

**ATTENTIONAL AND SELF-REGULATORY
DIFFICULTIES OF ROMANIAN ORPHANS
TEN YEARS AFTER BEING ADOPTED TO CANADA:
A LONGITUDINAL STUDY**

by

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Attentional and Self-Regulatory Difficulties of Romanian Orphans 10 Years After Being Adopted to Canada: A Longitudinal Study

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ABSTRACT

This thesis was designed to examine the attentional and self-regulatory difficulties of Romanian orphans 10 years after experiencing at least 9 months of severe deprivation in Romanian institutions early in life. It is part of the third phase of a longitudinal study examining the overall development of these children. Attention and self-regulatory difficulties of the 10.5 year old Romanian orphanage children (RO; n=36) were compared to two other groups of children: a sample of Canadian born (CB; n=42) non-adopted children and a group of early-adopted (EA; n=25) Romanian children who were adopted prior to four months of age. In addition, the stability of attentional and self-regulatory difficulties experienced by the RO group from Phase 2 to Phase 3, and predictors of attentional and self-regulatory difficulties from Phase 1 and Phase 2 to Phase 3 were examined. As a group the Romanian orphans were found to show more difficulties than children in the other groups on all measures of attention and self-regulation with the exception of activity level. Within the RO group attentional and self-regulatory difficulties were found to be highly stable from age 4.5 to 10.5 years. Significant positive correlations were found between length of time in an institution prior to adoption and attention problems at age 10.5 years. Number of developmental delays assessed at 11 months post-adoption was also significantly correlated with attentional and self-regulation difficulties at age 10.5 years. Support and stimulation in the home at age 4.5 years was found to be predictive of several measures of attentional and self-regulatory difficulties at age 10.5 years. Results are discussed in terms of environmental influences on the development of attentional and self-regulatory abilities.

DEDICATION

This thesis is dedicated to all the children and families who have shared their stories, lives and experiences to make this research possible and to contribute to the understanding of child development.

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INTRODUCTION

After the fall of the Communist dictatorship of Nicolae Ceausescu in Romania in December 1989, the world became aware of the horrendous situation of more than 100,000 children languishing in over 600 state-run orphanages. People all over the world were shocked by the vivid television images of the extreme deprivation of the children. They lay inactively in cribs by themselves with malnourished bodies and vacant looking eyes. Many of these children seemed fated to die.

These images sent many people to Romania with the hope of adopting orphaned children. Many went with the intent and desire of saving the children, while others had been waiting to adopt a child for a long time and saw this as an opportunity. Upon arriving in Romania, the children they saw were mostly malnourished and suffering from a variety of health problems. Because of the confinement to their cribs and the lack of exercise and time outdoors the children had poor physical development. The lack of any significant auditory or visual stimulation further caused major cognitive deficits. Self-stimulatory activities such as rocking constituted the central and repetitive activity for many of these children simply because they were deprived of everything else (Ames & Carter, 1992). The silence in the orphanages was one of the most striking features; the usual sounds of children crying, laughing or playing were not observed. Social isolation and lack of interaction with each other or with caregivers made it impossible for most children to form any type of close relationship. Compounding the lack of interaction was emotional deprivation as the children rarely received nurturing or emotional care. Even during the times when their basic needs were being met such as at feeding times, the children were hardly ever held.

In 1990/91 approximately 700 Romanian children were adopted into Canada. Following a trip to Romania in 1990 to observe the conditions in the orphanages firsthand, Dr. Elinor Ames of Simon Fraser University began a longitudinal study to follow the development of the Romanian adoptees in British Columbia. She recognized that scientific study of these children subsequent to their adoption by middle class families in Canada represented a rare opportunity to assess the effects of early severe deprivation and to determine whether adequate rearing later in life could compensate for early deficits. Dr. Ames' research participants included a group of children adopted into Canadian homes from Romanian orphanages after having spent at least 8 months in an institution (RO group), and children in two matched comparison groups (1) non-institutionalized Romanian children who would have gone to orphanages had they not been adopted prior to four months of age (the EA group), and (2) a Canadian born (CB) group consisting of children raised in their biological homes. The first phase of this study took place when the RO children had been in their adoptive homes for an average of eleven months. Data were collected from the children's parents with a focus on issues such as attachment quality, behaviour problems and parenting stress. Phase 2 of the study was broader and took place when the majority of the children were 4.5 years old. This phase included data collected from parents and teachers as well as direct observation. More extensive comparisons were done between the children in each of the groups and once again attachment and behaviour problems were examined in addition to their cognitive skills. The current phase of this longitudinal study took place when most of the children were 10.5 years old and is the most comprehensive look at this sample to date.

The focus of this thesis is restricted to the attentional and self-regulatory difficulties of the Romanian orphans. Self-regulation refers to individuals' control of

their motor, affective and sensory response systems as well as of cognitive systems such as attention and thinking (see Bronson, 2000 and Rothbart, Ahadi, Hershey, Hershey and Fisher, 2001). Hence, attentional abilities, or the capacity to sustain attention to a single task, is a specific example within the broader category of self-regulation. This thesis includes: 1) a description of their attentional and self-regulatory difficulties, 2) a comparison of those attentional and self-regulatory difficulties with those of the Canadian born and the Early-adopted children, 3) an examination of predictive relations between conceptually relevant measures from the earlier phases and current attentional and self-regulatory difficulties and 4) an examination of the stability of the attentional and self-regulatory difficulties from Phase 2 to Phase 3.

The importance of early experience

The importance and significance of early rearing experiences in human development has been discussed in both theoretical writings and empirical research and has been the subject of intense debate concerning the long term impact of negative early experiences. Some argue that early negative conditions in and of themselves will not have any lasting negative effects (Clark & Clark, 2000; & Schaffer, 2000). Others claim that negative experiences occurring in early childhood almost certainly result in detrimental and lasting effects (Bowlby, 1966; Dennis, 1973).

Clark and Clark (2000) propose that early experiences are only one aspect in determining future outcomes and are not necessarily deterministic. They argue that the influences of biology, the psychosocial environment, transactions, and chance events cannot be neglected in accounting for differences in long-term individual outcomes. Clark and Clark do however mention that “without very strong intervention to overcome

early developmental retardation, whether intellectual, emotional or both a poorer progress would result” (p. 84).

In a recent review of research on the importance of early experiences, Schaffer (2000) points to evidence in support of Clarke and Clarke’s position (2000) that suggests that there are many factors throughout a child’s life that influence the extent to which he or she is affected by negative early experiences and/or its effects are mitigated. One of the central themes in this review article is that the resilience of children and their ability to recover from negative experiences appears to have been underestimated in previous studies and that there seems to be a self-righting tendency in psychological development analogous to that found in physical growth. Further, Schaffer claims that it is inaccurate to suggest that the earlier the negative experience the greater the impact; rather it depends on the kind and length of experience and the child’s ability at a particular age to both interpret and incorporate it. Schaffer contends that it is important to look at individual differences in children that may explain why some children fare better than others after experiences such as institutionalization. He calls for longitudinal studies to: 1) trace developmental pathways, 2) take individual differences among children into account, 3) look at the efforts to remedy ill-effects, 4) consider children’s subjective interpretation of their experiences, 5) determine the modulating effects of intervening experience and 6) provide much greater precision in defining the original adversity and the subsequent outcome to be assessed. The longitudinal study, of which the present thesis is a part, traces developmental pathways, considers individual differences, and examines intervening experience in an attempt to shed light on whether early negative experience can be moderated or overcome by subsequent experience.

On the other side of the argument Bowlby (1966) contends that negative early rearing conditions can have a lasting impact on the social, intellectual and physical development of children. In 1977, a World Health Organization Expert Committee explicitly stated that during the first few years of life the continuity of relationships to parent figures is especially important. Bowlby (1966) states that, “among the most significant developments in psychiatry during the past quarter of a century has been the steady growth of evidence that the quality of the parental care which a child receives in his earliest years is of vital importance for his future mental health” (p. 11). Bowlby claims that infants and young children need a warm, intimate and continuous relationship with their mother (or permanent caregiver) in which both find satisfaction and enjoyment. Bowlby classifies the absence of these factors as maternal deprivation.

Bowlby addresses the direct impact that institutional rearing has on children by stating that children experiencing multiple changes of parent figures or who are reared in institutions with many attendants are most at risk for subsequent developmental difficulties (World Health Organization, 1977). This same message could be heard as early as the 1940’s when Spitz (1946) proclaimed that not even the best-trained caregivers could replace the level of interaction and reciprocity with infants achieved by mothers. A significant body of research now shows that the relationship between caregiver and child appears to have a strong impact on attention and self-regulation. This research is reviewed in the following paragraphs.

The child-caregiver relationship and attentional and self-regulatory difficulties

While one approach to the etiology of attention difficulties emphasizes genetic or brain abnormalities (Tannock, 1998; & Thapar, Holmes, Poulton, Harrington, 1999)

another focuses on rearing conditions and the mother-child relationship. Previous research examining the impact of the environment on attention and self-regulation has indicated a strong association (Carlson, Erdman, 1998; Clark, Ungerer, Chahoud, Johnson, & Stiefe, 2002; Jacobvitz & Sroufe, 1995; Kopp, 1989; Kopp, 1982; Ornoy, Segal, Bar-Hamburger & Greenbaum, 2001; Robson & Cline 1998; Tronick, 1989).

