

**ATTACHMENT REPRESENTATIONS IN
CHILDREN FOLLOWING EARLY
INSTITUTIONAL DEPRIVATION**

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ABSTRACT

It is well documented that early deprivation has a deleterious effect upon children's subsequent ability to form attachment relationships. However, in most studies it has been difficult to differentiate the effects of early experience from continued exposure to risk and thus there is continued debate regarding, the longitudinal course and stability of attachment disturbances following early institutional care. The aim of the present study was to investigate the long-term effects of profound early deprivation on attachment representations and to examine their associations with children's previous attachment disturbances. The participants, 90 children adopted from Romanian institutions between the ages of 0-42 months and a comparison group of 30 non-deprived UK adoptees, were assessed at age 11 years. A narrative approach to assessment was adopted using the Child Attachment Interview. Previous data regarding children's attachment disturbances at age 6 were also available. ANOVA and ANCOVA analyses using planned contrasts indicated a significant association between deprivation and three of the components of attachment; coherence, reflective functioning and atypical behaviours. In addition attachment disturbances at age 6 were correlated with atypical behaviours at age 11. However, after controlling for IQ the observed associations became non-significant and cognitive functioning demonstrated the strongest mediating effect between early adverse care and later development. The discussion focuses on the role of early experiences in the organisation of attachment and its impact on wider social and cognitive functioning. Possible mechanisms underlying observed patterns of attachment are considered in the context of contemporary literature and theoretical perspectives and limitations of the study and the scientific and clinical implications are discussed.

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Chapter One

INTRODUCTION

Overview

Following Ceausescu's fall from power in 1989, the fate that had befallen many Romanian children during his regime was brought into the public eye. Media coverage of the institutions where many newly born infants had been placed depicted appalling conditions in which they had been exposed to extreme nutritional, physical, psychological and social neglect. Public reaction to these images resulted in many such children being adopted into families within the UK.

These children represent a particularly interesting group in terms of attachment research. Conditions within the Romanian institutions meant that they had received no consistent or responsive care and as a result they did not have the opportunity to develop discriminating attachment relationships during the first months or years of their lives. This provides an important research opportunity in terms of assessing how such early experiences shape subsequent development and attachment to care-givers. In contrast to many groups of high-risk or maltreated samples of children in which there is continued exposure to risk throughout childhood, the Romanian sample experienced dramatic discontinuity from profound deprivation to low-risk family environments following adoption. These circumstances provide an opportunity, to delineate the impact of early deprivation from the cumulative effects of other stressful and adverse environmental influences.

There is an ongoing debate within attachment literature concerning the extent to which early years determine subsequent development and the long-term consequences of early adverse care on attachment for socio-emotional adaptation (see Weinfield, Sroufe, Egeland & Carlson, 1999). The notion that early care provides the child with the template for internal working models of relationships may suggest that the quality of attachment during infancy has long ranging implications for later functioning (Bowlby, 1973). However, others have pointed out that in the face of substantial change in the environment, changes in attachment processes are also possible, if not likely (Belsky & Fearon, 2002). Few would endorse a 'critical period' model of attachment and early experience (see Weinfield et al., 1999) and research on attachment security and insecurity in the typical range is consistent with that (Weinfield et al., 1999). On the other hand, little research has directly investigated this in extreme circumstances, such as those experienced by Romanian orphans. Previous research has documented that early severe institutional deprivation can significantly disrupt attachment behaviour in childhood and longitudinal data indicates that these effects persist over several years (e.g. Tizzard et al., 1978; Chisholm, 1998; O'Connor et al., 2000). Studies also suggest that children who have experienced early deprivation display atypical patterns of disturbance in their social behaviour not consistent with typical insecure attachment styles (Chisholm, Carter, Ames & Morrison, 1995; Albus & Dozier, 1999; O'Connor et al., 2000). Therefore questions remain about disturbances that emerge following institutionalisation and the long-term developmental implications of non-attachment in infancy.

The longitudinal follow-up of Romanian children adopted into the UK has provided an interesting insight into the behavioural manifestations of early institutional care at

ages 4 and 6 (Rutter et al., 1999; O'Connor et al., 2000; Kreppner, O'Connor & Rutter, 2001). Preliminary findings also indicate that marked behavioural disturbances are still observed in some children at the age of 11 (O'Connor et al., in press). However, the mechanisms underlying these disturbances or how they might be expressed at a representational level remains unclear. Of specific interest in the current study is how early deprivation affects the development of internal working models of attachment relationships as reflected in the way that children think and talk about attachment relationships and events. Adopting a narrative approach to assess attachment organisations in late childhood aims to provide a further understanding of the nature and course of attachment disturbances in (ex)institutionalised children and how these patterns emerge through discourse regarding attachment related experiences.

Parent-Child Relationships and the Attachment System

“In the working model of the world that anyone builds, a key feature is his notion of who his attachment figures are, where they may be found, and how they may be expected to respond. Similarly, in the working model of the self that anyone builds, a key feature is his notion of how acceptable or unacceptable he himself is in the eyes of his attachment figures” (Bowlby, 1973, p.203).

According to Bowlby (1969; 1973; 1980), attachment is a biologically rooted motivational system that develops during the first years of life and which motivates the young child to seek comfort, support and nurturance from discriminated attachment figures. Observations that infants behaviour toward their care-giver seemed to mirror that seen in many non-human animals (e.g. Lorenz, 1935; Hinde &

Spencer-Booth, 1967) pointed to the existence of a sensitive period within the first year of life during which the infant is primed to form attachment bonds with selective attachment figures. Taking ideas from ethology and control systems theory, Bowlby conceptualised the attachment system as an evolutionary phenomenon that functions to promote an infant's survival through three mechanisms; proximity seeking, secure base behaviour and separation protest. The infant uses the attachment figure as a "secure base" from which to venture out and explore, and a safe haven to which to return at times of danger or distress. The experience of security is the goal of the attachment system, which functions primarily to provide physical and psychological protection and to regulate the child's emotional experience. The ontogeny of attachment of the attachment system develops through four stages (Bowlby, 1982). During the first stage the child orients and signals (e.g. cries) for a response from care-givers with little discrimination. At the second stage the child begins to identify and prefer specific attachment figures and attempts at communication are directed toward those figures. As the child develops motor skills, the third phase is characterised by maintaining proximity to the discriminated figure. Finally, at 3 to 4 years old, the child develops an appreciation of the feelings and motives of others and behaviour develops in a goal-corrected manner allowing the child to respond flexibly to its environment to attain a desired response (Bowlby, 1982).

Attachment theory (Bowlby, 1969; 1973; 1980) proposes that the early parent-child attachment relationship forms the prototype for the development of all later relationships. Beyond infancy, based on the experience of interactional patterns with the primary care-giver, the individual develops a representational system or "internal working model" (IWM; Bowlby, 1973) of their own self worth and the kinds of care

that can be expected from others. This is not meant to imply that early experiences have irrevocable effects on later development, rather that they set an individual on a course which has a probable but not pre-determined outcome. The trajectory depends both on an individual's prior history of interactions and factors operating within their current environment. Bowlby (1973) based his ideas on Craik's (1943) notion that an individual assimilates their early experiences and subsequent understanding of the causal relationships amongst events, actions and outcomes into an "internal working model" of their environment which allows them to respond flexibly and adaptively to environmental demands

Bowlby (1969; 1973; 1980) observed that, given the opportunity, nearly all children develop attachment relationships even when the care offered by the attachment figure is poor or malign. The key concept in traditional attachment literature is that, based on their experiences of care-giving, the child develops operable internal models of relationships with which they can evaluate the potential consequences of different courses of action. These allow the formation of adaptive and purposeful behavioural strategies in the context of the attachment dyad which function to maximise care and minimise distress. Secure attachment occurs when a child has a mental representation of the attachment figure as available and responsive when needed whereas insecure attachment develops when such a representation is absent. Rooted in these assumptions, the majority of classic attachment research relates to children and adults who have had the opportunity to form selective attachments from infancy. Implicit, is the notion that children develop within an "environment of evolutionary adaptedness" (Bowlby, 1982) that is, that a care-giver will be present in order to allow the

formation of discriminating attachment relationships irrespective of the quality of the care that is provided.

The question arises however, what happens in cases where rearing environments deviate from the evolutionary expectations on which attachment theory is based? What are the developmental implications for children who do not have the opportunity to form selective attachment relationships during infancy? Some children, such as those raised in the Romanian orphanages, do not follow the normal ontogeny of attachment. The conditions within these institutions meant that there was no one figure toward whom the child could direct attachment behaviours or from whom they received care. Without a discriminated attachment figure promoting the species-typical behaviour on which attachment theory is based, can the assumptions and findings from classic attachment research be applied to this group of children (O'Connor 2000)? Studies of children raised in institutions have allowed an increasing insight into the nature and development of disturbances associated with the absence of any continuous relationship during the first months of life and subsequent "non-attachment" during infancy (e.g. Chisholm et al., 1995; Rutter et al., 1998; O'Connor et al., 2000).

Attachment following Severe Institutional Deprivation

It is well documented that early institutional rearing has a negative effect upon later adjustment and specifically, in the context of this study, on children's subsequent attachment behaviour (e.g. Tizzard & Hodges, 1978; Zeanah, 2000). This points to the importance of early pathogenic care in developmental programming. However, there is ongoing debate within the literature regarding the longitudinal course and stability

of attachment disturbances following institutional care, the nature of sensitive periods in development and the limits of resilience following adversity.

Early research into the effects of institutionalisation during infancy (e.g. Goldfarb, 1945; Provence & Lipton, 1962; Tizard & Hodges, 1978) highlighted the deleterious impact upon children's cognitive, social and emotional development. Notably consistent in the literature are observations of patterns of disinhibited behaviour characterised by "over-friendliness to strangers" (e.g. Tizard & Hodges, 1978) and "indiscriminate", yet "shallow" attachment toward a variety of adult figures. Such patterns of social approach and lack of wariness are in direct contrast to the secure-base behaviour observed within typical samples of children (e.g. Ainsworth, 1978) and are thought to reflect a distinct pattern of attachment disturbance specifically related to institutional care and lack of a discriminated attachment figure during infancy (Wolkind, 1974). Findings that these behaviours persisted into childhood and even adolescence would seem to support the notion of a sensitive period during infancy and the traditional view that maladaptive early experiences cause irreparable damage to psychological and social growth (e.g. Bowlby, 1951). However, despite providing a compelling, and to some degree, consistent picture of the effects of early institutionalisation these studies have some limitations. The use of heterogeneous definitions of early deprivation covering a mixture of severity, patterns and settings makes it potentially misleading to refer to a single kind of institutional rearing. This makes generalisation of the findings to other samples difficult (O'Connor, 2003). Additionally, the samples of children often remained in high-risk environments subsequent to removal from the institutions. Thus, the potentially contaminating influence of exposure to ongoing risk make it difficult to draw any conclusions

regarding the precise association between early institutional care and later developmental outcomes (Rutter, 1981). The Romanian adoptees used within the current study differ in this regard from previous samples. The dramatic environmental discontinuity from extreme deprivation to placement within low-risk family settings provides a “natural experiment” making it possible to capture the specific impact of early deprivation on later attachment independent of the confounding effects of continued risk.

Contemporary Research on the Effects of Early Institutional Deprivation: Findings from the English and Romanian Adoptee (ERA) Study

The adoption of Romanian children into the UK following early severe institutional deprivation has provided a unique research opportunity in which the correlates of early pathogenic care in terms of social-cognitive outcomes can be further identified and understood. The sample within the English and Romanian Adoptee (ERA) study consisted of 165 children who had experienced extreme early deprivation within Romanian institutions and a comparison group of 52 inter-country non-deprived adoptees. Subsequent to adoption the children were assessed at ages 4 and 6 years using multiple assessment measures including physical and cognitive assessment, interviews with primary care-givers, standardised behavioural and familial relationship questionnaires and a modified version of the separation-reunion procedure. Some preliminary findings regarding attachment disturbances from assessments when the children were 11 were also available (O'Connor et al., in press).

A number of important findings have been drawn from these studies to date. Overall many of the Romanian children were found to thrive within adoptive families, forming close bonds with their adoptive parents and demonstrating significant, if not complete, recovery in terms of IQ and physical delay (e.g. Rutter et al., 1998; Rutter, Kreppner & O'Connor, 2001). However, they have also highlighted long-term and pervasive attachment disturbances associated with early institutional deprivation (Chisholm, 1998; O'Connor et al., 2000a, 2001, 2003) and a significant dose response association with the length of exposure to early pathogenic care.

In a sizable minority of the Romanian sample, the presence and duration of institutional deprivation was associated with non-secure attachment status, even several years after being placed in the adoptive family home (Chisholm, 1998; O'Connor et al., 2000). Furthermore, many of the children displayed patterns of behaviour inconsistent with established classifications of insecure attachment (e.g. avoidant, ambivalent or disorganised; O'Connor et al., 2000). Consistent with previous observations of institutionalised samples (e.g. Tizard & Hodges, 1978; Chisholm et al., 1995), the children displayed disinhibited attachment behaviour characterised by inappropriate social approach, marked boundary violations and difficulties with emotional regulation. For example, amongst the children classified insecure-other there was a striking tendency to display *"attachment related behaviours (e.g. strong approach, contact maintaining) toward the stranger, extreme forms of emotional over-exuberance, nervous excitement, silliness, coyness and excessive playfulness more typical of a much younger child"* (O'Connor et al., 2003 p16). The authors noted that these behaviours were apparent with both the stranger

and the parent but did not seem to have the goal of engaging either in a reciprocal interaction.

