A comparison of the effects of adoption, restoration to the natural mother, and continued institutionalisation on the cognitive development of four year old children. *Child Development, 45*, 92-99.
- Tizard, B., & Rees, J. (1975). The effect of early institutional rearing on the behaviour problems and affectional relationships of four-year-old children. *Journal of Child Psychology and Psychiatry, 16*, 61-73.
- Tizard, J., & Tizard, B. (1971). Social development of 2-year-old children in residential nurseries. In H. R. Schaffer, (Ed.), *The origins of human social relations* (pp. 147-163). London: Academic Press.
- van IJzendoorn, M. H. (1991). Peer relationships across time. *Pedagogische-Studien, 68* (2), 56-67.

- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117 (3), 387-403.
- van IJzendoorn, M. H., Dijkstra, J., & Bus, A. G. (1995). Attachment, intelligence and language: A meta-analysis. *Social Development*, 4 (2), 115-128.
- Vorria, P., Papaligoura, Z., Dunn, J., van IJzendoorn, M. H., Steele, H., Kontopoulou, A., & Sarafidou, Y. (2003). Early experience and attachment relationships of Greek infants raised in residential group care. *Journal of Child Psychology and Psychiatry*, 44 (8), 1208-1220.
- Waters, E., Merrick, S. K., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security from infancy to early adulthood: A 20 year longitudinal study. *Child Development*, 71 (3), 684-689.
- Wechsler, D. (1992). *Wechsler Intelligence Scale for Children – Third Edition UK Manual*. The Psychological Corporation Ltd.
- Weinfeld, N. S., Sroufe, L. A., Egeland, B., & Carlson, E. A. (1999). The nature of individual differences in infant-caregiver attachment. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 68-88). New York: Guilford Press.
- World Health Organisation (1992). *The ICD-10 classification of mental and behavioural disorders: Clinical description and diagnostic guidelines*. Geneva, Switzerland.

Youngblade, L. M., & Belsky, J. (1992). Parent-child antecedents of 5 year olds' close friendship: A longitudinal analysis. *Developmental Psychology, 28 (4)*, 700-713.

Zeanah, C. H. (2000). Disturbances of attachment in young children adopted from institutions. *Developmental and Behavioural Pediatrics, 21 (3)*, 230-236.

Appendix 1: Ethics approval

**INSTITUTE OF
PSYCHIATRY**

De Crespigny Park
Denmark Hill
London SE5 8AF

Telephone: (UK+44) 0171 703 5411
Facsimile: (UK+44) 0171 703 5796

ETHICAL COMMITTEE (RESEARCH)

Tel: (0171 919) 2892

11 January, 1999

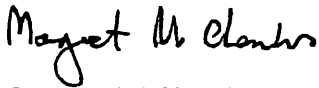
Prof M Rutter
SGDP Research Centre
Institute of Psychiatry

Dear Prof Rutter

**Re: Developmental deficit and catch-up following profound early privation
(59/92)**

At its meeting on 18 December 1998, the Ethical Committee (Research) considered and confirmed Chair's action to approve the amendment to the above study, as requested in your letter of 28 August 1998.

Yours sincerely



Margaret M Chambers
Research Ethics Coordinator

Appendix 2: The Child Attachment Interview Protocol

Appendix 3: Coding scheme for use with the Child Attachment Interview

Appendix 4: Peer relationship difficulties interview and coding scheme

For copy write reasons and matters of reliability the measures and coding schemes cannot be reproduced here. Please refer to the original sources detailed in the references or contact the English and Romanian Adoptees Study, at the Institute of Psychiatry, London.