Several studies have been conducted looking specifically at the environmental component in the etiology of attentional and self-regulation difficulties (Ornoy et al. 2001; Robson & Cline 1998 & Carlson et al. 1995). Ornoy et al. (2001) explicitly state that the environments in which children are raised are among the most important factors determining their developmental outcome. In their research they examined the effects of deprivation and heroin addicted parenting on the development of attentional and self-regulatory difficulties by studying five groups of children; children born with drug-dependent fathers, children born to and raised by drug-dependent mothers, children born and raised in low SES (environmentally deprived) homes, and two control groups of children -- one born to families with average SES and one born to drug-dependent mothers but adopted by families not drug-dependent and of average SES. Results of this study showed that the children born and raised by heroin dependent mothers had the highest rate of inattention and hyperactivity. Ornoy et al. concluded that abnormalities were mainly influenced by postnatal environmental factors as the children born to heroin-addicted mothers and adopted did not experience the same degree of difficulty in attention and hyperactivity. Furthermore, they found that children raised in neglectful environments had similar functioning deficits as the children born and raised by heroin addicted parents, again providing support for the environmental component to these difficulties.

Robson and Cline (1998) further explain how less stimulating and less sensitive caretaking increases the likelihood of subsequent difficulties in children's regulation of attention and behaviour. Their research included 83 children (55 girls) with a mean age of 5 years, 9 months and indicated that children with less appropriate environments in early childhood, as measured by the preschool version of the Home Observation for Measurement of the Environment (HOME) Inventory (Cadwell & Bradley, 1984), had significantly higher scores on an inattention measure. Of particular interest is that they found neither low birth weight nor prenatal growth patterns to have implications for attentional difficulties. In conclusion, they state that despite a presumed organic contribution to attention difficulties, optimal caretaking has a compensatory effect, and less-than-optimal caretaking increases the risk for the later difficulties (Robson & Cline, 1998).

Carlson et al. (1995) also addressed the importance of the environment and child-caregiver interactions in understanding the development of attention and self-regulation. According to these authors, there are many stages children progress through as they develop the ability to self-regulate and control their behaviours, with the caregiver being an integral component in each of these stages. Their results indicate that the quality of caregiving more powerfully predicted distractibility at age 12 than did early biological or temperamental factors. Similar to Robson and Cline (1998) they discovered that endogenous infant factors such as medical history, drug/alcohol history and composite motor maturity and adaptability ratings failed to predict distractibility or hyperactivity at age 12. Distractibility and hyperactivity were however, found to be significantly predicted by maternal variables such as maternal anxiety/aggression and intrusive caregiving and contextual variables such as mothers' relationship status and emotional

support. Furthermore, a diagnosis of attention deficit hyperactivity disorder (AD/HD) was found to be predicted by measures of distractibility and hyperactivity at age 3 and 4 providing support for the stability of the difficulties. Finally AD/HD symptoms were found to be predicted best by environmental factors and distractibility at an earlier age.

Two other studies have looked at the significance of the child-caregiver relationship in terms of the development of difficulties in attention and self-regulation (Clarke et al. 2002; Erdman, 1998). These two studies have specifically related the development of the later difficulties to the attachment relationship. Clarke et al. suggest that the symptoms of AD/HD may develop in the context of an insecure attachment relationship. Furthermore, they assert that insecurely attached children are more vulnerable to problems with affective and behavioural regulation. In their study comparing the quality of attachment in five ten-year-old boys with a diagnosis of AD/HD to a group of same-age controls without AD/HD they found that the boys diagnosed with AD/HD had lower scores on various attachment measures. Around half of the children with AD/HD described predominantly negative parent-child relationships. The overall pattern of attachment for the boys diagnosed with AD/HD was an anxious-ambivalent or disorganized style.

Erdman (1998) provides further support for Clark et al.'s (2002) position by presenting a framework, based on systems and attachment theory, that purports that children's behaviours have to be viewed within the context of the parent-child relationship. Erdman explicitly states that the familiar environments of children diagnosed with AD/HD are disorganized, chaotic, or neglectful. Furthermore, Erdman states that the similarity between children in therapy for AD/HD and those for attachment issues is startling.

Researchers have also looked at the importance of self-regulation in attention and behavioural control and the crucial role of caretakers in the development of self-regulation (Kopp,1982 1989; & Tronick, 1989). Kopp (1989) explains that infants and young children must have external support for regulating their emotions. Caregivers therefore, play a crucial role as soother and facilitator. Moreover, as caregivers help infants regulate their arousal, infants begin to acquire associations between their own actions, those of others and their own feeling states.

Kopp (1982) further explains the development of self-regulation and the importance of caregivers at every phase of development. Kopp proposes four phases to the development of self-regulation. The caregiver's role in these phases of development progresses from providing social interactions and a routine, to being responsive and sensitive and providing the child with objects, to the quality of the mother-child relationship and the reciprocal interactions, to child expectations, being a role model and providing continued social influence.

Tronick (1989) clarifies that through the mutual exchanges between child and caretaker a child develops self-control, which develops into traits such as attention and behavioural control. Tronick further maintains that when there is a failure of caregivers to appropriately facilitate their infant's goal-directed activities, positive affect and help regulating behaviour also fails to occur. Typical interactions allow the infant to elaborate his or her other-directed affective communications and self-directed regulatory capacities. Psychopathology is likely to arise in situations where there is persistent and chronic interactive failure. In these situations the infant is forced to disengage from people and things because the infant has to devote too much regulatory capacity to controlling the negative affect he or she is experiencing. Tronick claims that problems children have

with tantrums, impulse control, and conduct disorders and even the risk-taking of adolescents may then be viewed as arising out of children's experiences with mutual regulation and their ability to self-regulate. Furthermore, Tronick states that the regulation of emotions, self and other, interactive success and affective reparation are in fact lifetime issues.

The common theme in the work of each of these authors is the importance of the caretaking relationship and the environment for the development of attentional and self-regulatory difficulties. Results from previous phases of the present longitudinal study are consistent with this view. In Phase 1 and 2 of this study it was found that the home environments in which the children were reared were associated with their developmental progression in a number of areas (Thompson, 2001). In the current study I examine whether the home environments of the RO children at age 4.5 are associated with their attentional and self-regulatory abilities at age 10.5. Further, various authors have argued the importance of the quality of caregiving in infancy for the development of self-regulatory abilities. The RO children experienced negative caregiving during infancy. One would expect that the longer they were deprived in this regard, the more difficulty they would have with attentional and self-regulatory abilities. Hence, I will examine the length of deprivation in relation to attentional and self-regulatory difficulties. Lastly, as the attachment relationship to caregivers has been shown to play a significant role in attentional and self-regulatory difficulties I will examine the attachment quality of the RO group at Phase 2 in relation to their attentional and self-regulatory difficulties at Phase 3.

Past research on children in institutions

Research on institutionalized children also points to the importance of the caretaking environment for the development of attention and self-regulation abilities.

There have been many studies in which the developmental outcomes for children who have been reared in institutions have been examined. While none of these studies has looked specifically at the effect of institutional experience on attention and self-regulatory difficulties later in life, many have noted the strong prevalence of low attention and hyperactivity/restlessness in these populations (Brodzinsky, Schechter, Braff & Singer, 1984; Frank, Klass, Earls, Eisenberg, 1996; Groze in Press; Hodges & Tizard, 1989; O'Connor, Bredenkamp & Rutter, 1999; Provence & Lipton, 1962; Tizard, 1991; Tizard & Hodges, 1978; & Tizard & Rees 1975).

For example, Hodges and Tizard, (1991) and Tizard and Rees (1975) found increased problem behaviour in a group of post institutionalized children who experienced good physical care in an institution. Although these children did have good physical care they had little opportunity to form close continuous relationships with an adult. Among the problem behaviours noted were increased restlessness and a lack of concentration in the institutionally reared children in comparison to a group of children reared in their biological homes.

In Tizard's (1989) review of intercountry adoption, hyperactivity, along with a few other difficulties, emerged as one of the major problems facing post institutionalized adopted children. In this review many studies were examined with children ranging from infancy to ten years of age at time of adoption. This finding is consistent with Tizard and Hodges' (1978) finding that according to parents' the main areas of concern for adopted post-institutionalized children (adopted between 2 and 4 ½ years of age) were restlessness, lack of concentration and impulsiveness. The work by O'Connor et al. (1999) supports these claims. Reporting two case studies looking at attachment disturbances early in life and the implications on childhood disorders, O'Connor et al.

described how low attention and poor concentration were two of the main concerns expressed by the parents, and confirmed by the teachers, of post-institutionalized children.

In addition to symptoms of hyperactivity and attentional difficulties being reported in children reared in institutions, two studies have looked specifically at the prevalence of attention deficit disorder (ADD) in this population (Brodzinsky, Radice, Huffman, & Merkler, 1987; & Deutsch, Swanson, Bruell, Catwell, Weinberg & Baren, 1980). Deutsch et al. studied two populations of ADD patients; both samples were randomly drawn from cases diagnosed from either the Child Development Clinic of the Hospital for Sick Children in Toronto or the Educational, Behavioral, and Developmental Pediatric Clinic in California and both had a sample size of one hundred. In addition, two non-ADD control populations were studied. The researchers discovered that the overall rates of adoption in the ADD samples were approximately 20% with most being non-relative adoptions. From their analysis they suggest that approximately 23% of all adopted children would be expected to have ADD.