Disinhibited attachment behaviour at age 11 was correlated with attention and conduct problems, difficulties in peer relationships and cognitive level but still appeared to characterise a distinct set of behaviours (O'Connor et al., in press). While the severity of disturbance decreased between the ages of 4, 6 and 11 years, individual differences showed marked stability and were strongly correlated with the length of time the child had spent in the institution thus demonstrating a dose response association (O'Connor et al., in press). In addition, it was found that disinhibited attachment behaviour toward adult strangers could co-exist with apparently secure attachment relationships with the adoptive parents where the latter was defined as specific instances of secure base behaviour toward the parent or based on parental reports of the parent-child relationship (Chisholm, 1998; Zeanah et al., 2002). This led to the suggestion that disinhibited disturbances may manifest principally in social behaviour toward non attachment figures rather than attachment behaviour in general (Zeanah et al., 2002). If this were the case then there are implications for the use of traditional measures of attachment security with this group of children indicating that disinhibited disturbances may need to be assessed independently of parent-child attachment relationships (O'Connor et al., 2003). It also suggests that disinhibited behaviour may not specifically reflect a disturbance in current attachment relationships but rather is one manifestation of the pervasive detrimental impact of non-attachment during infancy on wider social-emotional functioning (Rutter, 1981). Assessment of the mediating effect of attachment disturbances during middle

childhood between early deprivation and attachment organisation in children at the age of 11 may help to clarify this to some extent.

Reports of inappropriate social approach and “over-friendliness to strangers” (e.g. Tizard & Hodges, 1978) have been consistent within the literature on institutionalised children for more than fifty years (e.g. Goldfarb, 1945). This atypical lack of secure-base behaviour is now thought to reflect a core behavioural disturbance associated specifically with institutionalisation and lack of a discriminated attachment figure during infancy (O’Connor, 2003). In that context, the findings from earlier studies of institutionalization may not simply be a consequence of ongoing risk processes, but rather reflect a common effect of severe early social deprivation. However, it remains unclear how these findings should be conceptualised theoretically or addressed clinically. More recently literature has begun to examine the link between disinhibited attachment behaviour and symptoms of what has been termed “reactive attachment disorder” (e.g. O’Connor & Zeanah, 2003).

Attachment Disorder

In 1980, the term “reactive attachment disorder” was added to the DSM-III in recognition that pathogenic care within infancy can have significant and deleterious effects on later social functioning and psychopathology (e.g. Greenberg, 1999). Many of the core behavioural symptoms of what DSM-IV now refers to as the “disinhibited” form of reactive attachment disorder are similar to the atypical behaviours observed in children raised in institutions. Most striking of these are indiscriminate attachment behaviour (e.g. tendency to go off with strangers), marked attention seeking (Tizard & Hodges, 1978) and superficial friendliness. Findings have

indicated that these behaviours are associated with institutional upbringing and specifically to the lack of a consistent care-giver within this context during infancy (Tizard & Rees, 1975).

Questions have been raised regarding how to conceptualise the attachment disorder behaviour observed in (ex)institutionalised children within current understandings of attachment theory (e.g. Greenberg, 1999; O'Connor et al., 2002). The very factor that makes these children such an interesting group in terms of attachment, namely its very absence during infancy, means that they developed outside the “environment of evolutionary adaptedness” on which the theory is based (Bowlby, 1972). In the context of traditional attachment theory, disinhibited behaviour could be explained as “developmental delay” in normal attachment development. Indiscriminate friendliness could then be understood as an organised strategy which aims to optimise the opportunity to develop attachment relationships. However O'Connor et al., (2002) argue that this seems unlikely and it seems more probable that the ontogeny of attachment in children raised in institutions is qualitatively different from that outlined by Bowlby (1973). This hypothesis has yet to be directly tested.

Further information regarding developmental trajectories for (ex)institutionalised children and how attachment disturbances and disinhibited behaviours manifest in later childhood, adolescence and adulthood will help increase our understanding of the long-term effects of early pathogenic care. Clinical observations suggest that persistent intrusive and personal questioning (without apparent regard for the answer), lack of awareness about social boundaries and interpretation of social cues may be some of the social-cognitive features associated with attachment disorder in older

children (O'Connor et al., 2003). However, very little is currently known about the internal working models that underlie these behaviours, how these models might be manifested at a representational level or their stability and consequences in the longer-term.

Models Regarding the Role of Early Experience in Later Development

There are differing views regarding how early exposure to risk may predict later adaptation. Some models suggest that a sensitive period exists within infancy in which a particular kind of input is required for “normal” development to take place. Failure to obtain the required input during this time leads to abnormal development, the effects of which will be largely irreversible (Greenough et al., 1987). Thus, the care received by an infant during the first year of life is crucial to later adjustment; secure attachment being a protective factor and insecure attachment a risk factor. Animal studies have supported the notion of critical periods in development (e.g. Harlow & Suomi, 1970) although it has been more difficult to disentangle the concept in humans due to the ongoing confounding effects of environmental continuity. As discussed previously, research into the developmental trajectories of the Romanian sample provides an opportunity to rectify some of the methodological issues as regards sensitive periods in development that have limited human developmental literature to date.

Generally, few authors would uphold the notion of a rigid critical period in development following which change is not possible (Weinfield, Sroufe, Egeland & Carlson, 1999). Findings indicate that while early institutional deprivation can have a persistent deleterious effect on some children’s cognitive and social functioning,

others demonstrate substantial, if not complete recovery following placement within adoptive families (e.g. Chisholm, 1998; Rutter et al., 2001). This suggests that lasting damage is not inevitable following early deprivation and that other factors have a large part to play in developmental outcomes. Transactional or interactional models of development (e.g. Bowlby, 1973; Chicchetti & Lynch, 1995) conceive development as a dynamic, multidetermined process whereby the effects of early deprivation are mediated by risk trajectories or pathways. This model also involves the notion of resilience factors in development which seem to protect individuals from the effects of adversity. Resilience is thought to include temperamental and genetic factors (Plomin, 1983) as well as cognitive structures such as the child's ability to incorporate adverse experiences into their belief system and set of self concepts (Rutter, 1985).

Thus early experiences have a probabilistic but not determined effect on later development dependent on interactions between the child and their environment. In terms of this model, children who have suffered early institutional deprivation would be considered at increased risk for possible (rather than certain) negative developmental outcomes. Findings to date seem to support this notion, with a substantial number of the children displaying pervasive difficulties subsequent to early institutional rearing (e.g. O'Connor et al., in press). However, the finding that some children do not exhibit problems despite early pathogenic care indicates that early deprivation alone is not sufficient to explain later difficulties. It remains unclear what distinguishes children who display marked disturbances from those who do not. The importance of the child's age at placement is consistently emphasised but as yet there is no firm evidence defining the boundaries of a sensitive period and current understandings of causal mechanisms are limited (O'Connor et al., 2003).

Individual Differences in Attachment

In order to study the on-going effects of early deprivation and subsequent non-attachment during infancy, it is necessary to have an idea of how individual differences in attachment manifest within typical samples of children. Bowlby's (1969) original interest in the effects of early maternal deprivation grew from observations of the adverse impact of maternal deprivation and prolonged separations on children's psychological and social functioning. However, the focus of attachment theory research soon shifted away from the effects of early pathogenic care toward understanding the nature and development of the effects of early attachment relationships within typical samples. The aim was to attempt to clarify some of the developmental questions about the selective nature of child-parent attachment and how individual differences in relationship quality are associated with later psychological and social functioning.

The concept of internal working models of attachment was operationalised by Mary Ainsworth (1978) with her development of an experimental method to assess the quality of child-parent attachment relationship in young children. The Strange Situation procedure (Ainsworth, 1978) rests on the assumption that attachment patterns can be inferred from a child's behaviour in response to situations where the attachment system is activated. Based on observations of mother-child interactions within this framework, Ainsworth et al., (1978) identified distinct patterns of attachment behaviour which they classified secure (group B), insecure - avoidant (group A) or insecure – resistant (group C). More recently, an additional category named disorganized/disoriented, has been added, (group D; Main & Solomon, 1990)

Secure infants explore readily in the presence of the care-giver, become distressed by their absence and rapidly seek contact with them on reunion. They are reassured by this proximity and eventually return to independent exploration. Secure infant's behaviour is associated with well co-ordinated, consistent and sensitive mother-child interactions where the care-giver is responsive to infant's cues and permitting of access. **Insecure-avoidant infants** engage in exploration in the presence of the care-giver but any interaction tends to be restricted to requests for practical assistance. The infant is unlikely to become distressed during separation, tends to treat the stranger in the same way as they did the care-giver and upon reunion may ignore the care-giver rather than initiating contact. This pattern was found to be associated with maternal insensitivity and specifically with rejection of the child's attachment behaviours. **Insecure-resistant** children show limited exploration, seem wary of the situation and the stranger and seek proximity to the care-giver even before separation occurs. Separation results in extreme distress which does not diminish upon reunion. The key feature of this classification is the ambivalence of the child toward the care-giver characterised by the child frequently seeking contact but then resisting it once it has been achieved. Insecure-resistant classifications were found to be associated with maternal insensitivity and unpredictability of responsiveness although not mothers who were notably rejecting.

Disorganised infants exhibit seemingly undirected and often conflicting behaviours indicating an inability to maintain one organised attachment strategy in the face of distress (Main & Solomon, 1990). Contemporary research (e.g. Robertson & Robertson, 1989) and retrospective studies of the classic findings revealed distinct characteristics in the reunion behaviour of children following long separations from

care-givers under adverse conditions. On reunion, such children were observed to exhibit extreme disorientation and pervasive suppression of affect and behaviour towards the mother that went beyond typical avoidant behaviour. The children also exhibited behaviours such as freezing, hand-clapping, head-banging, stereotypies or fear of the care-giver. As a relatively recent addition to the contemporary A-B-C attachment classifications (Ainsworth, 1978), there is less empirical evidence regarding the aetiology and course of disorganised attachment. However, this attachment classification is associated with infants in maltreatment or clinical samples such as children of depressed mothers; children with histories of severe abuse and neglect or where there were unresolved traumatic attachment experiences in the mother (Main & Hesse, 1990). It is thought that these children may have experienced the care-giver as both a source of reassurance and of fear so that activation of the attachment system produces strong and conflicting motivations. Main & Hesse (1990) suggest that the undirected and often incomplete attachment behaviours observed in disorganised samples is the result of the child being unable to cognitively assimilate the contradictory information from the mother and, therefore, lacking a coherent or organised behavioural strategy to modulate their arousal.

A major finding from the studies of children following institutional deprivation was that disturbances in their separation-reunion behaviour did not fit with any of the existing insecure categories (e.g. Chisholm et al., 1998; O'Connor et al., 2000). Even the disorganised classification, which is highly correlated with other forms of early adverse care (e.g. maltreatment/abuse; Main & Hesse, 1990), did not adequately capture the behavioural disturbances observed in the institutionalised samples and has yet to be reported in children following early institutionalisation (O'Connor et al., in

press). Instead institutional deprivation seems to be associated with atypical patterns of insecure attachment often classified as “insecure-other” (O’Connor et al., 2000a). The homogeneity of these patterns, however, suggest that the “other” classification may have a more specific and definable interpretation which represents a distinct institutional syndrome (O’Connor et al., 2002). Rather than being an organised strategy, the disinhibited behaviour displayed by the Romanian children seemed to reflect a fundamental disturbance in the patterns of behaviour most important to the attachment system; attachment, affiliation, fear and exploration (O’Connor et al., 2002). This could be explained by the lack of a consistent care-giver to regulate emotional arousal during infancy leaving the child with impaired strategies for managing the activation and termination of attachment behaviours in later life. However, there is no direct evidence to support this proposal at present.

Attachment Status in Infancy and Developmental Trajectories

In order to assess the long term consequences of early institutional rearing it is useful to review the literature regarding the long-term stability and course of attachment within typical samples and how attachment organisation manifests at different time throughout childhood. Bowlby (1973) suggested that beyond infancy, the attachment system develops from simple non-verbal behaviours designed to elicit a desired response from the mother and attachment experiences become assimilated into a representational model regarding the self and the self in relation to others. This “internal working model” comes to govern the child’s growing repertoire of social behaviour, guiding their interactions with others and enabling them to regulate and interpret those interactions and evaluate the probable outcome of alternative behaviours within an increasing range of contexts. This suggests that individual

differences observed in infancy would be carried forward to other settings and attachment relationships.

Secure attachment during infancy promotes the feeling of security and confidence within interactions with the world. The model of the parent as responsive becomes associated with a complementary model of the self as effective and this has been found to be associated with later feelings of efficacy, self esteem and positive expectations regarding social relationships (Sroufe, 1983). In contrast, children who have experienced inconsistent or inaccessible care tend to feel anxious regarding their interactions. This serves to discourage exploration and has been found to have a negative impact on later feelings of confidence, mastery and trust within relationships. Thus, early experiences of care-giving seem to provide the basis for a child's expectations and approach to other relationships. Secure children carry expectations that others will be responsive towards them and that they are worthy of positive responses. Insecure infants grow to expect that they cannot depend on the responses of others and that they are worthy of rejection (Bowlby, 1982). In the case of disorganised attachment, the child is likely to have a model of themselves as vulnerable and helpless and not able to depend on protection or reassurance from others (George & Solomon, 1999). It remains unclear however, how expectations regarding future relationships develop in the context of early institutional deprivation. Again the question arises, how does a child form a model of the "self in relation to other" when there is no other present?

Stability and Change in Attachment

Once formed, internal working models are thought to exist largely outside consciousness, biasing expectations and regulating perception of subsequent interactions. Thus, they become actively self-perpetuating and the individual behaves in ways that maintain the existing organisation of their representational model (Bretherton & Munholland, 1999). This would suggest that attachment classifications should remain relatively stable over time. Generally, stability of attachment classification over the short term seems to be quite high ranging from 50-96% over 6 months (e.g. Main & Weston, 1981). Long-term stability between 12 and 60 months of age has been reported to be as high as 82% although this figure decreases when attachment is assessed in preschoolers (Main & Cassidy, 1988). Typically, classifications remain most stable within low risk, middle class samples while a greater degree of instability is associated with disadvantaged, high-risk samples or those undergoing changing life circumstances such as stressful life events (see Sroufe & Waters, 1979). Disorganised attachment classifications seem to be less stable than the other A-B-C categories (Lyons-Ruth, Repacholi, McLeod & Silva, 1991). This suggests that stability of attachment is due both to early experiences and to consistency in patterns of parent-child interaction in the family home. The development of the Adult Attachment Interview (AAI; George, Kaplan & Main, 1985) which is discussed at more length later in this chapter, made it possible to assess the stability of attachment classifications across the life span. Longitudinal studies have found correspondence as high as 70-75% (Waters et al., 1998) between attachment classification in infancy and AAI classifications in late adolescence and young adulthood within low-risk, middle class samples. Similar to the findings regarding attachment stability within infancy, long-term changes in attachment status

were related to malignant alterations in the care-giving environment such as death, illness or divorce. Instability was also found to be associated with high-risk populations (Sroufe, 1998).

Secure relationship dyads can become unstable in the context of negative events such as a previously supportive parent becoming extremely depressed or anxious, or life changes within the family such as unemployment, illness or bereavement (Sroufe, 1998). Bowlby (1973) suggested that such experiences could result in the parent(s) being less able to respond to attachment cues or act as a secure base. In this case a child's confidence in the parent may become compromised leading to a reconstruction of the working model of the parent and self in the light of this new experience. Evidence for the malignant reorganisation of internal working models also comes from observation of children's reactions to their care-givers following major separation (e.g. Robertson, 1978). Conversely, positive changes in life circumstances may lead to an increase in a parent's ability to respond sensitively and fulfil the child's attachment needs. This could then be paralleled with a revised working model of the parent as caring and the self as worthy. As discussed previously, "recovery" from early negative attachment interactions is reflected in findings that many children form secure relationships following early institutional deprivation when placed within adoptive families who provide nurturing and sensitive care (e.g. Chisholm, 1998). Other children, however, seem unable to form secure attachments within this context and exhibit pervasive disturbances in their attachment and social behaviour (Hodges & Tizzard; 1989a; O'Connor et al., 2000). Thus, it seems that in some cases revision of internal working models in the light of new experiences is constrained by prior

adaptation particularly when those models are based on negative early experiences (Bowlby, 1973).

Defensive Exclusion

Bowlby (1973) made reference to underlying defensive processes to explain the observed resistance to change in the (insecure) internal working models of some children. He proposed that defensive exclusion allows an individual to protect themselves from painful feelings, perceptions and thoughts. In the context of attachment relationships, this would allow the child to selectively exclude negative attachment experiences such as those in which the parent was rejecting or abusive. However, while this strategy may be adaptive in the short term, Bowlby (1973) felt that it could interfere with subsequent reconstructions by preventing the incorporation of relevant available information into the attachment system. He explained it in terms of segregated memory systems or multiple models of attachment whereby contradictory or painful information is excluded to a different part of the memory and only information that does not arouse anxiety remains within conscious awareness. The problem arises when subsequent attachment related cues re-evoked the difficult memories and feelings resulting in the activation of two conflicting working models within consciousness awareness. He argued that this manifested in attachment behaviour that seemed dysregulated, irrational, out of context and/or out of control such as is observed in infants classified as disorganised.

In relation to early deprivation, the finding that disinhibited attachment behaviour towards strangers could co-exist with secure attachment relationships with the adoptive parents could be explained by the notion of segregated memory systems and

the existence of dual internal working models of relationships that function differentially depending on the context. Children's experience of nurturing and sensitive interactions with their adoptive parents may have resulted in the development of secure attachment representations within that relationship. However, a previously developed model of social relationships based on their awful experiences within the institutions could still be activated in the context of interactions with unfamiliar adults. However, at the present time, no direct evidence is available to support this.

Assessing Attachment beyond Infancy – from Behaviour to Representation

Beyond infancy, internal working models are thought to become organised in terms of event schemata (Mandler, 1979), scripts (Schank & Abelson, 1977), or generalised event representations (Nelson & Gruendel, 1981). Clearly such mental structures cannot be directly observed and measures of attachment rest on the assumption that specific cues activate the attachment system and that responses to these cues can be used to infer the organisation of underlying working models. The strange situation procedure relies on observations of non-verbal behaviour when infants are separated from their mother and is designed for use with children up to 18 months old (Ainsworth, 1978). Modified versions of the separation-reunion paradigm (e.g. Cassidy & Main, 1985) have also been used with pre-schoolers but it has limited utility after this time. The central notions regarding the ontogeny of the attachment system suggest that beyond pre-school years children should be quite confident to explore and interact with their environment independently of the care-giver. Thus separation should no longer activate the attachment system with the same intensity as with an infant or very young child and it becomes increasingly difficult to elicit

attachment status using methods which rely on observations of non-verbal behaviour. This ceiling effect means that alternative methods are required for assessing attachment organisation past the pre-school years.

The possibility of using discourse to infer attachment organisation in older children and adults grew from the reconceptualisation of individual differences in attachment organisation as differences in mental representations of the self in relation to attachment (Main, Kaplan & Cassidy, 1985). In this view, internal working models or mental representations of attachment (Bowlby, 1969) can be defined as “*a set of conscious and/or unconscious rules for the organisation of information relevant to attachment and for obtaining or limiting access to that information, that is to information regarding attachment-related experiences, feelings and ideations*” (Main, Kaplan & Cassidy, 1985, p67). This definition implies that internal working models guide, not only feelings and behaviour, but also attention, memory and cognition. This introduced the possibility of examining attachment patterns in older children and adults using methods that looked beyond behaviour toward cognitive structures and use of language. This signified a move toward the use of interview procedures and a focus on the content and structure of an individual’s narrative in the assessment of attachment status and has provided a useful addition to behavioural observations in understanding attachment organisation. In order to develop a narrative measure of attachment appropriate for use with children following early deprivation, it is necessary to draw on the literature regarding measures currently in use and what they have brought to light regarding attachment and related language structures within typical populations.

Narrative Assessment with Adults

The Adult Attachment Interview (AAI; George et al., 1985) is the most widely used narrative measure of attachment with adolescents and adults. It is a structured interview which focuses on an individual's memories of early attachment and their perceptions regarding how these may have influenced current functioning and personality. The content and format of the questionnaire is designed to activate attachment memories and what is assessed is the ability to access and reflect upon those memories in a coherent, consistent and collaborative manner (Hesse, 1999). It was originally developed to test the hypothesis that mental processes underlying attachment would vary as distinctively as behavioural processes as the result of differing internal working models of attachment. Results indicated that as predicted attachment status was not necessarily based on actual attachment experiences. Rather it could be predicted on the basis of the organisation or "coherence" of attachment related narrative (George, Kaplan & Main, 1985).

"Secure/autonomous" attachment status (George et al., 1985) is reflected in a coherent, collaborative narrative regardless of whether the experiences being discussed are positive or negative. Qualities of coherence include the ability to discuss openly a range of positive and negative emotions, emotional regulation, ease of access to attachment related memories with appropriate elaboration, internal consistency, fluidity of conversational style and evidence of metacognitive monitoring such as reflective functioning and mentalising.

Dismissing attachment status is characterised by incoherent narrative style when discussing attachment memories and a tendency to be dismissive of the importance of

attachment related experiences and relationships. Discourse tends to be internally inconsistent with general or idealised descriptions of attachment experiences (e.g. “we got on just fine” or “she was an excellent mum”) unsupported or contradicted by the relationship episodes that are recalled. Interviews are often relatively brief as individuals within this category seem reluctant to elaborate regarding attachment experiences and often claim that they are unable to remember relevant information.

Preoccupied classifications are also characterised by incoherent (but distinctive) narrative patterns. The individual seems preoccupied by past attachment relationships and experiences often dwelling on particular negative themes and appearing angry, passive or fearful. Individuals in this category often provide answers with irrelevant or unrelated details and interview transcripts tend to be excessively long. Often the narrative is grammatically incorrect or contains vague expressions.

Unresolved/disorganised (Hesse 1996) narrative patterns indicate significant lapses in the monitoring or reasoning of discourse when the individual is discussing traumatic early experiences. This is related to the disorganised/disoriented classification in infancy and is over represented in clinical samples (Hesse 1996).

In the case where the narrative style within the interview is contradictory and incompatible a classification of “**cannot classify**” is given. This is a relatively new addition to the AAI coding scheme and little data regarding its validity is available (Hesse, 1999). It has not yet been found to be strongly associated with any of the strange situations classifications but is associated with histories of psychiatric disorder, marital and criminal violence and sexual abuse. Extrapolating from

behavioural observations (e.g. O'Connor, 2000), it seems sensible to predict that the Romanian sample might fall into this category. Based on the findings to date (e.g. O'Connor, 2000) it could be expected that older children would exhibit incoherent attachment related narrative following early institutional deprivation and furthermore, that this would be distinct from patterns of incoherence observed in other samples. As yet there is no direct evidence for this proposal and it remains unclear how the specific effects of institutionalisation would manifest at a representational level.

Coherence, Metacognitive Monitoring and Reflective Function

The most robust finding arising from narrative assessments of attachment to date is that the overall coherence of an individual's discourse when discussing attachment related topics is the best predictor of attachment security (George, Kaplan & Main, 1985). Main (1991) suggests that coherence of attachment related narrative is linked to an individual's capacity for metacognitive monitoring. This can be described as the ability to reflect on the validity, nature and source of feelings and thoughts both in the self and other people. Extending Bowlby's (1973) ideas regarding insecure attachment and defensive exclusion, Main suggests that incoherence in adults attachment related narrative arises as the result of early deficits in their ability to use metacognitive knowledge to process negative attachment related events. Consequently, multiple (and incompatible) models of attachment related experiences are formed (Main, 1991). Metacognitive skills are evident in most children by the age of 6 years (Chandler, 1988) and are crucial in the development of "operable" self-other representations (Fonagy & Target, 1997). Important processes include the ability to make "appearance-reality" distinctions (e.g. that the same object/event can be represented in different ways by the same person at different times and represented

differently by different people; Flavell et al., 1986) and the dual coding of single entities (e.g. the knowledge that the same object can fit into two categories). Children who show impairments in these abilities are more vulnerable to malign attachment experiences because they are unable to conceptualise alternative realities (e.g. just because my attachment figure rejects me does not mean I am a bad person) or to organise unpredictable or contradictory interactions (responsive/rejecting) into a single (coherent) working model (Main, 1991).

Other authors (e.g. Fonagy and Target, 1997; Meins et al., 1998) have extended ideas regarding metacognitive abilities and attachment processes. Reflective functioning or mentalising (these terms are used interchangeably in the literature) refers to the capacity to understand the mental states of self and other and to organise the experience of one's own and other people's behaviour in terms of mental state constructs. Children's capacity for reflective functioning is associated with attachment security in childhood (Meins et al., 1998). Its development is embedded within the social world of the family (Fonagy & Target, 1997) and promoted within secure mother-child dyads (Meins et al., 1998; Fonagy, Redfern & Charman, 1997). Mothers who are sensitive and responsive to the infant's internal states promote the child's capacity to be aware of, label and understand thoughts and feelings of self and others (Humphress et al., 2002). Reflective functioning equips the child with the ability to make sense of self-other interactions and flexibly activate context-appropriate self-other representations. Thus it is an important determinant of later self organisation and socio-cognitive functioning (Fonagy & Target, 1997). Early institutional deprivation, therefore, where there is no care-giver to help the child develop any understanding of self-other interactions in terms of mental states, could have a serious

impact upon the development metacognitive abilities and the child's capacity to make sense of their experiences. This in turn would disrupt the formation of coherent attachment representations and have detrimental effects on subsequent social functioning.

The association between attachment, coherence and other high level cognitive capacities such as reflective functioning could, conceivably, be mediated by non attachment related factors such as intelligence or memory. However, secure attachment classifications from the AAI (George et al., 1985) are not normally correlated with IQ, memory or narrative styles on unrelated topics (Bakermans-Kranenburg & van Ijzendoorn, 1993). Other studies using narrative techniques to assess attachment in children, however, suggest that verbal IQ can partly (but not completely) explain the relationship between attachment and mentalising abilities (Humphress et al., 2002). Verbal abilities are also an important predictor of children's performance on theory of mind tasks (Happé, 1995). Thus, in assessing the effects of early institutional deprivation on later attachment it is important to demonstrate that any relationship observed is not mediated by IQ. This is particularly important in terms of the sample within the current study since early deprivation has already been shown to have had a deleterious and often long-term impact on the cognitive functioning of some of the Romanian adoptees (Rutter et al., 1998).

Narrative Assessment with Children

Past infancy it becomes possible to employ measures of attachment that go beyond non-verbal behaviours and draw on the child's increasing competence in terms of

language and cognition. Most narrative techniques used to date involve the use of projective stimuli to infer mental representations or internal working models of relationships. These include story stem tasks (e.g. Separation Anxiety Test: Shouldice & Stevenson-Hinde, 1992); the use of family photos (e.g. Main et al., 1985) or doll play (e.g. Solomon, George & DeJong, 1995). These studies have found correlations between secure vs. insecure classifications from the strange situation and children's responses to attachment related story stem tasks. Moreover, children seem to show similar patterns of narrative organisation in relation to attachment status as observed in adults using the AAI (George et al., 1985).