Brodzinsky et al. (1987) also looked at the rates of ADD in the adoption population. They looked at data from a total of 260 children, 130 who were adopted and 130 who were living with their biological parents. Half the children were boys with their ages ranging from six to eleven years old. They found the adopted children to be significantly more likely to be rated as hyperactive and inattentive. Although they purposefully excluded the more disturbed and delayed children from the adopted group they still found 14 % of adoptees within the clinical range for ADD. Deutsch et al. offer both environmental and biological hypotheses to account for the finding. The environmental components they hypothesized were stress placed on the adoptive family

and effects from separation anxiety faced by the adoptees. Substance abuse by the biological mothers and poor nutrition were among the biological hypotheses provided by the authors.

Lastly, a few studies have compared the attention and self-regulation of children reared in institutions with children reared in foster homes in order to study the extent that these difficulties arise from genetic risks and adverse experiences before receiving substitute care, or from the risks associated with specific types of substitute care (Goldfard, 1943, 1944, 1945; Roy, Rutter & Pickles, 2000; Vorria, Rutter, Pickles, Wolkind & Hobsbaum, 1998). Interestingly these studies indicate that the children reared in foster homes did not have the low attentional abilities or the high levels of hyperactivity that were found in the children reared in institutions.

Roy et al. (2000) examined the differences between children reared in institutions and children raised in both foster care and biological families. Their results provided meaningful support for the environmental component involved in attentional and self-regulatory difficulties. In this study both groups of children reared in substitute care had been separated from their biological parents, but while one group, the children reared in institutions, was prevented from forming an attachment to an adult caregiver, the other group was presumably able to form an attachment to their foster parents. The main differences found between these two groups of children concerned hyperactivity and unsociability. Furthermore, both inattention and hyperactivity were observed more frequently in the substitute care groups than in the comparison children reared by their biological parents. Data were obtained from teachers, caregivers and by observation. All three sources showed similar results, with attentional and self-regulatory difficulties

significantly higher in the institutional group than either of the other two groups and the foster care group slightly higher than the biologically reared group (Roy et al. 2000).

Goldfarb (1943, 1944 & 1945) further addressed this difference in functioning by reporting that children reared in institutions, in comparison to those raised in foster care and biological homes, were found to be more restless and hyperactive, with high levels of distractibility combined with a lower ability to concentrate. Goldfarb (1943) explains that among all the difficulties noticed in the institutionally reared group the high prevalence of hyperactivity was the most conspicuous. Goldfarb (1942) explains these findings of institutionally reared children faring poorly in comparison to those raised in foster homes as resulting from the institutionally reared children's lack of warm, frequent, individualized adult contact, which the foster children were able to receive. Furthermore, Goldfarb (1944) highlights the impact of deprivation and the absence of stimulation as factors affecting the institutionally reared children but not the foster care children, which contributes to the differences noted.

The common finding in all these studies is the significant effects of early deprivation on the development of attentional and self-regulatory difficulties, and in some cases the diagnosis of either ADD or AD/HD. Specifically, being deprived of individualized care early in life appears to be associated with these difficulties. Results from previous phases of this longitudinal study of which the present research is part are consistent with these trends and are reported in the following section, along with the work of other researchers on Romanian orphans.

Past research on Romanian orphans

In addition to studies examining institutionally reared children, there have been several studies looking specifically at children reared in Romanian institutions. Only

those studies addressing the effects of institutional rearing on attentional and self-regulatory difficulties will be reviewed here. Unfortunately these studies are few and they contain little detail pertaining specifically to attentional and self-regulatory difficulties (Groze & Ileana, 1996; Groze, & Ryan, 2002; Kreppner, et al. 2001; Marcovitch, et al., 1997; Rutter, Kreppner, O'Connor, 2001).

Groze and Ileana's (1996) study included 475 children adopted from Romania between 1990 and 1993 with ages ranging from infancy to 18 years (average age of 4.6 years). In relation to attentional and self-regulatory difficulties, they reported that the post-institutionalized Romanian adopted children were more likely than adopted children who did not experience deprivation to experience difficulties such as responding to environmental stimuli (over reactive or under reactive) and displaying inappropriately high activity levels for their age. More specifically, Groze and Ileana state, that along with bed wetting, being more active than expected for his or her age, was the most frequent problem behaviour reported by the adoptive parents. Furthermore, looking at the difference in activity level between the children adopted from Romania without institutional experience and the children having institutional experience in Romania prior to adoption a significant difference was found. Of the 98 children found to display activity levels too high for their age, 83% had been institutionalized prior to adoption. Marcovitch et al. (1997), while not discussing attentional or self-regulatory difficulties in particular, expanded on this finding of the difference between institutionalized children and those adopted prior to institutionalization by indicating that problem behaviour reported by parents and teachers on the Child Behavior Checklist (CBCL, Achenbach, 1991) was significantly related to the amount of time spent in an institution.

Groza and Ryan (2002) also compared domestic adoptions to international adoptions by comparing 230 children adopted from institutions in Romania to the United States to 61 children domestically adopted to families living in the United States. The Romanian adopted group was further divided based on institutional experience, 122 children had such experience prior to adoption. Overall, Groza and Ryan found that a history of institutionalization was associated with the more frequent occurrences of serious behaviour problems. More specifically, institutionalized children were found to exhibit more attentional difficulties as well as greater withdrawal, anxiety/depression, social problems, thought problems as well as overall internalizing behaviour difficulties in general in comparison to the two comparison groups. Specifically relating to attentional difficulties, Groza and Ryan found that 36% of the Romanian adopted sample scored above the clinical range on the attention problems subscale of the CBCL in comparison to only 5% in the domestically adopted comparison group.

While these studies have all touched on the impact early deprivation has on attentional and self-regulatory difficulties, only two studies have looked specifically at whether these difficulties are a deprivation syndrome (Kreppner, et al., 2001, Rutter, Kreppner, & O'Connor, 2001). Rutter et al. compared 165 children adopted from Romania by families living in the United Kingdom to 50 British children adopted within the UK. The assessments occurred when the children were 6 years old. Directly pertaining to attentional and self-regulatory difficulties, Rutter et al. reported that inattention/overactivity was much more common in the Romanian sample and that inattention/overactivity was significantly associated with age at entry to the U.K. or the amount of time in the institution. Rutter et al. concluded that the elevated levels of inattention/overactivity in the Romanian group was a result of institutional experience

and was not strongly influenced by genetic factors. In support of this claim, Rutter et al. reported that of the children who were adopted from institutions prior to 6 months of age, 70% were within the normal range of functioning, which was nearly as high as the rate within the UK adopted sample, whereas of those adopted beyond 6 months of age only a fifth to a quarter showed normal functioning

Examining the same sample, Kreppner et al. (2001) extended these claims reporting inattention/overactivity (I/O) to be significantly higher in the Romanian group than the within-UK adoptees as measured by both teachers' and parents' reports. Post hoc comparisons showed that the Romanian children who were adopted before 6 months of age were scored significantly lower in I/O by both parents and teachers than those adopted between 6 and 24 months and over 24 months. The mean differences among the adoptee groups suggested a trend for I/O to increase with length of deprivation.

Correlational analysis within the Romanian sample at age 6 years indicated a significant positive linear relationship between age at entry to the UK and I/O for both parent and teacher reports. Furthermore, strong continuity of I/O was determined by the significant correlation between age 4 and age 6 parental ratings. Kreppner et al. explain that the effect of duration of deprivation did not diminish over time suggesting that these children will face difficulties in dealing with a formal group setting once they begin school.

Findings from this current longitudinal study

Research on institutional children consistently shows a relationship between the institutional experience and attentional and self-regulatory difficulties. Results from the previous phases of the present longitudinal study are consistent with those of other studies. While the attentional and self-regulatory difficulties of the RO, CB and EA children were not reported in the previous phases of the current study, length of

deprivation was found to be positively correlated with externalizing and internalizing behaviours. In Phase 1 of the longitudinal study of which the current study is a part, the previously institutionalized children were found to have more behavioural difficulties than either the EA or the CB children who did not experience early deprivation (Fisher et al., 1997). Their median age at assessment was 25 months (range 17 to 43 months). It appeared that the unresponsive institutional environment the ROs experienced in their early years had a substantial impact on their behaviour and their ability to react to environmental demands. The RO group had higher total behaviour problems as assessed by the Child Behaviour Checklist (Achenbach, 1991) than the CB and EA children with 2% of the ROs scoring in the clinical range, that is, at a level at which professional help is recommended. The ROs also had more internalizing problems compared to the CB and EA groups and 6.5 % of the Romanian orphans scored above the clinical range for internalizing behaviours. In general the RO children tended to be over-controlled or withdrawn, did not express their needs, and did not report experiencing pain or discomfort, or support from adults. The difficulties facing the RO children were correlated with factors such as length of time in orphanage, and number of Romanian children adopted by the family. The longer the children were in the orphanages the worse off they were and children in families who had adopted more than one child tended to have more problems as well (Thompson, 2001).