Studies using narrative assessment of pre-schoolers and 6 years olds have found that secure children are more coherent and emotionally open during story stem tasks relating to both positive and negative attachment experiences. Their conversational style is fluid, organised, appropriately elaborated and they are able to remain contained even when confronted with emotional laden topics (Main, Kaplan & Cassidy, 1985). Secure children show the ability to spontaneously reflect on their own and others thoughts and feelings (Humphress et al., 2002), give more positive descriptions of mother-child interactions, and generate constructive story resolutions that acknowledge the role of the care-giver in helping them to solve problems (Oppenheim, 1990). Themes within story completion tasks of secure children hold the child as valuable, the relationship with the mother as warm and the mother as being available if the child became distressed (Cassidy, 1988).

In contrast, insecurely attached children tend to give incoherent responses to narrative tasks and display difficulties with emotional and behavioural regulation. Distinct

patterns of incoherence are related to the different insecure attachment categories. The discourse of avoidant children is restricted, tending to focus on impersonal topics with little elaboration (Main et al. 1985). Story stem tasks involve rejection, dismissal of attachment and denial of the child's need for help in solving problems. Insecure-resistant children tend to display more anger within their narratives and often have difficulty bringing the story to a resolution (Shouldice & Stevenson-Hinde, 1992). Children classified as disorganised give irrational or bizarre responses or remain completely silent. Their narrative is incoherent, dysfluent and contains many "false starts" (Main et al., 1985). Themes within their stories often contain violence, aggression or hostility, which the child seems unable to control (Cassidy, 1988).

To date, narrative assessment techniques have not been used within samples of children who have suffered early institutional deprivation. The behavioural data (O'Connor et al., 2000) suggests that representations within such children may not resemble those discussed above (e.g. avoidant, rejecting, catastrophic themes etc.). Rather, deprivation and attachment disturbances in childhood may be associated with representational models which reflect fundamental disturbances in understanding, accessing and using the mental states of self and others in making sense of behaviour (O'Connor (2003). This hypothesis, however, remains untested and the current study hopes to move toward a further understanding of some of these issues.

The Child Attachment Interview (Target, Fonagy, Shmueli-Goetz, Datta & Schneider, 1998)

As discussed above, narrative techniques that exist for assessing attachment in childhood have tended to rely on inferring mental representations from projective

stimuli such as story stem tasks (e.g. Shouldice & Stevenson-Hinde, 1992) or doll play (e.g. Solomon, George & DeJong, 1995). The assumption seems to have been that children would not be able to respond meaningfully to direct questions regarding attachment experiences (Target et al., 2002). However, more recently, modified versions of the AAI have been used with older children and young adolescents (e.g. Ammanti et al., 1990) with some success. In an attempt to integrate representational and behavioural approaches in assessing attachment organisation in middle childhood the Child Attachment Interview (CAI: Target et al., 1998) was developed to supplant existing measures. While based conceptually on the AAI, the CAI focuses on children's recent attachment related events and how current relationships (rather than memories) with the parents are represented. As a relatively new measure, there is currently only a small amount of data available. However, preliminary results are encouraging in terms of both reliability and validity. In addition it seems that, contrary to popular belief, children are able to respond to direct questioning regarding attachment experiences and that their responses appear to reflect their internal attachment organisation (see Target et al., 2002).

Aims of study

On the basis of the literature it seems reasonable to propose that children who have suffered early institutional deprivation may develop disturbed attachment representations and furthermore, that these may differ from insecure children in the typical range or those who have experienced other forms of early adverse care such as maltreatment or abuse. The aim of the study is to examine the specific effects of early institutionalisation on attachment representations at age 11 and how these are manifested in narrative and behaviours during discussion of close attachment

relationships within the family. In particular, the study investigates the impact of deprivation on children's coherence, their capacity for mentalising and reflective functioning and on atypical behaviours displayed within the context of the interview situation. The study also aims to test whether any observed disturbances in attachment representations at age 11 can be shown to be linked with earlier attachment disturbances at age 6.

Research Questions

The research questions addressed in the current study are as follows:

1. How are attachment representations manifested in children who have suffered early institutional deprivation?
2. What are the long-term effects of early institutional deprivation on attachment in late childhood?
3. Will children exposed to longer periods of deprivation show greater attachment disturbance at age 11 than those exposed for a shorter length of time?
4. To what extent do attachment disturbances at age 6 years mediate the relationship between deprivation and subsequent attachment representations at age 11?

Chapter Two

METHOD

Context

The current study is a longitudinal follow-up of children adopted into the UK following severe early deprivation. It is part of a wider multiple assessment project called the English and Romanian Adoptees (ERA) study which has followed the development of children adopted from Romanian orphanages into the UK and a comparison sample of within-country, non-deprived adoptees (see Rutter et al., 1998 for details). Previous assessments were carried out when the children were 4 years and 6 years of age. The current study was carried out when the children were followed-up at 11 years of age.

Participants

The participants in the current study comprise a sub-sample of those from the ERA project. The initial selection procedure for the entire ERA sample will be described as the same process applies to the participants within the current study.

ERA Romanian Sample

The ERA Romanian sample was taken from the 324 children adopted from Romania into British families between February 1990 and September 1992 through the Department of Health and the Home Office. A number of children also entered the UK from Romania illegally. These children were not included in the sample. A stratified random sampling design was used for selecting the sample of Romanian

adoptees. The aim was to obtain 13 boys and 13 girls placed in adoptive families between the ages of 0-3 months, 13 boys and 13 girls placed between 3-6 months and thereafter 10 boys and 10 girls in each of the 6 month age bands up to 42 months. 81% of the adoptive parents of the Romanian children agreed to participate in the study when the children were aged 4 and 6 years (Rutter et al., 1998). The final sample (N = 165) was made up of 111 children who entered the UK before the age of 24 months, and 54 children who entered between 24 and 42 months.

ERA UK sample

The UK sample consisted of 52 UK-born children who had been placed into adoptive families before the age of 6 months old. The sample was obtained through local authorities and voluntary adoption agencies. Agencies only provided access to the families after they had consented to take part and, therefore, the precise rate of participation is not known. However, available information suggests that around 50% of families who were approached agreed to participate in the study (Rutter et al., 1998).

Extent of Early Deprivation of the Romanian sample

Precise information regarding the exact levels of deprivation within each of the Romanian institutions is unavailable. However, media coverage and anecdotal reports from people who visited the orphanages suggest that overall the conditions and quality of care were extremely poor (see Rutter et al., 1998 for details). The extreme physical and developmental delay of the Romanian children that was evident at entry into the UK also points to the fact that they had experienced profound global deprivation (O'Connor et al., 2003). In general, the institutions lacked adequate

funding, food or medical supplies. Reports suggest that the children received virtually no visual or auditory stimulation and were often confined to cots for up to 20 hours a day with few, if any, toys or play things. Child-to-care-giver ratios ranged from 10:1 for infants to 35:1 for children over the age of 3 (McMullan & Fisher, 1992) and interaction between children and staff was minimal. This would suggest that it is extremely unlikely that the children had the opportunity to develop discriminating attachment relationships while in the institutions.

Information on why the children had been placed into the institutions was not systematically available. However, it seems reasonable to suggest that severe poverty may have played a major role given the economic conditions within Romania at that time. That the majority of the children were placed within institutions so early in their lives (85% under one month old) also suggests their placement was not due to developmental delay or handicap which would not have been evident by that time (O'Connor et al., 2000b).

Demographics and Family Background

The adoptive families of both the British and the Romanian children were generally middle class and slightly better educated than the general British population (Rutter et al., 1998). Significant differences between the families adopting from Romania and those adopting from within the UK related to parental age and family composition. In general, adoptive parents of Romanian children tended to be slightly older than within country adoptive parents (mean age of fathers being 39.0 years vs. 36.0 years and of mothers 36.6 years vs. 34.2 years). A higher proportion of the adoptive parents of the Romanian children already had biological children of their own and fewer had

adopted previously. These differences were thought to be a consequence of adoption policy within the UK

Within the main ERA sample, no significant association was found between the characteristics of the families who had adopted Romanian children, and the child's age of entry into the UK. In addition, no significant differences in terms of physical condition were found between the early and late-placed groups of Romanian adoptees on entry into the UK.

The sub-sample for this study

The sub-sample used in the current study comprised 120 children in total selected at random from the main ERA sample. Within this sub-sample the children were divided into four groups: 30 early-placed Romanian adoptees who had entered the UK before the age of 6 months; 31 middle-placed Romanian adoptees who entered the UK between 6-24; 29 late-placed adoptees who entered the UK between 24-48 months and 30 within-country adoptees all of whom had been placed into adoptive families before the age of 6 months. Due to the fact that the sub-sample were drawn at random there were slightly more boys ($n = 63$) than girls ($n = 57$). However, this difference was not significant ($\chi^2 = 7.21, p < .065$). Table 2.1 presents the mean age of entry into the UK and child gender in each of the four groups within the sub-sample.

Table 1: Age child joined household by adoptee group and child gender

Age (in months) child joined household				
Adoptee groups	Gender	N	Mean	Standard Deviation
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	31.37	4.95
	Total	29	29.86	4.70

The sub-sample in the current study did not differ significantly from the entire sample with regards to any of the above variables and can therefore be assumed to be representative of the ERA study at large. The demographic characteristics of the sub-sample will be further discussed within the results section.

Ethics

Ethical approval was sought in 1996 for the ERA project of which this study is part. Ethical approval was obtained from the Institute of Psychiatry and the Bethlem and Maudsley NHS trust, reference number 59/92.

Procedure

The assessment for this study was part of the large data collection for the entire ERA project. Families were visited at home on two occasions, shortly after the child's 11th birthday. During these visits, multiple assessments were carried out with both the child and the primary care-giver (usually the mother). The assessment measures included psychometric testing, a set of behavioural, family and peer relationship questionnaires and semi-structured interviews. All were conducted by trained interviewers of the ERA study team. The interview of relevance in this study is the Child Attachment Interview (CAI; Target et al., 1999), a shortened version of which was administered to the child during the second visit to the home. The interview consisted of a series of semi-structured questions and took approximately 30 minutes to administer. All of the interviews were video-recorded to allow subsequent coding of both the child's behaviour during the procedure and their responses to the interview items. The author's contribution to the study was in the development of a coding scheme for the CAI.

Design

The present study aimed to examine the quality of mental representations underlying attachment relationships within an interview situation. The study used a non-equivalent groups posttest-only design of four levels. The main dependent variable is deprivation and is based on the categorical variable of children's membership within the four groups. Deprivation can also be assessed within the Romanian sample as a continuous variable based on age of entry into the UK. The within-country adoptees did not suffer early deprivation and therefore provide a comparison group controlling for the effects of adoption in the absence of early deprivation.

Measures

Attachment Relationships

Child-Parent attachment was measured using the Child Attachment Interview (CAI; Target et al., 1998). The original version of the semi-structured interview consists of 19 items to assess children's mental representations of attachment figures and significant others. Based on the Adult Attachment Interview (AAI, Main et al., 1985), the CAI aims to capture the affective nature of attachment relationships as well as the quality (e.g. coherence) of the child's response. The interview consists of questions regarding the child's experience with, and perceptions of their care-givers particularly within situations in which the attachment system is thought to be activated (e.g. emotional upset, physical injury and separation from parents). During the interview the child is asked to describe what generally happens with the parent in these situations as well as being asked to give a specific example. In this way the interview attempts to elicit the child's overall current state of mind with respect to attachment and also their narratives regarding specific relationship episodes (RE's) and memories with attachment figures.

The shortened interview protocol used in the current study comprised 12 questions plus probes, which aimed to elicit the child's mental representations of their attachment figures. These included: 'Who is in your family? (lives with you in your house)'; 'Tell me three words to describe yourself (examples)'; 'Can you tell me three words that describe what its like to be with your mum (examples)?'; 'What happens when your mum gets upset with you?'; 'Can you tell me three words that describe what its like to be with your dad?'; 'What happens when your dad gets upset with

you?'; 'Can you tell me about a time when you were upset and wanted help?'; 'What happens when you hurt yourself?'; 'Has anyone close to you ever died/anyone you cared about who isn't around anymore?'; 'Have you ever been away from your parents for longer than a day?'; 'Do your parents sometimes argue? Can you tell me about a time when that happened?'; 'In what ways do you want/not want to be like your mum/dad?'

The existing CAI coding scheme had originally been developed for use with children in the general population. Therefore, a modified version was devised by the author and colleagues for rating in this study. It was derived from a combination of literature regarding attachment organisation and narrative structure (e.g. Main, Kaplan & Cassidy, 1995), the original CAI coding schedule, previous studies (e.g. O'Connor et al., 2000, 2001), anecdotal reports from research team members on the social behaviour of the Romanian adoptees and observations of a number of videotapes. Specifically it aimed to capture how the atypical attachment disturbances, previously observed in the sample (O'Connor et al., 2001), might be manifested at a representational level. Once developed, a pilot using the new scheme was carried out by the author, and subsequent revisions made before the main study began.

The coding scheme consisted of 13 different scales; use of examples, warmth/positive regard for parents, hostility/negative regard for parents, dismissal of attachment, anger, emotional incongruence, emotional non-containment/lack of emotional regulation, emotional openness, coherence, interpersonal engagement, preoccupation, idealising and reflective functioning. For each of these dimensions children's responses were scored on a 5-point scale with 0 representing the lowest level and 4

representing the highest level. Four of the scales were rated separately for mother and father (use of examples, positive regard, negative regard and idealising) and the remainder were rated jointly with respect to mother and father. In addition, children's responses to each item in the interview were rated for mentalising on a 3-point scale.

The scales of specific interest within the current study were coherence, reflective functioning and mentalising. In the context of the CAI, coherence is defined as the child's ability to describe their attachment relationships in a way that is organised, easy to follow and with appropriate elaboration without getting "off track". Mentalising refers to the child's ability to understand their own and other people's thoughts and feelings. This was rated according to the amount the child made reference to mental and emotional states in their response to each question. It assessed the extent to which any references to mental and emotional states were context specific and differentiated and whether the child demonstrated an understanding of the cause and effect of the thoughts and emotions they described. Reflective functioning attempts to capture the child's overall ability to appreciate and consider intentionality in themselves and others and the extent to which they spontaneously reflect and elaborate on mental and emotional states throughout the whole interview. A copy of the full coding manual and the coding sheets are contained in Appendix 1.

The internal consistency of the CAI is good ($\alpha = .92$) indicating that the scale is tapping into a single construct. In a sample of 8-12 year olds the test-retest reliability was .75 or above for security classification for attachment to mother and .65 or above for attachment classification to father. It has a significant association with other

measures of attachment (Separation Anxiety Test) and also by a significant correlation with parental attachment status according to the AAI (Target et al., 2000).

Atypical Behaviours

One of the main findings from previous studies on the social development of Romanian adoptees was a pattern of seemingly 'odd' behaviour. Using the videos of the CAI, children were rated for the presence of such atypical behaviours during the interview situation using a 13-item checklist based on the previous findings. The behaviours were scored on a 3-point scale (0 = no evidence of the behaviour, 1 = slight/brief/mild occurrence of the behaviour and 2 = clear evidence of the behaviour). The 13 items were as follows; the child appears frightened of the interview situation; bizarre facial expression/grimaces unrelated to the interview context; child manages to unnerve/derail the interviewer; child zones out during the interview (trance like); grossly immature acts; overly concrete thinking; distracted by external factors; child violates the interview context; child seeks physical contact with the interviewer; child tries to set agenda/willfully controlling the pace or content of the interview; hyperaroused; child shows scorn/contempt for the interviewer and child's emotional states are not well modulated characterised by a turning 'on and off' of affect or swinging to relative extremes.

Following a pilot study, the author and a colleague coded 70 videos each. A random selection of 20 (17%) of the total number of videos ($N = 120$) were also double coded for reliability analysis. The coders were unaware of children's adoptee group membership until all coding was finished. Reliability for each item was based on correlations between the raters (see Table 2.2). Variables with poor inter-rater

reliability ($r > .60$) were dropped from further analysis. Within the current study the scales of specific interest are coherence, reflective functioning, mentalising and atypical behaviours. Based on current literature, these were considered to be the most robust predictors of attachment status and, as such, were used as the main dependent variables within the statistical analysis. For the final analysis the scores from the different components on the mentalising item were collapsed to create an overall score for each child (internal consistency; $\alpha = .60$). Similarly, a total atypical score was derived from individual component scores (internal consistency; $\alpha = .82$) with the exception of question 1 (child appears frightened of the interview context) as this did not correlate well with the other components and was subsequently dropped from analysis.

Attachment Disturbances at Age 6 Years

In order to assess the stability of attachment patterns over time, the results from the current study were compared with data from the ERA study regarding attachment disturbances collected when the children were aged 6 years using a semi-structured interview with the parents. The interview consisted of 3 items designed to assess the child's behaviour toward the parents and other adults in both novel and familiar situations (see O'Connor et al., 2000). Responses were scored according to evidence of 3 items thought to reflect attachment disturbances; definite lack of differentiation between adults, clear indication that the child would readily go off with a stranger and definite lack of checking back with the parent in anxiety provoking situations. Parental responses were scored on a 3-point scale (0 = no evidence, 1 = mild evidence and 2 = marked or pervasive disturbance) ($\alpha = .80$). Inter-rater reliability for the 3

items, determined on the basis of 20 interview protocols from 3 interviewers, was 1.00, .94 and .86 respectively (O'Connor et al., 2000).

Cognitive Ability

Cognitive ability was assessed at age 6 years using a shortened version of the Weschler Intelligence Scale for Children 3rd edition, UK version (WISC-III). Performance and verbal IQ were assessed and the scores combined to derive a Full-Scale IQ score (FSIQ). FSIQ was included in the analysis as a covariate. Measures of performance IQ assessed perceptual-organisational skills, spatial visualisation and visual-motor co-ordinating. It involved two subsets. "Block design" required the child to copy abstract designs using blocks. "Object assembly" involved completion of cut-up puzzles of common stimuli (e.g. a horse). Verbal IQ assessed the child's understanding of words, verbal concept formation and verbal expression, also using two subsets. "Vocabulary" required children to describe the meaning of words (e.g. "What is a bicycle?"). The "Similarities" task involved relating pairs of verbal concepts (e.g. "In what ways are a banana and an apple alike?"). The scores from the two subsets within each dimension were prorated to derive a total score for performance and verbal IQ. The WISC-III is the most commonly used standardised measure of children's cognitive ability and is well validated. However, as a shortened version of the original protocol was used for the purpose of this study, the prorated FSIQ scores should be regarded as estimates.

Table 2.2: Correlations for reliability analysis

Item		Inter-rater reliability (Correlation*/Kappa**)
Ease of Access/recall:	Self	.47
	Mother	.96
	Father	.95
Specificity*:	Self	.77
	Mother	.80
	Father	.73
Fit*:	Self	.74
	Mother	.73
	Father	.85
Warmth*:	Mother	.79
	Father	.87
Hostility*:	Mother	.89
	Father	.97
Dismissal of Attachment*		.92
Anger*		.52
Emotional Incongruence*		.72
Emotional Regulation*		.80
Emotional Openness*		.76
Coherence*		.79
Engagement*		.83
Preoccupied*		.70
Idealising*		.68
Reflective Functioning*		.75
Mentalising**:	Self	.43
	Mother	.67
	Father	.71
	Mother upset with you	.76
	Father upset with you	.79
	Feelings hurt	.80
	Physically hurt	.57
	Someone moved away/died	.72
	Away from parents	.36
	Parents arguing	.49
	Frightened of interview	.92
	Bizarre facial expressions	.69
	Derail interviewer	.42
	Zoning out	-.53
	Grossly immature acts	.69
	Overly concrete thinking	.56
	Distracted by external factors	.71
Atypical Behaviours**:	Violates interview context	.89
	Seeks physical contact	.49
	Tries to set agenda	.71
	Hyperaroused	.88
	Shows scorn/contempt	.88
	Emotional dysregulation	.83

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

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

The items in bold are those used in the main statistical analysis

Chapter Three

RESULTS

Research Aims

The aim of the present study was to investigate attachment representations in children who have suffered early institutional deprivation. Of specific interest were the long-term effects of profound deprivation on attachment in late childhood and in the association between duration of deprivation and attachment disturbances. In addition, the study aimed to investigate the stability of attachment between the ages of 6 and 11 and the extent to which attachment disturbances at age 6 years mediate the relationship between the length of deprivation and attachment as assessed in the current study.

The results will be presented in four sections. In order to identify possible confounding factors when assessing the relationship between early deprivation and attachment at age 11 years, the first section will consider the association between background variables (e.g. IQ, family demographics) and deprivation. The second section will discuss the relationship between background variables and measures of attachment (e.g. coherence). The third section will address the research question regarding duration of deprivation, attachment related narrative and atypical behaviours. The final section outlines the longitudinal course and stability of attachment throughout childhood and the role of attachment disturbances at age 6 years in mediating the effects of deprivation and attachment organisation at age 11 years.

Data analysis

Most of the analyses involving duration of deprivation were based on categorical groupings of the sample: 0-6 months (UK), 0-6 (early-placed Romanian), 6-<24 months (mid-placed Romanian) and 24-<42 months (late-placed Romanian). The categorical distinction was used because it allowed for a direct test of the effects of early deprivation using the comparison between the UK and Romanian groups. It also permitted a means of examining the effects of duration of deprivation within the Romanian sample itself. Data analysis to examine the effects of deprivation upon attachment used One-way Analyses of Variance (ANOVA) with planned contrasts in order to draw comparisons between specific groups. The contrasts used were Romanian vs. the UK sample (contrast 1), late vs. early-placed Romanian adoptees (contrast 2) and late vs. mid-placed Romanian adoptees (contrast 3). One-way Analyses of Co-Variance (ANCOVA) with the same planned contrasts were used in order to control for significant extraneous variables whilst analysing the effects of deprivation. An ANCOVA was also used to test the hypotheses that attachment disturbances at age 6 years would mediate the relationship between deprivation and attachment at 11 years.

Creating such categorical groupings is not, however, meant to imply a threshold or other form of non-linear effect. Accordingly, additional correlational analyses based on a continuous measure of age of entry into the UK from Romanian institutions, were also conducted where appropriate.

Section 1: The relationship between deprivation and sample characteristics

In order to identify potential confounding influences that might mediate the relationship between early deprivation and attachment status, associations between deprivation and specific characteristics of the children and families were examined, namely IQ and gender of the adopted child, socioeconomic status of the adoptive family and the educational level and age of the adoptive parents. Controlling for these factors in the main analysis increases the chance that attachment patterns observed can be accounted for by the effects of deprivation and not other background variables.

A One-Way ANOVA using the planned contrasts described above was used to examine the relationship between deprivation and the continuous background variables (see Table 3.1).

A significant association was found between cognitive ability and deprivation. The difference between the deprived (Romanian) and non-deprived (UK) groups ($t(116) = -4.96, p < .001$) indicates that deprivation is negatively related to IQ, with the Romanian sample tending to score lower in terms of IQ than the UK comparison group. Moreover, there was a dose response curve in terms of duration of deprivation and IQ with a significant negative association between the early and late-placed Romanian adoptee groups ($t(116) = 2.93, p < .01$). This indicates that children who spent longer within institutions during infancy tended to exhibit greater difficulties in terms of later cognitive functioning. No significant difference was found between the mid and late-placed adoptees in terms of IQ ($t(116) = .48, p = .63$).

Table 3.1: Group differences: duration of deprivation and family characteristics

	Adoptee group status					Contrasts		
	UK		Romanian			1	2	3
	N	Mean	0-6mths	6 -	24 -			
				24mths	42mths			
		(SD)	(SD)	(SD)	(SD)	t-value	t-value	t-value
FSIQ	120	106.17 (13.65)	96.63 (19.76)	86.13 (13.78)	84.07 (17.98)	-4.96***	2.93**	.48
Social class of household	120	2.23 (.82)	1.97 (1.07)	2.48 (1.15)	2.34 (1.11)	.144	-1.39	.515
Age of mother	120	44.77 (3.64)	48.23 (5.94)	46.29 (6.01)	46.14 (6.43)	1.79	1.44	.11
Age of father	111	46.29 (4.32)	48.93 (5.73)	48.54 (5.75)	49.75 (7.54)	2.14*	-.51	-.76
Mother: scholastic attainment	120	2.80 (1.35)	2.97 (1.40)	2.26 (1.59)	2.62 (1.37)	-.61	.93	-.98
Father: scholastic attainment	108	3.00 (1.33)	3.30 (1.20)	2.42 (1.45)	2.25 (1.80)	-1.06	2.65**	.43
Mother: post- school qualifications	120	1.83 (1.39)	2.03 (1.27)	1.84 (1.29)	1.59 (1.24)	-.05	1.32	.75
Father: post- school qualifications	108	2.33 (1.33)	2.26 (1.32)	2.23 (1.18)	2.32 (1.39)	-.22	-.18	-.26

* p <.05 ** p<.01 ***p<.001

Contrast 1 = UK vs. Romanian adoptees

Contrast 2 = Romanian adoptees: late vs. early-placed

Contrast 3 = Romanian adoptees: late vs. middle placed

There was a significant difference between the UK and Romanian groups with regards to age of father ($t(107) = .03, p < .05$) with fathers of the Romanian adoptees tending to be slightly older. In addition, the early and late-placed Romanian adoptee groups differed with regards to scholastic attainment of the father ($t(104) = 2.65, p < .01$) with the fathers of later adopted children tending to have achieved less academically. Deprivation was not significantly associated with any other of the demographic or background variables included in the ANOVA. There was also no significant association between deprivation and gender ($\chi^2(3) = 7.21, p = .07$).

In summary, IQ, age of father and scholastic attainment of the father were found to be associated with deprivation. These will be controlled for in the main analysis.

Section 2: Relationships between measures of attachment and sample characteristics

The relationship between the measures of attachment (coherence, mentalising, reflective functioning and atypical behaviours) and sample demographics was explored using a correlational analysis (see Table 3.2). Cognitive functioning was highly correlated with three of the measures of attachment. The positive linear relationships between IQ and coherence ($r = .32, p < .001$) and IQ and reflective functioning ($r = .31, p < .001$) indicates that children with higher IQ scores also tended to score more highly with regards to these variables. A significant negative association was found between IQ and global atypical behaviours ($r = -.309, p < .001$). This suggests that children with higher IQ tended to exhibit fewer atypical behaviours than children with poorer cognitive functioning. No significant relationship was found between IQ and mentalising ($r = .06, p = .49$).