In Phase 2 when the children were on average 4.5 years of age, the RO children's problem behaviour had changed from the internalizing behaviour seen at Phase 1 to externalizing behaviours in which they acted out or behaved aggressively (Thompson, 2001). It appears that once they had adjusted to their new environments the RO children began having temper tantrums, displaying more aggressive behaviour problems, and did

much more attention seeking with peers and adults. At Phase 2 the RO children continued to have more total behaviour problems (36% scored above the clinical cutoff) but had moved from internalizing difficulties to externalizing behaviours (29% scored above the clinical cutoff). Seventy two percent of the most troublesome problems reported by parents at Phase 2 were behavioural, emotional or social problems. These problems were severe enough that teachers and parents reported them and agreed that further examination and intervention was warranted (Thompson, 2001). Although the results for attentional and self-regulatory difficulties in particular were not reported in the published studies, they are examined here in order to address the issue of their stability across time. I also examine the relation of attentional and self-regulatory difficulties with time in institution and the adoptive home environment.

Findings from previous phases of the present study taken together with other research on post-institutionalized children clearly suggests that the RO children will continue to experience behavioural difficulties and specifically attentional and self-regulatory difficulties. It is important to study the attentional and self-regulatory difficulties of these children because numerous theoretical and empirical perspectives indicate that attentional and self-regulatory difficulties in childhood are associated with continued attentional difficulties later in life as well as the development of numerous other associated difficulties. If the Romanian orphans have persistent attentional and self-regulatory difficulties, now is a crucial time to assist them in this regard as they move toward the more volatile years of adolescence. Furthermore, the opportunity to examine the environmental component of attentional and self-regulatory difficulties will shed light on this important developmental issue for all children, parents, teachers, counselors,

advocates and researchers experiencing or working with attentional and self-regulatory difficulties.

The Present Study

The first aim of this study is to describe and compare the current attentional and self-regulatory difficulties of Romanian (RO) children who spent nine months or more in institutions to those of a Canadian born (CB) non-adopted sample and a group of early adopted (EA) Romanian children who were destined to go to similar institutions if they had not been adopted prior to four months of age.

Another major aim of this thesis is to examine predictive relationships between current attentional and self-regulatory difficulties of Romanian orphans and conceptually relevant factors measured during Phase 1 and 2 of the research when the children were 11 months post-adoption and 4.5 years old, respectively. These factors include the length of time spent in an institution, number of developmental delays at 11 months post-adoption, the home environment at age 4.5 years, and attachment quality with their adoptive parents at age 4.5 years. Lastly I will examine the stability of attentional and self-regulatory difficulties by examining the association between these variables at Phase 2 and Phase 3.

On the basis of the previous review, I have formulated the following hypotheses:

1. As a group, the RO children will have more attentional and self-regulatory difficulties than their comparison groups.
2. Within the RO group, nurturance and stimulation in the home environment will be negatively related to children's attentional and self-regulatory difficulties.
3. Time in institution will be significantly related to attentional and self-regulatory difficulties of the Romanian orphans at age 10.5 with greater

time in institution being associated with greater attentional and self-regulatory difficulties.

4. Attachment quality at age 4.5 will predict the attentional and self-regulatory difficulties of children at age 10.5 with children who were insecure at Phase 2 experiencing greater attention and self-regulatory difficulties at Phase 3.
5. Developmental delays at Phase 1 will predict attentional and self-regulatory difficulties at Phase 3 with poorer development at Phase 1 predicting more attention difficulties and hyperactivity at Phase 3
6. Attention and self-regulatory difficulties will remain stable from age 4.5 to age 10.5

METHOD

Participants

Findings reported in this thesis are based on data from 36 Romanian orphanage (RO) children (17 boys), each of whom had lived in an orphanage for a minimum of 9 months (range 9 to 53 months, $M = 24$ months). These children's ages at adoption and their total time in institution were almost perfectly correlated at .97 indicating that most had been institutionalized since birth (Fisher et al., 1997). Data are also analyzed for a Canadian born (CB) non-adopted, non-institutionalized comparison group ($n = 42$), 35 of which were individually matched to ROs on sex and age (± 3 months) and an Early-adopted (EA) comparison group ($n = 25$) individually matched to the younger RO and CB children. There are more Canadian born children than Romanian orphans because although some RO families chose not to participate in this phase of the study, the

Canadian born children were needed as matches for the Early-adopted group. The EA children, also from Romania, were adopted prior to 4 months of age and came from hospitals, orphanages, or their biological parents. These children share similar birth family histories, and pre- and peri-natal care with the RO children and were destined to be raised in orphanages similar to those from which the RO children were adopted. However, as they were adopted early in life they do not share the extensive institutional experience.

Attrition from Phase 2 to Phase 3 occurred for a number of reasons. Some families declined to take part in Phase 3 because they no longer felt the research was of assistance to them. Others said they and their children felt like they had been studied “to death” and just wanted to get on with their lives and put the adoption issue behind them. One family dropped out because a parent was gravely ill while another family chose not to participate because the parents had not told their child that she was adopted. Some families had moved to other cities or countries and were not accessible for this phase, while others could not be found. In all, 11 RO families, 5 CB families, and 5 EA families who participated at Phase 2 did not take part in Phase 3. Five new CB families were added in Phase 3 in order to provide matches for EA children who did not have RO matches.

Procedures

As a first step in Phase 3 an introductory letter was sent to the parents of all previous participants to explain the research and ask for their continued participation (See Appendix B). The letters were followed up with phone calls to ensure that the letters had been received and to address any questions or concerns the parents had about the current study. The parents were asked for verbal confirmation that they and their children would

participate (written consent was obtained later) and appointments were made with the families for home visits, which began in February 1999 and concluded in July 2001 (See Appendix C). Parents were asked for permission for the researchers to contact their children's teachers and school administrators in order to collect data from them on the children's social behaviour. The purpose of the school visits was explained to the parents so that they could make an informed decision about whether to give their consent. The principals, and in some cases school district administrators, were then contacted for their permission to approach teachers and enter the classrooms of the study participants. The administrators, principals and teachers gave their written consent for research in the schools (See Appendices D and E). The visits to both homes and classrooms took place approximately half way through the school year, typically between January and June in each of the three years. This was to ensure that both teachers and classmates had sufficient time to get to know the target children and form relationships.

Child assessments, which took an average of four to five hours, were done during the home visits. These visits were typically scheduled for two to three hours on two separate days at the end of the school day or on the weekend. In some cases, due to parent schedules, assessments were done in one day but this was avoided whenever possible because it was felt that four continuous hours of completing questionnaires and intelligence tests was too tiring for 10-year-old children. Two-hour sessions were deemed to be short enough to ensure that the children continued to be engaged in the activities and perform optimally.

A female graduate student in Counselling Psychology who has many years of experience working with children with a wide range of developmental and special needs conducted the assessments. Upon arrival at the homes, she spent several minutes talking

to the children to establish rapport. She took time to explain why she was there, what the children were expected to do and to find out what they knew about the visits. The examiner gave the children concentrated one-on-one attention, and provided positive feedback throughout the assessment. If the children appeared tired, restless or bored, the examiner asked how they were doing and if they needed a break. The examiner sat with the children to ensure that they understood how to complete the questionnaires and assisted by reading the questions to the children when necessary. Attempts were made to eliminate potential researcher bias by ensuring that the examiner had no prior contact with the family before the assessments were done. Standardized questionnaires ensured that the exact questions were asked of all participants. It is hoped that these approaches were successful in counteracting any preconceived ideas the researcher had about outcomes based on previous phases of the study.

In addition to the child assessments, parent interviews were conducted during the home visits to determine how the parents felt their children were progressing and whether there were any ongoing problems from earlier phases of the study (e.g. eating or sleeping problems, stereotyped behaviours). These interviews typically took about one hour and were audio taped with the permission of the parents. The parents were also asked to complete a package of questionnaires on their children's social, emotional, intellectual, and physical development and return it by mail in stamped, self-addressed envelopes.

Finally, teachers were asked to complete three short questionnaires on the children's academic performance and social behaviour. The measures were left with the teachers in stamped, self-addressed envelopes to be mailed to the research team upon completion.

All participants in the study were told that their participation was voluntary and that they could withdraw at any time. They were also informed that if they had any questions or concerns about the research that they could contact the principal researcher or the Dean of the Faculty of Education at Simon Fraser University by telephone or email.

Measures

Data for this thesis came from two sources: parents and teachers.

Demographic Information

Parents completed a 13-item questionnaire to report on their socio-economic, educational and marital status. The following five items were analyzed for this thesis: highest level of education of mothers and fathers, annual family income and ages of mothers and fathers (See Appendix F). Mothers and fathers were asked to indicate their highest level of education using a 6-point scale where one equaled elementary school and six equaled graduate or professional school. The ages of the parents were calculated by subtracting their birth dates from the dates their children were assessed. Their birth dates were obtained using information from earlier phases of the current study and/or parents were telephoned and asked their dates of birth. Annual family income was answered using a 10-point scale where one equaled less than \$20,000 and 10 was equal to above \$100,000.