Table 3.2: Correlations of measures of attachment with family characteristics

Family characteristics	Measures of Attachment			
	Coherence	Mentalising	Reflective Functioning	Atypical Behaviours
	N = 120	N = 120	N = 120	N = 120
FSIQ	.32***	.06	.31***	-.31***
Social class of household	-.11	-.16	-.19*	.13
Age of mother	.10	-.03	.02	-.08
Age of father	.01	-.04	.01	.12
Mother scholastic attainment	.14	-.03	.12	-.14
Father scholastic attainment	.09	-.02	.004	-.15
Mother post-school qualifications	.08	-.15	.04	-.14
Father post-school qualifications	.11	.06	.08	-.25**

* $p < .05$ ** $p < .01$ *** $p < .001$

Reflective functioning was found to be negatively correlated with social class of the family ($r = -.19$, $p < .05$) indicating that children who scored more highly in terms of reflective functioning tended to be from higher socio-economic family backgrounds (a score of 1 indicated highest socioeconomic status, 5 indicated lowest). In addition, atypical behaviours were negatively associated with post-school qualifications of the father ($r = -.249$, $p < .01$). That is, children with elevated levels of atypical behaviours tended to come from families in which the father had fewer post-school qualifications. There were significant differences between girls and boys with regards to reflective

functioning ($\chi^2(4) = 13.62, p < .01$). Gender was not significantly associated with any of the other measures of attachment.

In summary, gender, IQ, social class of family and post-school qualifications of the father were found to be associated with specific measures of attachment. These will be controlled for in the main analysis.

Section 3: Early Institutional Deprivation and Attachment

The primary aim of this study was to examine the relationship between early institutional deprivation on attachment at age 11 years. The main prediction was that deprivation would have a deleterious effect on children's attachment and that this would be reflected in the organisation of attachment related narrative. It was also predicted that children who had experienced early deprivation would differ from the non-deprived controls with regard to atypical behaviours. Finally, it was suggested that a dose-response curve would be observed in children who had suffered longer periods of deprivation. That is, the children who had suffered deprivation for longer (i.e. late-placed Romanian adoptees = entry into UK 24-42 months of age) would display more disturbed attachment than those exposed for a shorter length of time (middle-placed Romanian adoptees = entry into UK 6-24 months of age and early-placed Romanian adoptees = entry into UK 0-6 months of age).

A one-way ANOVA with planned contrasts was used to explore the effect of deprivation on attachment. As discussed previously, this permitted comparison between the Romanian and UK sample (contrast 1), late vs. early-placed Romanian

adoptees (contrast 2) and late vs. mid-placed Romanian adoptees (contrast 3). Results will be presented separately for each measure of attachment.

Deprivation and Coherence

There was a significant effect of deprivation upon coherence between the UK and Romanian groups ($t(116) = -2.48, p < .01$) with Romanian adoptees tending to be less coherent than the non-deprived controls (see Table 3.3). However, duration of deprivation did not demonstrate a significant effect on coherence within the Romanian sample with the differences between late and early-placed adoptees ($t(116) = .84, p = .40$) and the mid and late-placed adoptees ($t(116) = -.21, p = .84$) being non significant.

Having established a significant association between deprivation and coherence, it was necessary to examine whether the observed effect between the Romanian and UK groups functioned independently of background variables. The relevant variables associated with coherence were IQ, age of father and scholastic attainment of father. Therefore, an ANCOVA, treating these factors as covariates, was used to explore the precise relationship between deprivation and coherence whilst controlling for these possible mediating factors (see Table 3.3). As discussed above, no significant effect of deprivation was found between the early and late-placed Romanian adoptees (contrast 2) and therefore these contrasts were not included in the ANCOVA.

Table 3.3: Group differences: Duration of deprivation and coherence

	Adoptee group status							
	UK		Romanian			Contrasts		
	N	Mean	0-6mths Mean	6-24mths Mean	24-48mths Mean	1 t-value	2 t-value	3 t-value
Coherence	120	2.93	2.57	2.29	2.34	-2.48**	.84	-.21
		SD=.98	SD=.86	SD=1.27	SD=.90			
Controlling for IQ	120	(2.74)	(2.52)	(2.40)	(2.48)	(1.18)	-	-
Controlling for age of father	111	(2.95)	(2.51)	(2.32)	(2.34)	(-2.38)	-	-
Controlling for scholastic attainment of father	108	(2.99)	(2.50)	(2.36)	(2.37)	(-2.49)	-	-

(Figures in brackets represent the adjusted values after controlling for the covariate)

* $p < .05$ ** $p < .01$

Contrast 1 = Romanian vs. UK adoptees

Contrast 2 = Late vs. early-placed Romanian adoptees

Contrast 3 = Late vs. mid-placed Romanian adoptees

After controlling for the effect of IQ, the difference between the UK and Romanian samples in terms of coherence was no longer significant ($F(3, 115) = .53, p = .67$). Similarly, the group differences previously identified with regards to deprivation were no longer significant once the effect of scholastic attainment of the father and age of father had been controlled; ($F(3, 103) = 2.13, p = .10$ and $F(3, 106) = 2.09, p = .11$ respectively).

Deprivation and Reflective Functioning

The effect of deprivation upon reflective functioning was also analysed using an ANOVA with planned contrasts (see Table 3.4). There was a significant effect of deprivation upon reflective functioning between the deprived and non-deprived groups with UK adoptees displaying higher levels of reflective functioning than the Romanian groups ($t(116) = -2.34, p < .05$). However, duration of deprivation did not demonstrate a significant effect upon reflective functioning with the differences between the late and early-placed Romanian groups (contrast 2) and the mid and late-placed Romanian adoptees (contrast 3) being non-significant ($t(116) = 1.87, p = .63$ and $t(116) = .90, p = .37$ respectively)

An ANCOVA was used to control for the significant background variables associated with reflective functioning; IQ, gender, social class, age of father and scholastic attainment of father (see Table 3.4). Group differences between the UK and Romanian adoptees in terms of reflective functioning remained significant after controlling for the effect of gender ($F(3, 115) = 3.33, p < .05$), social class ($F(3, 115) = 2.70, p < .05$), age of father ($F(3, 106) = 2.64, p < .05$) and scholastic attainment of father ($F(3, 103) = 2.69, p < .05$). However, after controlling for IQ, the effect of deprivation upon reflective functioning between the deprived Romanian adoptees and the non-deprived controls was no longer significant ($F(3, 115) = .89, p = .45$).

Table 3.4: Group differences: Duration of deprivation and reflective functioning

	Adoptee group status							
	UK		Romanian			Contrasts		
	N	Mean	0-6mths Mean	6-24mths Mean	24-48mths Mean	1 t-value	2 t-value	3 t-value
Reflective	120	2.87	2.60	2.32	2.07	-2.34*	.84	-.21
Functioning		SD=.98	SD=1.25	SD=1.17	SD=.88			
Controlling	120	(2.69)	(2.55)	(2.42)	(2.20)	(-1.18)	-	-
for IQ								
Controlling	120	(2.89)	(2.63)	(2.27)	(2.06)	(-2.47)*	-	-
for gender								
Controlling	120	(2.86)	(2.55)	(2.36)	(2.09)	(-2.34)*	-	-
for social								
class								
Controlling	111	(2.88)	(2.51)	(2.46)	(2.06)	(-2.23)*	-	-
for age of								
father								
Controlling	108	(2.90)	(2.54)	(2.49)	(2.05)	(2.22)*	-	-
for								
scholastic								
attainment								
of father								

(Figures in brackets represent the adjusted values after controlling for covariate)

* p < .05 ** p < .01

Contrast 1 = Romanian vs. UK adoptees

Contrast 2 = Late vs. early-placed Romanian adoptees

Contrast 3 = Late vs. mid-placed Romanian adoptees

Deprivation and Mentalising

Deprivation was not significantly associated with mentalising with no significant difference between the UK and Romanian groups; ($t(116) = 1.90, p = .06$). Nor was it associated with duration of deprivation with no significant difference being found between the late vs. early-placed Romanian adoptees ($t(116) = -.26, p = .80$) or the mid vs. early Romanian adoptees ($t(116) = -.44, p = .66$). As a result, this variable was not used in any further analyses.

Deprivation and Atypical Behaviours

As shown in Table 3.5, there was a significant effect of deprivation upon atypical behaviours between the UK and Romanian samples with the deprived Romanian group being significantly more likely to display atypical behaviour than the non-deprived controls ($t(116) = 2.77, p < .01$). Duration of deprivation did not demonstrate a significant effect on atypical behaviours between either the early vs. late-placed Romanian adoptees ($t(116) = -1.09, p = .28$) or the mid vs. late-placed Romanian groups ($t(116) = -.34, p = .73$).

An ANCOVA was carried out to examine the relationship between deprivation and atypical behaviours independent of the identified confounding variables (IQ, age of father, scholastic attainment of father and post-school qualifications of the father) (see Table 3.5). Controlling for IQ reduced the effect of deprivation between the UK and Romanian groups to a non-significant level ($F(3, 115) = .85, p = .47$). Similarly, the group differences previously observed with respect to atypical behaviours were no longer significant after controlling for age of father ($F(3, 106) = 2.02, p = .11$) and for scholastic attainment of father ($F(3, 103) = 2.08, p = .11$). The effect of deprivation

upon atypical behaviours remained significant after controlling for the post-school qualifications of the father ($F(3, 103) = 2.56, p < .05$).

Table 3.5: Group differences: duration of deprivation and atypical behaviours

	Adoptee group status							
	UK		Romanian			Contrasts		
	N	Mean	0-6mths Mean	6-24mths Mean	24-48mths Mean	1 t-value	2 t-value	3 t-value
Atypical	120	.06	.22	.29	.32	2.77**	-1.09	-.34
Behaviours		SD=.17	SD=.35	SD=.40	SD=.50			
Controlling	120	(.12)	(.23)	(.26)	(.28)	(1.57)	-	-
for IQ								
Controlling	111		(.21)	(.25)	(.31)	(2.24)	-	-
for age of								
father								
Controlling	108		(.22)	(.20)	(.30)	(2.24)	-	-
for								
scholastic								
attainment								
of father								
Controlling	108		(.21)	(.20)	(.32)	(2.39)**	-	-
post-school								
qualification								
of father								

Figures in brackets represent the adjusted values after controlling for covariate

* $p < .05$ ** $p < .01$

Contrast 1 = Romanian vs. UK adoptees

Contrast 2 = Late vs. early-placed Romanian adoptees

Contrast 3 = Late vs. mid-placed Romanian adoptees

Age of Entry into the UK (continuous) and Attachment

The above analysis used a categorical measure of deprivation in order to allow for comparisons between the adoptee groups. The results presented above, based on this categorical grouping, showed no significant effects of the duration of deprivation upon attachment between the Romanian groups (e.g. late vs. early-placed Romanian adoptees and late vs. mid-placed Romanian adoptees). To ensure that this wasn't the result of the categorical groupings additional correlational analyses were performed using a more sensitive, continuous measure of deprivation based on the child's age of entry into the UK. Analyses based on this continuous measure of duration of deprivation are restricted to the Romanian adoptees because it is not informative about the UK sample all of whom were placed before the age of 6 months. Replicating the previous findings presented in this section, the correlation based on the child's age of entry into the UK revealed no significant effects of the duration of deprivation upon coherence ($r = -.06$, $p = .59$), reflective functioning ($r = -.184$, $p = .08$), mentalising ($r = .02$, $p = .89$) or atypical behaviours ($r = .12$, $p = .25$).

Section 4: The Relationship between Deprivation, Attachment Disturbances at Age 6 and Attachment at Age 11 Years

The aim of this section is to establish the longitudinal course and stability of the effects of deprivation upon attachment by examining the extent to which the relationship between duration of deprivation and attachment at age 11 years is mediated by attachment disturbances at age 6 years

Deprivation and Attachment Disturbances at Age 6 Years

The relationship between length of deprivation and attachment disturbances within the Romanian adoptee sample at age 6 years are described elsewhere (see O'Connor et al., 2000a). To establish the association between deprivation and attachment disturbances at age 6 for the purpose of the present study, a one-way ANOVA with planned contrasts was used (see Table 3.6). As expected, Romanian adoptees were significantly more likely to exhibit attachment disturbances at age 6 years than the UK comparison group ($t(116) = 2.73, p < .01$). A dose response curve was also observed with late-placed Romanian adoptees showing significantly higher levels of attachment disturbances than the early-placed Romanian children ($t(116) = -3.26, p < .001$). These associations decreased but remained significant after controlling for the effects of IQ ($F(3, 115) = 3.52, p < .05$) (see Table 3.6).

Table 3.6: Group differences: deprivation and attachment disturbances at age 6 years

Adoptee group status								
UK			Romanian			Contrasts		
			0-6mths	6-24mths	24-48mths	1	2	3
	N	Mean	Mean	Mean	Mean	t-value	t-value	t-value
Attachment	120	.93	1.10	2.06	2.52	2.73**	-3.26***	-1.05
disturbances		SD=.94	SD=1.56	SD=2.05	SD=1.78			
at age 6								
Controlling	120	(1.10)	(1.14)	(1.97)	(2.40)	(1.91)*	(2.80)**	
for IQ								

Figures in brackets represent the adjusted values after controlling for covariate

* $p < .05$ ** $p < .01$

Contrast 1 = Romanian vs. UK adoptees

Contrast 2 = Late vs. early-placed Romanian adoptees

Contrast 3 = Late vs. mid-placed Romanian adoptees

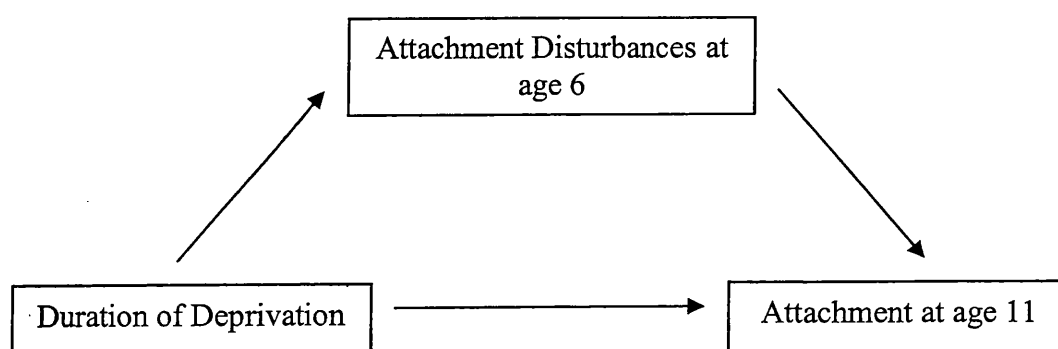
Attachment Disturbances at Age 6 and Measures of Attachment at age 11 Years

The relationship between attachment disturbances at age 6 years and measures of attachment was examined using a correlational analysis. There was a significant positive linear association between attachment disturbances at age 6 years and atypical behaviours at age 11 ($r = .22$, $p < .05$) years indicating that adoptees who displayed greater attachment disturbances at the age of 6 also tended to exhibit more atypical behaviour at age 11 years. Attachment disturbances at age 6 were not found to be significantly associated with any of the other measures of attachment at age 11 years and as such were not included in the subsequent analyses within this section.

Relationship between Deprivation, Attachment Disturbances at Age 6 Years and Attachment at Age 11 years

The mediational model (Preacher & Leonardelli, 2003) can be used to test whether a mediator (attachment disturbances at age 6 years) carries the influence of an independent variable (deprivation) to a given dependent variable (atypical behaviour). Based on this model, (see figure 3.1) three causal pathways from the observed results are possible.

Figure 3.1: Mediational Model: deprivation, attachment disturbances at age 6 years and measures of attachment at age 11 years



Thus, one causal pathway is between deprivation and attachment disturbances at age 6 years, another is between attachment disturbances at age 6 years and attachment at 11 years and a third causal pathway is between early deprivation and attachment at 11 years. The mediational model tests the notion that duration of deprivation affects attachment at 11 years via its effects on attachment disturbances at age 6 years. Mediation can be said to occur if the following three conditions are met; deprivation is significantly associated with attachment disturbances at age 6, deprivation is significantly associated with attachment at age 11 independent of attachment disturbances at age 6 and attachment disturbances at age 6 have a significant, unique effect on attachment at age 11. Once these conditions have been met, mediation would hold if duration of deprivation had no effect or a reduced effect on attachment at age 11 when the effects of attachment disturbances at age 6 years were controlled.

Based on the above model, an ANCOVA was used to assess the effect of deprivation upon atypical behaviours at age 11 years treating attachment disturbances at age 6 years as a covariate. Atypical behaviour was the only dependent variable included in this analysis as it was the only measure of attachment at age 11 years that met all of the above conditions for mediation. Controlling for attachment disturbances at age 6 reduced the previously observed effect between deprivation and atypical behaviours at age 11 to a non-significant level ($F(3, 115) = 1.84, p = .14$). This indicates a significant mediating effect of attachment disturbances at age 6 years between deprivation and atypical behaviours age 11. This would suggest that attachment disturbances at age 6 at least partially predicted the elevated levels of atypical behaviours observed in the current study.

In order to formally assess the significance of the mediation, Sobel's method (1982; taken from Preacher & Leonardelli, 2003) was used. This test allows the significance of the indirect effect of the independent variable (e.g. deprivation) on the dependent variable (e.g. atypical behaviours) via the mediator (e.g. attachment disturbances at age 6). The results showed that the partial mediation of attachment disturbances at age 6 was not significant ($z = 1.15$, $p = .13$). It seems, therefore, that while attachment disturbances at age 6 years are related to deprivation during infancy and to atypical behaviours at age 11 years, they cannot account for the associations that have been observed.

Considering the influence that cognitive abilities has demonstrated within these results, an additional Sobel's test was performed to identify the mediating effect of IQ between deprivation and atypical behaviours at age 11. The result showed that IQ did have a significant mediating effect upon duration of deprivation and later atypical behaviours and can, at least partially, account for the relationship between deprivation and measures of attachment at age 11 years ($z = 2.22$, $p < .05$).

Chapter 4

DISCUSSION

Overview

There is ongoing debate within attachment literature regarding the extent to which early adverse experiences impact upon subsequent socio-emotional development. This study attempted to address some of these fundamental theoretical questions by examining the long-term effects of early institutional deprivation on children's attachment representations. It is well documented that early deprivation can have detrimental effects on children's attachment behaviour and that these seem to persist even several years after being placed within caring, family environments (Chilsholm, 1998; O'Connor et al., 2000). Furthermore, findings indicate that attachment disturbances reported in children following adverse institutional rearing do not resemble insecure attachment patterns observed in typical samples (e.g. Chisholm, 1998; O'Connor et al., 2000). However, it remains unclear how the effects of early institutional deprivation manifest beyond middle childhood or what the long-term developmental implications of non-attachment during infancy might be. This study aimed to explore the continuing impact of early deprivation on attachment organisation at age 11. It adopted a narrative approach to examine specifically the way that these early experiences might affect the manner in which children think and talk about their attachment relationships. In addition the study set out to examine the extent to which attachment disturbances assessed at age 6 mediated the relationship between early deprivation and attachment organisation as measured in the current study.

The sample comprised 120, 11-year-old adopted children. The children were divided into four groups; three representing varying lengths of early institutional deprivation in Romania and one comprised of UK adoptees who had not suffered early deprivation and therefore acted as a comparison group. Children were interviewed in their home using the Child Attachment Interview (CAI; Target et al., 2002). Attachment was rated according to the overall coherence of attachment related narrative and the extent to which children demonstrated reflective function and mentalising capacities within their discourse. Patterns of atypical behavioural disturbances were coded based on observations of the child's conduct during the interview. Previous data regarding children's attachment disturbances at age 6 were also included.

The Effects of Early Deprivation on Subsequent Attachment Representations

Findings from the current study indicated that there was a relationship between deprivation and three different components of attachment; coherence, reflective functioning and atypical behaviours. This provides evidence for substantial continuity in attachment disturbances following early institutional deprivation even after a substantial amount of time (up to ten years) within the adoptive family. This extends the findings of previous work demonstrating the negative effects of early adverse care on socio-emotional development (e.g. Chisholm et al., 1998; O'Connor et al., in press) and confirms theoretical predictions regarding the long-term impact of severe early deprivation on later attachment.

Findings indicated that the Romanian sample tended to be less coherent when talking about attachment related issues, demonstrated less reflective functioning within their

narrative and exhibited elevated levels of atypical behaviours within the interview situation as compared to the non-deprived UK adoptees. This indicates that early deprivation has a significant and pervasive impact upon subsequent social-cognitive development. It suggests that children exposed to early pathogenic care and, specifically, to the absence of a discriminated attachment figure during infancy, demonstrate greater difficulties in terms of subsequent attachment than children who have not been deprived.

Several explanations for these findings seem possible. As discussed in the introduction, it seems likely that non-attachment during infancy could result in severe disruptions in the formation of operable working models of the self and self-other relationships. How does a child develop a sense of self and what can be expected from others when there is no other there? At the very least it would seem that this could create problems in terms of the development of trust and reciprocity in the context of later attachment relationships. Indeed, children who have suffered early deprivation often demonstrate social difficulties that go beyond attachment relationships with their primary care givers and extend to other contexts such as relationships with teachers and peers (Rutter, Kreppner & O'Connor, 2001). In typical situations, through their relationship with their care-giver the child learns how to manage and modulate its own emotional states and how to generate behavioural and affective responses that are socially acceptable, contextually appropriate and effective in attaining their goals (Saarni, 1999). It could be hypothesised therefore, that the absence of a care-giver during infancy may lead to atypical strategies of self-regulation in emotionally arousing situations and to maladaptive ways of relating to people in social situations. Similarly, the development of metacognitive capacities,

which enable the child to understand the thoughts and feelings of others and make sense of prior experience, is thought to be fostered by early maternal care (Fonagy and Target, 1997). Thus, non-attachment during infancy could result in fundamental problems in understanding and interpreting the social world. These abilities would appear to be crucial in successfully managing social interactions both within the context of attachment relationships and the wider environment. Therefore it seems unsurprising that early institutional care would have a significant impact on a child's ability not only to form subsequent relationships but also in the way that they are able to think and talk about those relationships.

Once formed, internal working models are thought to become actively self-perpetuating in that the child tends to behave in ways that maintain the existing organisation (Bretherton & Munholland, 1999). This suggests that based on prior experience the child grows to expect certain responses from care-givers and evaluates subsequent situations and the behaviour of others accordingly. The dyadic nature of this process means that the observed stability of attachment difficulties following early severe deprivation may be linked to interactional patterns with the adoptive parents. Thus, the child brings with them certain expectations based on their experiences within the institutions regarding the type of care they will receive. Subsequent parental responses to this may be crucial in the revision or maintenance of those models. How did parents deal with the difficulties they encountered? It is possible that the children's considerable behavioural and social difficulties frustrated or undermined parental confidence leading to less sensitive engagement. This is consistent with the transactional model of development (e.g. Bowlby, 1969) suggesting that early deprivation may have set up a chain of consequences that

produce further maladaptive outcomes leaving the Romanian children more vulnerable to later maladjustment. Further research into environmental factors which promote positive change in children who display disturbed attachment following early deprivation will help to develop our currently limited understanding of the mechanisms underlying stability and highlight areas that could be a target for clinical intervention.

It is also possible that the persistent effects of early deprivation on attachment could be explained by pervasive neurobiological changes caused by early pathogenic care. Consistent with the notion of critical periods in development (e.g. Greenough et al., 1987) the normal development of neurobiological systems, and particularly the limbic system of the brain, is thought to be dependent on adequate environmental stimulation during infancy (Chugani et al., 2001). Various authors (e.g. Joseph, 1999; Devinsky et al., 1995) have linked the development of the limbic system, in the first few years of life, with concurrent social and emotional development. Thus, early institutional rearing characterised by the virtual absence of any stimulation may lead to abnormal neurobiological development which could explain the pervasive and persistent attachment disturbances observed in deprived samples. However, the fact that not all children manifest attachment problems or difficulties in social behaviour following early pathogenic care means that the notion of critical periods in development may not be sufficient to explain subsequent maladjustment and the boundaries for sensitive periods remain unspecified.

Consistent with this, the fact that controlling for cognitive ability reduced all of the observed associations to a non-significant level may also indicate that early

attachment deprivation alone is not sufficient to explain the attachment problems observed. This, and the finding that specific demographic characteristics (age and scholastic attainment of the adoptive fathers) confound the relationship between early pathogenic care and later development, highlights that a direct causal link between early deprivation and attachment cannot be assumed. It suggests that the long-term effects of deprivation on later development may be mediated by other factors relating to both to the child and their environment. This suggests that our understanding of the causal mechanisms underlying stability and change in attachment disturbances is currently limited. Further research is necessary to define the complex interaction of factors including biological processes, early experiences, cognitive, emotional and representational structures and current environmental demands which seem to underlie socio-emotional development following early deprivation.

Manifestations of Attachment Difficulties Following Early Deprivation – are they Comparable with Typical Samples?

In terms of development within the normal range, an association between attachment in infancy and subsequent narrative coherence when discussing attachment related topics would be expected (e.g. Main, 1985). Certainly the patterns of incoherence and reduced capacity for reflective functioning observed in the current study are consistent with findings from narrative assessment of attachment in typical insecure samples (e.g. Main, 1985; Fonagy et al., 1997). However, interpretation of results from the deprived Romanian sample based on expectations regarding “normative” attachment insecurity should be made with caution. As discussed in the introduction, there is a fundamental difference between early rearing environments where a care-

giver is present (even one who offers maladaptive early care) versus the total absence of any attachment figure during infancy characterised by the experience of the Romanian children. As suggested previously (e.g. O'Connor, 2002) this is likely to result in attachment organisation that does not fit into existing classifications. This suggestion is supported in the current study by the fact that the deprived children demonstrated elevated levels of atypical behaviour compared to the UK adoptees. Moreover previous findings demonstrate that secure attachment with adoptive parents following early deprivation assessed using the strange situation paradigm (Ainsworth, 1978) can co-exist with parental reports of the child's disinhibited behaviours towards adult strangers (O'Connor et al., in 2000). This may impugn the validity measures developed for typical samples to assess attachment within deprived samples (O'Connor et al., in press). Thus, while the narrative patterns observed in the current sample of Romanian adoptees would appear to be similar to that which would be expected in typical insecure children (although this does not relate to atypical behaviours), these similarities are not necessarily related at a more mechanistic level. It seems likely that the total absence of a care-giver in infancy may result in attachment organisation and representational structures of relationships which are fundamentally quite different from that of insecure children who have received care during infancy, albeit poor or malign.

The present study is not in a position to provide clarification regarding the representational processes which underlie the observed association between deprivation and narrative structure or whether they involve similar mechanisms that underly narrative structures in other insecure samples. However, extrapolating two findings from the current study suggest that the causal mechanisms might be quite

different. Firstly, the finding that deprivation was related to greater levels of atypical behaviour supports and extends previous research regarding the distinctive nature of disturbances which manifest following early institutional care. Secondly, the strength of the association between cognitive ability and narrative structure found in the current study is not consistent with findings regarding IQ and coherence in adult samples (e.g. Main et al., 1985) or preliminary findings from the CAI in samples of children within the general population (Target, 2002). It could be that maltreatment samples would provide a more meaningful point of comparison and a few studies (e.g. Humphress et al., 2002) indicate that the association between IQ and language structure increases within high-risk (e.g. poverty) samples. However, very little literature is currently available so this remains an open question. The association between deprivation, attachment and IQ will be discussed at greater length later in this chapter.