Indices of Current attentional abilities

Parent reports

Several parent questionnaires were used in this longitudinal study, which provide a range of information about each child but only the parent reports related to the child's

attention and self-regulation were used in this thesis. Parent reports can provide reasonably accurate information about a child's attentional and self-regulatory abilities. Parents and guardians are usually among the most important sources of data about children's abilities and difficulties. They tend to be the most knowledgeable about their child's behaviour across time and situations (Achenbach, 1999).

The Child Behaviour Checklist/4-18 (CBCL; Achenbach, 1991). This measure is self-administered by both parents and teachers and uses a standardized format to record behavioural problems and competencies of children aged 4 through 18. The questionnaire consists of 118 behaviour problem scores (answered using a 3-point Likert scale) from which five subscales (externalizing behaviours, internalizing behaviours, social problems, thought problems, and attention problems) and a total behaviour problem score are derived. For this thesis the attention problems scale was used as an index of the attentional difficulties of the children in the study.

CBCL norms for girls and boys are available, along with clinical and borderline cutoffs. This measure was standardized upon both clinical and non-clinical populations. The initial principal components analysis was performed on a sample of children drawn from mental health service providers in the Eastern United States. Several different types of service providers were chosen to increase the variability in the sample with respect to race and socioeconomic status (Achenbach & Edelbrock, 1981).

Norms for the factor-based scales were derived from the non-clinical population. The combination of these two sample types allowed for clinical cut-offs to be devised. A total score of 70 or above is considered to be in the clinical range, with 98% of children generally scoring below this number, and scores from 67-69 in the clinical borderline range.

The CBCL has high validity and reliability. Achenbach and Edelbrock (1981) have carefully documented the finding that clinically-referred children obtain higher scores on the Problem Scales than non-referred children. In fact, with the exception of allergy and asthma, each item has been shown to distinguish referred from non-referred children. The inter-rater and test-retest reliabilities of the CBCL item scores are supported by correlations in the .90s (Achenbach, 1991). Inter-parent agreement is also high, and over 1-and 2-year periods, the mean score changes are not significant (Achenbach, Phares, Howell, Rauh, & Nurcombe, 1990).

Child Behavior Questionnaire (CBQ; Rothbart et al. 2001) This parent report measure assesses children's temperaments on 16 different subscales. For the purpose of this study only subscales pertaining to attention, activity, and self-regulation (activity level, attention focusing, attention shifting, impulsivity and inhibitory control) were included in the analyses. Reliability and validity have been widely assessed with regard to this measure. The internal consistencies of the various scales of the CBQ have been reported as ranging from .67 to .94. (Rothbart et al, in press). In addition, parental agreement on CBQ ratings is satisfactory (Rothbart et al, in press). Rothbart et al. further state that convergent validity is derived from confirmation of hypothesized relationships between temperament and both social behaviour patterns and problem behaviours.

Teacher reports

Input from teachers about children's attentional and self-regulatory difficulties at school is important for several reasons. Social and academic skills developed at school are important for psychological functioning and adaptation. The teacher is a key adult in

the lives of children, ranking second only to parents. Teachers have training, experience and opportunities, which enable them to observe children's attentional and self-regulatory difficulties and provide parents with insights about their children that may not have been apparent to them. This is because school is seen as a central developmental arena where problems may arise that may not be evident in other settings (Achenbach, 1991).

The Child Behaviour Checklist Teacher's Form/4-18 (CBCL; Achenbach, 1991).

The questionnaire contains the same behaviour subscales as those in the parent form of the CBCL and is also a highly reliable and valid measure. Teachers are asked to rate the student's performance in academic subjects, four adaptive characteristics, 118 specific problem items and two open-ended problem items. Of the 118 behaviour questions (answered using a 3-point scale) used in the CBCL only the questions making up the attentional problems scale were analyzed for this thesis.

Measures from Phase 2

In order to address the predictors of and stability of attention and self-regulation, data from a number of measures collected at Phase 2 of this longitudinal study were utilized in the present study.

Parent measures

The Child Behaviour Checklist/4-18 (Achenbach, 1991). This is the same measure described previously and was used to assess problem behaviour in the children at age 4.5. The Phase 2 CBCL data were used to examine the stability of attention difficulties.

Teacher measures

The Child Behaviour Checklist Teacher's Form (CBCL; Achenbach, 1991). This is the same measure described previously and was used to assess problem behaviour in

the children at age 4.5. The Phase 2 CBCL data were used to examine the stability of attention difficulties.

Preschool Behavior Questionnaire (PBQ) (Behar & Stringfield, 1974). This measure is a 36 item revision of Rutter's (1967) Children's Behavior Questionnaire. Some sample items are: Inattentive; Has poor Concentration or short attention span; Restless, runs about or jumps up and down, does not keep still. Each item is scored as 0 for "does not apply", 1 for "sometimes applies" and 2 for "frequently applies", and these are summed to obtain a total score. This measure also provides scores on three subscales, Hostile/Aggressive, Hyperactive/Distractible and Anxious/Fearful. Only the Hyperactive/Distractible scale was used in this study. High reliability and validity have both been reported (Behar & Stringfield, 1974). The measure was able to discriminate between previously diagnosed emotionally disturbed children and typical children. Furthermore in a second study replication of the previous findings were found indicating reliability (Behar & Stringfield, 1974).

Predictive Indices of attentional and self-regulatory difficulties

This study utilized relevant data from Phase 1 and Phase 2 of the longitudinal study in order to determine whether early childhood development, time in institution, attachment to caregivers, the adopted home environment at age 4.5 predicted attentional and self-regulatory difficulties of the Romanian children at age 10.5.

Time in Institution Time in institution was a major predictive factor identified in earlier phases of this study. Thompson (2001) found that the longer the children spent in Romanian institutions, the worse they were doing in Phase 2 at age 4.5 in terms of social behaviour and other indices. This variable was used in the present study to see whether it

also was predictive of how the Romanian children were doing in terms of attentional and self-regulatory difficulties.

Revised Denver Prescreening Development Questionnaire (Denver)

(Frankenburg, Dodds, & Fandal, 1970). The Denver was designed as a first step screening device in a two-step process to evaluate developmental progress in children aged 3 weeks to 6 years. The questionnaire is made up of 105 tasks or items within the range of accomplishments of children in the age span. Items are arranged in chronological order according to the age at which 90% of children in the standardization sample could accomplish them. Items are categorized in four domains: (1) Personal-Social, (2) Fine Motor-Adaptive, (3) Language, and (4) Gross Motor. This particular measure was chosen for Phase 1 of this longitudinal study and it has adequate reliability and validity. Test-retest reliability for one week was reported at 94% and inter-observer reliability was reported at 83% (Frankenburg, Dodds, & Fandal, 1970). Concurrent validity was reported by its developers based on the Developmental Screening Test (DDST) (Frankenburg Dodds, & Fandal, 1970). Furthermore, Frankenburg et al. report that the revised Denver identified between 84 and 96% of the non-average results from the DDST. In the present study, a parent report of the Denver (parental report of the number of delays the RO children exhibited at 11 months post-adoption) was examined in relation to attentional and self-regulatory difficulties at age 10.5.

The Home Observation for Measurement of the Environment Inventory (HOME)

(Cadwell & Bradley 1984) was designed to assess the quality of stimulation and support available to a child in the home environment. In Phase 2 the Preschool version of the HOME was used with the 4.5 year old children and the Elementary school version was used with the older children. The Preschool version contains 55 items clustered into eight

subscales: (a) toys and learning materials, (b) language stimulation, (c) physical environment, (d) pride and affection, (e) stimulation of academic behaviour, (f) encouragement of maturity, (g) variety of stimulation, and (h) acceptance (use of punishment). The Elementary School Version contains 59 items clustered into eight subscales: (a) emotional and verbal responsibility, (b) encouragement of maturity, (c) emotional climate, (d) growth fostering materials and experiences, (e) provision for active stimulation, (f) family participation in developmentally stimulating experiences, (g) paternal involvement, and (h) aspects of the physical environment. In the present study the total scores from both the older and younger versions were used in order to maximize the sample size for which HOME data were available. Internal consistency and inter-observer agreement have been shown to be high (Bradley, 1989).

The Preschool Assessment of Attachment (Crittenden, 1992). This is a separation-reunion technique used to assess the children's attachment to parents and was chosen for use at Phase 2 because most of Crittenden's work on attachment has revolved around maltreated or neglected children (Chisholm, 1998). The assessment allowed researchers to categorize preschool children as secure, defended, coercive or defended/coercive. Two other categories (secure other and insecure other) were also included to cover children whose strategies did not fit into any of the 4 categories listed. For analyses conducted in this thesis the attachment categories were collapsed into secure and insecure. Children who were securely attached to caregivers maintained close proximity when stressed but explored widely when feeling safe. Insecure children behaved in a variety of ways. Those using a defended/insecure strategy stayed close to caregivers in times of stress but did not alert the attachment figure that they needed them. This type of insecure attachment is similar to avoidant attachment as described by Ainsworth, Blehar, Waters,

and Wall (1978). Children who employed a coercive insecure strategy (similar to Ainsworth et al.'s ambivalent insecure attachment) tried to force an unwilling attachment figure to meet their need for constant availability. Children who were categorized as defended/coercive displayed both strategies. The insecure children were further categorized as either typical insecure or atypical insecure. Typical insecure included the more common forms of insecure attachment such as less extreme forms of defended insecure or coercive insecure. The Atypically Insecure children displayed defended or coercive strategies that were more extreme and less common (Thompson, 1999). Children coded as Insecure Other did not clearly match the criteria for the coercive or defended strategies and were placed in the Atypical Insecure category. In Phase 2, 33% of the RO children were found to display Atypical Insecure attachments as compared to 7% of the CBs and 4% of the EAs (Chisholm, 1998). Data from this measure were used to see if attachment security at Phase 2 was predictive of attentional and self-regulatory difficulties at Phase 3.