Questions regarding the meaning of patterns of narrative structure (e.g. incoherence and reduced capacity for reflective functioning) in deprived samples compared to other groups of children could be addressed by further research into the developmental implications and correlates of outcomes on the CAI in deprived vs. other groups of insecure children. If they are reflective of the same underlying attachment organisation then it would be expected that similarities between the correlates and developmental trajectories of each group would be observed. If they were found to be unrelated then this would provide further evidence for the existence of distinctive social-emotional deficits related specifically to early deprivation and subsequent non-attachment during infancy.

Duration of Deprivation and Attachment

No dose response curve was observed between duration of deprivation and level of attachment disturbance. This is inconsistent with previous findings (e.g. Chisholm, 1998; O'Connor, in press) and, as suggested above, may imply a more complex interaction of environmental and biological factors in the relationship between deprivation and later development. Thus, while early deprivation continues to demonstrate an effect on attachment organisation even at the age of 11, with increasing time in the adoptive home it seems that attachment disturbances become less marked even in children who had remained in institutions up to 42 months of age. This implies that some degree of (although not complete) catch-up in terms of attachment is possible following even very prolonged exposure to early deprivation.

The failure to find a dose response association could be due to limitations in power, as differences between the groups were relatively small. However, the pattern of mean scores suggests that atypical behaviour was the only dimension that demonstrated a possible dose response trend although this was not of sufficient magnitude to reach a significant level. As suggested by previous research and current findings, it is also possible that attachment disturbances following institutional deprivation manifest in ways inconsistent with that which would be expected within typical samples and therefore were not adequately captured by the measure used in the current study. Preliminary findings (O'Connor et al., in press) indicate that duration of deprivation remained associated with attachment at the age of 11 when attachment disturbances were operationalised as disinhibited attachment disorder behaviour. This suggests that early deprivation may result in a fundamental disturbance in wider social functioning rather than attachment relationships *per se*. These may need to be assessed separately

from problems in the parent-child (attachment) relationship and using measures developed specifically for early deprived samples (O'Connor & Zeanah, 2003). The mechanism underlying the seeming catch-up observed in the current study with regards to attachment of children who had experienced greater lengths of deprivation remains unclear and on-going research into stability and change in attachment following early deprivation and particularly the social-cognitive processes that underlie behavioural feature, may provide further clarification.

The Mediating Role of Attachment Disturbances at Age 6 between Deprivation and Attachment at Age 11 Years

Attachment disturbances at age 6 were found to be correlated with severity of atypical behaviours at age 11. The measure of attachment disturbances at age 6 assessed the extent to which the Romanian sample displayed disinhibited attachment disorder behaviours (O'Connor et al., 2003). Such behaviours index severe attachment disturbances and are very rare within community samples (O'Connor, 2002). The correlation between these behaviours and attachment in the current study therefore provides evidence for the substantial continuity of atypical disturbances following early pathogenic care. It also extends previous findings that early deprivation results in patterns of disturbance which are distinct from insecure attachment patterns in typical samples even those who have suffered early experiences of maltreatment or abuse. This supports the notion that the absence of a discriminated attachment figure in infancy such as is the case with children reared in institutions leads to underlying representations and deficits in socio-emotional development which are qualitatively different from deficits observed following other types of maladaptive early care. The fact that attachment disturbances at age 6 were correlated only with atypical

behaviours and not with other components of attachment also provides further evidence that social difficulties following deprivation may need to be measured independently of the parent-child relationship (O'Connor & Zeanah, 2003). This again highlights the important question regarding whether the observed patterns of coherence and reflective functioning within the Romanian sample are really manifestations of attachment insecurity or whether they indicate more pervasive difficulties in social, emotional and cognitive functioning which affected their performance in the interview situation.

The fact that atypical behaviours observed at age 11 were associated with attachment disturbances at age 6 provides some evidence that these atypical behaviours are an attachment related phenomenon. However, the finding that cognitive functioning played a greater mediating role between deprivation and atypical disturbances than could be explained by the disturbances at age 6 again indicates that they may be a manifestation of more pervasive socio-cognitive impairments related to early institutional rearing.

Deprivation, Attachment and Cognitive Ability

Findings indicated that non-deprived children demonstrated significantly higher levels of cognitive functioning than children who had been exposed to early deprivation. Moreover, within the Romanian sample there was also a significant dose response association between full-scale IQ and duration of deprivation, with children who had spent longer time in the institutions exhibiting greater deficits in cognitive abilities. After controlling for cognitive ability all of the observed associations between deprivation and attachment became non-significant. In addition cognitive ability was

found to significantly mediate the relationship between early deprivation and attachment at age 11. This may imply an important role for IQ in adaptation and social development following early deprivation. It is difficult to draw any precise conclusions regarding cause and effect and the direction of relationships between deprivation, IQ and attachment. However, the mediating effect of IQ between early deprivation and attachment provides evidence for the importance of the early attachment system in terms of global biobehavioural development (Polan & Hofer, 1999). It may suggest that the attachment system in the first years of life goes beyond promoting attachment behaviours in the context of the mother-child relationship and the development of internal working models for future interactions. Attachment behaviours then can be seen as a component of a larger developing organisation and the mother-child relationship as playing a critical role in promoting the development of a multitude of social, behavioural, neurobiological, emotional and cognitive outcomes (Polan & Hofer, 1999).

Impairments in cognitive functioning could be reflective of neurobiological damage caused by early deprivation which has concurrent implications for the child's ability to adapt to their social environment. Based mainly on findings from animal studies it appears that the development of some neurological systems are "experience-expectant" (Greenough, Black & Wallace, 1987) that is, they require considerable environmental stimulation and interaction within the first years of life in order to develop normally (Bremner, 1999). Deprived rearing environments characterised by the virtual absence of stimulation or interaction would therefore breach these expectancies which may then adversely affect neurobiological structures and subsequent social-cognitive development.

It could also be that deprived children who are more highly functioning in terms of cognition are better able to integrate and make sense of their experiences allowing them to develop more coherent models of attachment which is reflected in the way that they think and talk about their attachment experiences. Main's (1991) suggested that the ability to use metacognitive knowledge (which has been found to be linked to IQ in children; e.g. Humphress et al., 2002) is a protective factor against adverse early experience because it allows children to make sense of their experiences and form a coherent (singular) model of themselves and of themselves in relation to other which would result in increased verbal fluency within the interview situation.

O'Connor et al., (in press) also found that the concurrent relationship between IQ and disinhibited attachment behaviour was stronger at age 11 than at age 6 and suggest that disinhibited attachment behaviour may be a manifestation of co-existing developmental problems where it persists to age 11. Thus, stability of attachment disturbances in the long term could partly be accounted for by developmental delay (O'Connor et al., in press). This is important given the weight attached to linguistic coherence in the narrative assessment of attachment which necessarily requires that a child has a certain level of verbal ability in order to produce meaningful results. Mean IQ scores of the middle and late-placed adoptees within the current study indicate significant cognitive deficits which were approaching the borderline learning disabilities range. This level of cognitive impairment would most likely have an impact on both receptive and expressive language skills (Clements, 1998). Thus, the deficits in narrative structure observed in the Romanian sample may not have been reflective of insecure attachment but a function of underlying cognitive problems which meant that the child was unable to articulate themselves within the interview

situation. It is conceivable that the children did have secure attachment but were unable to explain it in a way that seemed coherent or organised although, based on previous findings regarding attachment disturbances within the Romanian sample, this seems unlikely.

The association between duration of deprivation and IQ means that the sample was fundamentally biased in this respect as the patterns observed could be accounted for by problems in verbal IQ. Outcomes on the CAI were found not to be significantly related to verbal IQ within typical samples (Target et al., 1998) where the mean IQ was closer to that observed in the UK adoptees within the current study. It could be that below a certain level of cognitive functioning, it becomes more difficult to assess attachment using narrative techniques and patterns observed merely reflect cognitive ability rather than underlying models of relationships. Further studies could explore outcomes on the CAI in children from the general population who have impairments in their cognitive functioning comparable with the current Romanian sample. This may help to clarify whether patterns observed in these children can be meaningfully extrapolated to infer underlying attachment organisation.

Limitation of the Study and Methodological Considerations

The Attachment Measure

The CAI was originally developed for use with samples of children in the general population. Some of the methodological implications of using a measure of attachment developed for typical samples with children following early deprivation

have been discussed previously in this section. The main concern is that the quality of attachment disturbance following early pathogenic care within institutions seems to be, in some respects, fundamentally different from that observed in other samples. This may limit the validity of traditional measures of attachment within this group. In order to try and overcome these limitations a coding schedule was devised specifically for this study. Reliability was acceptable as reflected by inter-rater reliability and internal consistency of the dimensions of attachment. Some evidence for the construct validity of the measure also comes from the finding that atypical behaviours were related to attachment disturbances at 6 years of age. However in developing the coding schedule, assumptions regarding aspects of narrative structure thought to reflect underlying attachment were based partly on operational definitions of attachment currently in use (i.e. coherence, reflective functioning). It is, therefore, difficult to assess whether the dimensions captured the aspects of attachment they set out to as it remains unclear whether assumptions based on the narrative structure of typical samples can be generalised to this group of children. In relation to this, it was surprising that mentalising was not found to be associated with deprivation and further highlights the need to establish the validity of the measure for use with deprived samples.

Another issue that arises from the findings in the current study is the confounding influence of cognitive ability on narrative structure. Assessment based on narrative techniques necessarily requires a certain level of verbal ability and it is unclear below what point of functioning observed patterns cease to be meaningfully related to attachment and are merely reflective of underlying difficulties in expressive language and understanding. This is particularly an issue in children following early deprivation

given the pervasive effect these experiences seem to have on the development of cognitive capacities

Given the idea that early deprivation has serious implications for subsequent social and emotional functioning, the interview situation could be expected to exert an influence on deprived children's narrative and behaviour in that context. The interview situation is also likely to have affected non-deprived children in some way (e.g. confidence) but given the particular social deficits observed in some of the Romanian sample they would be likely to exhibit a more marked reaction.

Causality

While all of the Romanian institutions were characterised by extreme global neglect, no systematic data is available regarding individual variations amongst the institutions. Therefore, it is not possible to determine whether it is severe deprivation *per se* or a specific aspect of the institution (e.g. staff-child ratio, the presence of toys, possible abuse) that may have influenced subsequent attachment disturbances. In addition, no precise data regarding characteristics of the biological parents was available and thus there is no information on possible genetic influences that may partly account for individual differences in development following early deprivation. The fact that no dose response association between duration of deprivation and attachment was observed in the current study combined with findings that some children do not display attachment disturbances following institutionalisation indicates that some children do better than others regardless of the duration of exposure to pathogenic care. This implies that notions of sensitive periods in development are not sufficient to explain subsequent difficulties and highlights the

potential importance of other factors including temperament and resilience in protecting the child from adverse early care. Further research examining these issues more closely would be useful to clarify the underlying developmental mechanisms involved.

Wider Scientific and Clinical Implications

This study aimed to address the nature of development following early severe deprivation and the role of early experiences on later outcome. The adoption of Romanian children into the UK following extreme institutional adversity provides a unique opportunity to differentiate between ongoing causes and sensitive periods in development and further clarify the link between adverse early experience and subsequent adaptation. In contrast to previous studies in which samples of children were often exposed to on-going risk, the deprivation experiences of the Romanian children used in this study were confined to the early months and years of their lives following which they were placed in adoptive families offering sensitive and nurturing care. This dramatic environmental discontinuity allows inferences about the causal role of early deprivation upon subsequent later development.

The findings from the present study provide evidence for the continuity of the negative effects of early deprivation and highlight the importance of the first years of life for subsequent socio-emotional development. However, this does not allow deprivation to be identified as the single causal mechanism in these outcomes. The importance of IQ and environmental factors in mediating the relationship between deprivation and later attachment indicates the probable contribution of genetic factors

or neurobiological deficits as a result of early institutionalisation as well as the influence of on-going factors within the child's environment.

Intervention

These findings cannot provide direct indications regarding kinds of intervention that might be helpful in severely deprived children. However, it would seem that if adoption (probably the most intensive intervention possible) is only associated with mild improvements after such a substantial amount of time then the notion of complete recovery following early deprivation may be unrealistic. Certainly, the findings may be taken to suggest the need for more systematic focus on individual differences in susceptibility to the effects of deprivation or on characteristics of adoptive families that may be associated with better child outcomes. The extent to which attachment difficulties observed in institutionalised samples may be amenable to clinical intervention is a matter of debate and it is thought that atypical and disinhibited forms of attachment disturbance may be particularly resistant to change (O'Connor et al., in press). However, given that these disturbances carry considerable developmental risks, further research to increase our current understanding of the nature and course of social-emotional development following early institutional deprivation seems crucial to highlight areas which could be the target of clinical interventions.

Conclusion

Consistent with previous literature the current study provides evidence for the long-term deleterious consequences of early institutional deprivation upon subsequent attachment and wider social, emotional and cognitive development. Furthermore there

was evidence that patterns of disturbance following institutional deprivation are not consistent with typical insecure attachment patterns observed in other samples of children even those who have experienced alternative forms of adverse care such as maltreatment or abuse. It highlights the importance of cognitive abilities in mediating the relationship between early deprivation and subsequent attachment. However, the mechanisms underlying the effects of early severe deprivation on the way that children think and speak about their attachment related experiences and whether they can be measured using techniques developed for typical samples remains unclear. Further research will help to clarify the ongoing impact of early pathogenic care and assist the development of effective assessment and treatment for attachment disturbances following early institutional deprivation.

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