RESULTS

Findings are presented in three main sections: 1) preliminary analyses that include a comparison of demographic variables across groups, validity correlations among measures within and between informant sources and stability correlations between Phase 2 and Phase 3 measures; 2) a comparison across groups on current indices of attentional and self-regulatory difficulties; 3) correlations between Phase 3 demographic variables and attentional and self-regulatory difficulties, as well as predictive correlations between total time in institution, security of attachment, the home environment and developmental delay when the children were age 4.5 years old and indices of attentional and self-

regulatory difficulties at age 10.5 and finally, multiple regression analyses to address the relative importance of Phase 2 measures in predicting Phase 3 attentional and self-regulatory difficulties.

Preliminary Analyses

Demographic Information

Means and standard deviations and the results of one-way analyses of variance (ANOVAs) comparing demographic characteristics across the RO, CB and EA groups can be found in Table 1.

There were significant differences among the three groups on age at assessment ($F(2, 98) = 4.08, p < .020$), mother's age ($F(2, 100) = 3.87, p < .024$) and father's age ($F(2, 96) = 3.67, p < .039$). Tukey B post hoc comparison tests revealed that the EA children were, on average, slightly younger than the RO and CB children when they were assessed. This is explained by the fact that the EA children were matched to the youngest RO children while the CB group contained matches for all the RO children. Hence these latter two groups included children in a broader range of age. The parents of the Early-adopted children were the oldest, the RO parents were the next oldest and the CB parents were the youngest. The groups did not differ on other demographic characteristics such as parents' education, marital status, and annual family income and generally speaking, despite factors such as time and attrition, the three groups remained comparable.

Gender differences on attention measures

To determine if there were gender differences in the attentional and self-regulatory difficulties one-way analyses of variance (ANOVA) were run. There were no gender differences on the parent form of the Child Behaviour Checklist, or the various

scales of the Children's Behaviour Questionnaire; activity level scale, attentional shifting scale, impulsivity scale or inhibitory control scale (see table 3). For all subsequent analyses data for males and females on these measures were combined. On the teacher form of the Child Behaviour Checklist attention problems scale, a gender difference was found within the CB group only (see table 3). Given that the gender differences was in one group only, and not the group of primary interest, in the interest of maximizing sample size, data for boys and girls on this measure were not analyzed separately.

Attentional abilities

Attentional and self-regulatory differences among groups

A central aim of this study was to determine if and how the RO children differ from the CB and EA children in terms of their attentional and self-regulatory difficulties. To address my hypothesis that on average, the RO children would have greater attentional and self-regulatory difficulties than their comparison groups, one-way analyses of variance (ANOVA) were run to look at differences among the groups on several indices. Means, standard deviations and results from one-way ANOVAs for measures related to both attention and self-regulation are found in table 4.

Significant differences were found among the groups on 5 indices of attentional and self-regulatory difficulties: parent form of the Child Behaviour Checklist attention problems scale ($F(2, 99) = 15.8, p < .001$); teacher form of the Child Behaviour Checklist attention problems scale ($F(2,89) = 5.3, p < .01$); Children's Behaviour Questionnaire Attentional Focusing scale ($F(2,94) = 10.35, p < .001$); Children's Behaviour Questionnaire Impulsivity scale ($F(2,94) = 9.5, p < .001$); and Children's Behaviour Questionnaire Inhibitory Control scale ($F(2,73) = 6.67, p < .01$) (See table 4). Tukey B post hoc comparison tests revealed that on the parent form of the Child Behaviour

Checklist attention problems scale the RO children experienced significantly more attention difficulties than either the EA or the CB children. The EA and CB groups also differ significantly from each other on this measure with the EA children displaying significantly more attention difficulties than the CB group. On the teachers form of the Child Behaviour Checklist attention problem scale the RO children were found to experience significantly greater attention difficulties than both the EA and the CB children. The EA children also were found to display significantly more attention difficulties than the CB children. On the CBQ parents reported that the RO children had a significantly greater degree of difficulty in attentional focusing and impulse control than both the CB and the EA children. The CB and EA groups did not differ on these measures. Parents also reported that RO children had significantly lower scores on inhibitory control than either the CB or EA children and that the EA children had significantly lower scores than the CB children

Non-significant differences were found among groups on the Children's Behaviour Questionnaire Activity Level scale. Parents reported that the RO children experienced higher levels of activity than either the CB or the EA children although the differences were not significant.

Clinical range frequencies

Frequencies were computed to determine the percent of children within each group scoring in the borderline and clinical ranges on the CBCL attention problem scale (see table 5). Scoring in the clinical range on this measure indicates the need for professional help. The results from the parent form of the CBCL attention problems scale show that 41% of the Romanian orphans were in the clinical or borderline range for

attentional difficulties. Among the Canadian born group 5 % were in the clinical or borderline range for attentional difficulties. Results for the Early-adopted group showed that 16% were in the clinical or borderline range for attentional difficulties.

Frequencies were also computed using the attention subscale from the teacher's form of the Child Behaviour Checklist attention problems scale (See Table 6). The numbers of children scoring in the clinical or borderline range were slightly lower than those found using the parent form. Among the RO children 28% were found to be in the clinical range for attentional difficulties compared to 12% in the CB group, and 16 % in the EA group.

An extreme index of attention difficulty is a clinical diagnosis of ADD or AD/HD. It is particularly interesting to note that 34% of the RO children were found to have a clinical diagnosis of either ADD or AD/HD while only 2.5% of the CB and 9% of the EA children have either diagnosis as reported by parents on a health questionnaire.

Stability Correlations from Phase 2 to Phase 3

Correlations were computed between identical variables used when the children were age 4.5 and when they were assessed at age 10.5 to determine if specific attentional and self-regulatory difficulties were stable over time. Measures that assessed similar attentional and self-regulatory difficulties at age 4.5 and at age 10.5 but were not identical variables were also correlated with one another to further address the stability of these difficulties.

The parent measure utilized in both Phase 2 and Phase 3 was the Child Behaviour Checklist attention problems scale. Results indicate that within the RO group parent reports of attention difficulties on the CBCL were highly stable over time ($r = .76, p < .01$) (see table 7). Correlations between the Phase 2 parent CBCL attention problem scale and

other Phase 3 measures of attention were also significant. These included correlations with the Phase 3 teacher form of the CBCL attention problems scale ($r = .39, p < .01$) and three scales on the Children's Behaviour Questionnaire; attentional focusing ($r = -.59, p < .01$); impulsivity ($r = -.59, p < .01$) and inhibitory control ($r = -.52, p < .01$). A similar pattern of results for the CB and EA groups can be found in Appendix J

The teacher measure utilized in both Phase 2 and Phase 3 was the Child Behaviour Checklist attention problems scale. Results indicated that for the RO children, teacher reports of attention difficulties were reasonably stable over time ($r = .48, p < .01$) (see table 7). Associations between the Phase 2 teacher measure and other Phase 3 measures of attentional and self-regulatory difficulties were also significant: parent form of the CBCL attention problems scale ($r = .55, p < .01$), and two scales on the Children's Behaviour Questionnaire, attentional focusing ($r = -.48, p < .01$) and impulsivity ($r = -.43, p < .01$). The Phase 2 teacher CBCL score was not significantly correlated with inhibitory control or activity level at Phase 3. A similar pattern of results for the CB and EA groups can be found in Appendix J.

Results also indicate that attention and hyperactivity as measured by the Parent form of the Preschool Behaviour Questionnaire, hyperactive/distractible scale at Phase 2 was significantly related to the Phase 3 parent form of the CBCL attention problems scale ($r = .67, p < .01$), teacher form of the CBCL attention problems scale ($r = .56, p < .01$), and several scales on the Children's Behaviour Questionnaire; attentional focusing ($r = -.62, p < .01$), impulsivity ($r = .36, p < .01$), and inhibitory control ($r = -.58, p < .01$) (see table 7). For the teacher form of the Preschool Behaviour Questionnaire correlations were very similar (see table 7). Results indicate that attention and hyperactivity as measured by the teacher form of the Preschool Behaviour Questionnaire at Phase 2, was

significantly related with the parent form of the CBCL attention problems scale ($r = .49$, $p < .01$), teacher form of the CBCL attention problems scale ($r = .51$, $p < .01$), and three scales on the Children's Behaviour Questionnaire; attentional focusing ($r = -.48$, $p < .01$), impulsivity ($r = .23$, $p < .05$) and inhibitory Control ($r = -.44$, $p < .01$) at Phase 3. A similar pattern of results for the CB and EA groups can be found in Appendix J.

Predictive Analyses

Predictive correlations and regression analyses were run to address six hypotheses related to the predictive value of Phase 1 and 2 measures in explaining current attentional and self-regulatory difficulties of the Romanian orphans. Correlations were computed to test the hypotheses that (1) time in institution would be significantly related to current attentional and self-regulatory difficulties, (2) number of developmental delays at Phase 1 would predict attentional and self-regulatory difficulties of the children in Phase 3 and (3) the adoptive home environment at age 4.5 would correlate with attentional and self-regulatory difficulties at age 10.5 with poorer home environments predicting attentional and self-regulatory difficulties. An ANOVA was also computed to test the hypothesis that attachment quality at age 4.5 would be predictive of attentional difficulties at age 10.5 with insecure children at Phase 2 experiencing more attentional and self-regulatory difficulties at Phase 3 than secure children. Regression analyses were also run to determine the relative importance of the significant correlates in predicting Phase 3 attentional and self-regulatory difficulties.

Time in institution

Time in institution was significantly and positively associated with only one measure of attentional difficulty, the parent form of the CBCL of attention problems scale ($r = .38, p < .05$; see table 8)

Developmental Delay

Number of developmental delays as assessed by the Denver Prescreening Questionnaire, when the RO group had been in their adoptive homes for approximately 11 months was significantly correlated with one current measure of attentional difficulty in the RO group (see table 8). Scores on the Denver were significantly correlated with the parent form of the Child Behaviour Checklist attention problems scale ($r = .38, p < .05$) indicating that the greater the number of delays experienced by the Romanian children at Phase 1 the greater the attentional difficulties they experienced at Phase 3.

Home environment

Stimulation and nurturance in the home at age 4.5 as measured by the Home Observation for Measurement of the Environment Inventory (HOME) was significantly correlated with three attentional and self-regulatory difficulties indices in the RO group at age 10.5 (see table 9)

Within the RO group HOME scores at age 4.5 were significantly correlated to Phase 3 parent form of the CBCL attention problems scale ($r = -.45, p < .01$), teacher form of the CBCL attention problems scale ($r = -.56, p < .01$) and the Children's Behaviour Questionnaire attentional focusing scale ($r = .38, p < .05$) but were not related to activity level, impulsivity or inhibitory control scales as measured by the Children's Behaviour Questionnaire.

The results for the CB and EA groups revealed similar findings with measures of the home environment at Phase 2 predictive of a few measures of attentional and self-regulatory difficulties at Phase 3 (see appendix L)

Attachment

Links between attachment security at age 4.5 as measured by The Preschool Assessment of Attachment (Crittenden, 1992) and attentional and self-regulatory difficulties at age 10.5 were examined using one-way analyses of variance (ANOVA). Attachment was not significantly related to any of the various attentional and self-regulatory difficulties variables at Phase 3 (See table 10). Although these findings were not significant, the secure RO children were found to have less attention problems on both the parent and teacher forms of the CBCL attention problems scale, lower activity levels, greater attentional focusing, lower impulsivity and greater inhibitory control on the CBQ (see table 10).

Regression Analyses

In order to determine the relative importance of Phase 1 and Phase 2 measures as predictors of later outcomes a series of multiple regression analyses was conducted. Two predictor variables from Phase 1 and one predictor variable from Phase 2 were selected on the basis of conceptual and empirical grounds: time in institution, number of developmental delays at Phase 1 and the home environment at Phase 2. These measures were all significantly correlated with Phase 3 outcomes.

The order of entry of the predictor variables into the regression equations was based on the following reasoning. The amount of time in institution the RO children experienced was the first variable that occurred in the children's lives. Hence, it was deemed appropriate to enter time in institution first. Developmental delay at Phase 1 was

entered next because it measured the RO children's development shortly after they were adopted. The home environment measured at Phase 2 was entered last.

Parent and teacher CBCL attentional difficulties scale and the Children's Behaviour Questionnaire attentional focusing scale were selected as the Phase 3 attentional and regulatory difficulties measures because these variables were significantly correlated with the aforementioned predictor measures.

The results from the regression analyses are summarized in Table 11. Time in institution was significantly associated with the parent form of the CBCL attention problems scale (R^2 change = .167, F change = 5.406, $p < .03$). Developmental delay made a non-significant contribution to the prediction of attentional and self-regulatory difficulties beyond that predicted by time in institution. The home environment contributed to the prediction of attentional and self-regulatory difficulties beyond the contribution of time in institution, (R^2 change = .107, F change = 3.97, $p < .06$) and accounted for a further 11 percent of the variance in the outcome. All three variables combined accounted for 33 percent of the variance.

Time in institution did not predict teacher form of the CBCL attention problems scale. Developmental delay also did not predict the outcome. The home environment was significantly associated with teacher report of attention difficulties on the CBCL, (R^2 change = .274, F change = 8.165, $p < .01$) and accounted for a further 27 percent of the variance in the outcome. All three variables combined accounted for 33 percent of the variance.

Neither time in institution nor developmental delay predicted attentional focusing. The home environment was significantly associated with the Children's Behaviour Questionnaire attentional focusing scale, (R^2 change = .161, F change = 4.899, $p < .04$) and

accounted for a further 16 percent of the variance in the outcome. All three variables combined accounted for 21 percent of the variance.

DISCUSSION

The purpose of the present longitudinal study was to investigate the attentional and self-regulatory difficulties of a group of post-institutionalized children adopted from Romanian orphanages into Canadian homes approximately 8 years ago. The difficulties exhibited by the 10.5 year old Romanian orphanage (RO) children were compared to two other groups of children: a sample of Canadian born (CB) never-institutionalized children and a group of early-adopted (EA) Romanian children who were adopted prior to four months of age. My research was aimed at describing and comparing the current attentional and self-regulatory difficulties of the RO group to those of the CB and EA groups, the stability of attentional and self-regulatory difficulties experienced by the RO group and the possible predictors of attentional and self-regulatory difficulties.

As comparisons between the three groups of children were a central aim of this study, it was of key importance to first evaluate the comparability of the RO, CB, and EA groups on a variety of demographic indices. At the commencement of this longitudinal study approximately 10 years ago, children in the CB and EA groups were individually matched to the RO children for not only age and sex, but also parents' education and ages, as well as family income. This matching procedure was essential in order to ensure socio-demographic differences between the groups did not contribute to disparities in developmental outcomes among them. Since environmental outcomes can change over time it was deemed crucial to reevaluate the equality of the three groups. Findings showed that at this phase of the research the RO, CB, and EA groups continue to be

comparable in terms of parent's education, marital status, and family income, increasing the possibility that differences among them were not related to demographic factors.

Consistent with previous research on post institutionalized children and with my hypothesis, as a group the RO children displayed greater attentional and self-regulatory difficulties than either the EA or CB groups. This difference was observed on a variety of different measures assessing these difficulties.

Also consistent with the literature was the finding here that the attention and self-regulatory difficulties of the RO children were relatively stable from age 4.5 to age 10.5 years. The correlations between Phase 2 and Phase 3 measures indicate that the children who displayed the greatest difficulties in attention and self-regulation relative to the others in the RO group at 4.5 years of age tended to continue to display the greatest difficulties at 10.5 years of age. This correlational analysis, however, does not tell us whether the Phase 3 difficulties were greater, lesser, or the same as they were in Phase 2. An examination of the number of children receiving attention difficulty scores in the borderline and clinical ranges suggests that attention problems are increasing. At Phase 2, 31% of the RO children scored above the borderline cutoff whereas at Phase 3, the figure was 41%.

There are a number of possible explanations for the apparent increase in the attentional and self-regulatory problems experienced by the RO children. It may be that in fact, the actual attentional abilities of the children have not changed over time but, rather, the demands of the environment have and that these environmental changes have highlighted the attentional problems these children have. For example, at age 4.5 years the RO children were not attending formal school settings. In contrast, at age 10.5 years, all children were attending school (except 5, who were home schooled). The school

environment clearly demands attention and self-regulatory skills and those children who do not have them are considered by teachers and parents to be problematic in that setting. Alternatively, the attentional and self-regulatory skills of the RO children may, in fact, have worsened over time. We can only speculate as to why this would be the case. We know from other research on this same sample, that the parents of the RO children experience significantly more parenting stress than do the parents of the CB and EA children (Le Mare & Kurytnik, 2002). This greater parenting stress may have translated into less responsive parenting, which in previous research (e.g., Robson & Cline 1998) has been linked to attentional problems. Continuous exposure to such parenting in the 6 years between Phase 2 and Phase 3 may have led to a reduction in attention abilities in some of the RO children.

In order to address the impact of the intervening years between Phase 2 and Phase 3 on the attentional and self-regulatory abilities of the RO children a couple of variables, which have been shown to be important in previous research, were examined. Specifically, I looked at the impact of attachment status and the home environment on children's attention and self-regulatory problems. In addition, following the work of Rutter et al. (2001) and Kreppner et al. (2001), the time the children spent institutionalized prior to adoption was also examined in relation to attention and self-regulation as was the children's developmental status at 11-months post-adoption.

Time in institution, although significantly related to one measure of attention and self-regulation (the parent CBCL attention problems scale), was a surprisingly weak predictor of attentional and self-regulatory difficulties. Previous research has highlighted the impact of length of institution on attentional and self-regulatory difficulties. Kreppner et al. found a significant positive linear relationship between length of deprivation and

inattention/overactivity (I/O) as assessed by both parent and teacher reports. The more robust relationship between length of institutionalization and I/O obtained in the Kreppner et al. study may be related to the age at which the children were assessed. In Kreppner et al.'s work the children were 6-years of age and hence had spent less time in their adoptive homes than the children in the present study who were 10.5 years old. The RO children in the present study had experienced more opportunity for post-adoption environmental factors to mitigate the effects of institutionalization on their attention and self-regulatory abilities.

Contentions by Bowlby (1951, 1966) and Yarrow (1961) that length of deprivation, age, and degree of deprivation are major factors that relate to the overall development and well-being of children later in life are supported to a certain extent by the present study. However, the present study does not support Dennis's (1973) contention that children adopted prior to 2 years of age will function relatively well, whereas those children adopted after age 2 may never fully recover from their deficits. This thesis shows a linear relationship with the greater the length of deprivation, the more serious the problems. Furthermore, while the RO group did show differences in attentional and self-regulatory difficulties it was not solely dependent on the amount of time spent in an institution. From these findings we can assume that experiences post adoption have contributed to the attentional and self-regulatory abilities of the RO group.

Security of attachment at Phase 2 of this longitudinal study surprisingly was not related to attentional and self-regulatory difficulties at Phase 3, as was hypothesized. Differences between the attention and self-regulatory abilities of the secure RO children were not statistically detectable. Previous research has indicated a strong relationship between attachment quality and attentional and self-regulatory difficulties (Clarke, et al.

2002; Crittenden & Clauseen, 1996; Erdman, 1998; Isabella & Belsky, 1991; Goldfarb, 1943; Lieberman & Pawl 1990; Main & Weston, 1982; O'Connor, Bredenkamp, & Rutter, 1999; Robert, 1994; Stiefel, 1997). It is an interesting question as to why such a relationship was not found here.

In order to address this question we need to consider the normal circumstances under which secure and insecure attachments typically form. Secure attachments typically develop in the context of a continuous, sensitive, and responsive care-giving relationship that begins at birth. Conversely, insecure attachments develop when care-giving is unpredictable, insensitive to the needs of the infant and/or unresponsive. In studies in which attachment has been examined in relation to attention and self-regulation, attachment status of the child and parental style of caregiving are likely to have been confounded. That is, secure children will typically be exposed to a certain type of caregiving. When links between security and attention abilities are found, we do not know if security per se is causally linked to attention or whether the type of caregiving associated with security is the important factor.

The RO children in the present study did not form their attachments to caregivers under typical circumstances. Due to the nature of institutional life, these children formed their first attachments beyond the infancy period once Canadian families had adopted them. The early deprivation they experienced sets them apart from the typical population in this regard. The extreme deprivation the RO children experienced in the institutions likely affected their internal working models leaving them vulnerable to viewing the world as unloving and themselves as unlovable regardless of later caregiving experiences. This view is supported by other research on this sample. Fernyhough (2003) found that the post-adoption home environments of the RO children were not related to attachment

status – that is, there was no difference between the secure and insecure RO children in terms of stimulation and nurturance in their homes. Hence, in contrast to “typical” children, the attachment status of the RO children appears to be less dependent on their home environments, which may explain why attachment did not relate to attention and self-regulatory difficulties in this sample.

While attachment quality was not found to be a significant predictor of attentional and self-regulatory difficulties, nurturance and stimulation in the home was. Although several measures of attentional and self-regulatory difficulties in the RO group were found to be significantly correlated with the nurturance and stimulation in the home we cannot be certain of the direction of the effect. It is unclear whether the attentional and self-regulatory difficulties of the children affected the home environment or if the home environment affected the attentional and self-regulatory difficulties.

Attentional and self-regulatory difficulties were also related to the HOME score for both the CB and EA groups although not as strongly as for the RO group. This finding suggests that while the home environment may have been a more important component for the RO group in terms of their attentional and self-regulatory difficulties, the home environment does have an impact on these outcomes in more typical populations as well. That the home environment was more strongly related to attention and self-regulation in the RO group than the CB or EA groups is probably explained by the greater degree of difficulty and delay in the RO children in early childhood in comparison to the children in the CB and EA groups. Because of their compromised development at time of adoption, what might be considered normal variations in warmth and stimulation in the home were important and made a difference to the development of these children. The EA and CB children were likely at developmental levels beyond the

threshold where such normal variations would make much difference, hence the weaker relationship between attention and self-regulation difficulties and the home environment in these two groups.

Overall it is encouraging to know parents can make a difference in their children's attentional and self-regulatory abilities even when faced with such extreme deprivation early in life. Thus, it is important that regardless of their children's pre-adoptive history, early developmental delays, attentional and self-regulatory difficulties, adoptive parents be encouraged to provide an appropriately nurturing and stimulating home environment for their adoptive children.

Conclusion

The findings of this study demonstrate that as a group the Romanian orphans continue to have attentional and self-regulatory difficulties, which exceed both the Canadian born and Early-Adopted children. However, there was much variance within the Romanian orphanage group with some children displaying attentional and self-regulatory abilities within the normal range.

Unfortunately, given the stability of these findings, there is the potential for these children to continue to experience these difficulties and related problems. Attentional and self-regulatory difficulties in children have been studied extensively in relation to their association to a large range of different difficulties and comorbid diagnoses (August & Garkinkel, 1990; Barkley, 1997; Biederman, Munir, & Knee, 1987; Biederman et al. 1999; Edelbrock, Costello & Kessler, 1984; Fergusson, Lynskdy, & Horwood 1997; Frick, & Lahey, 1991; Greene et al. 1996; Hindshaw, 1994; Hinshaw, Zupan, Simmel, Nigg, & Melnick, 1997; Hinshaw, 2002; Hinshaw & Meinick, 1995; Jensen, Johnston, Pelham, & Murphy, 1985; Maedgen & Carlson, 2000; Martin & Cantwell, 2000;

Soonuge-Barke, Lamparelli, Stevenson, Thompson, & Henry 1994; Stiefel, 1997; Tabassam, & Grainger, 2002; Tizard & Hodges, 1978). These correlated difficulties can be classified into seven main groups: school performance and ability, social difficulties, externalizing problems, self-concept and self-esteem, internalizing problems, attachment with parents and substance abuse. These studies indicate that each of these areas is highly related to and predicted by early attentional and self-regulatory difficulties. Furthermore, the stability of attentional and self-regulatory difficulties has been found to be astonishingly strong. In a review of the literature, Klein and Mannuzza (1991) state that the overall pattern for hyperactive children in adolescence is a continuation of their childhood symptoms and the development of antisocial behaviour. Similarly, Taylor, Chadwick, Hepinstall and Danckaerts (1996) report that children with hyperactivity were found to have at least one diagnosis at follow up nine years later, a majority of which were AD/HD or conduct disorder.

It is therefore absolutely essential that prevention and intervention measures commence and include involving the child's family, addressing his/her environment and providing support in other areas that may be associated with his/her attentional and self-regulatory difficulties. Given the presence of individual variability among the Romanian orphans, it is pertinent that interventions are designed with the children's individual needs in mind.

As the home environment has been shown to play such a crucial role in the outcomes, parental assistance could include continued nurturance and stimulation in the home. Furthermore, although attachment quality was not found to predict attentional difficulties here, research has found a strong relation between these factors and thus

attention to the developing relationship with their adopted children is also of outmost importance.

Counsellors can also provide assistance to these children by providing positive support as they mature and possibly continue to face attentional and self-regulatory difficulties as well as the difficulties associated with them. In addition to support, counsellors can also provide assistance by helping these children, their families and their teachers learn how to accommodate for these attentional and self-regulatory difficulties.

Although it has been difficult for the RO parents to respond to the many demands and difficulties facing their children, three quarters of adoptive parents report that they would be 'very likely' or 'extremely likely' to repeat the experience (LeMare & Kurytnik, 2002). While this is positive and encouraging news it is also pertinent for prospective adoptive parents of early-deprived children to be educated about potential attentional and self-regulatory difficulties as well as the range of associated difficulties their children may face so that they can be prepared as much as possible, financially and emotionally as well as being aware of possible interventions.

While there are many possible directions for further research on the attentional and self-regulatory difficulties of the Romanian orphanage children limitations of the current study must first be addressed. The small sample size of the RO and EA groups poses obvious challenges as well as concern for future phases of this study unless new participants are added. In previous phases of this study both of these groups were larger but attrition has reduced the sample. In preparation for a fourth phase of the Romanian Adoption Project, researchers should search for new Romanian adoptees and their families in British Columbia and across Canada.

Research is also needed to provide further support for the stability of attentional and self-regulatory difficulties as well as their associated difficulties. Observations and child measures would add greatly to the understanding of the complex difficulties facing these children. Extended focus on the Romanian orphan children who are not experiencing attentional and self-regulatory difficulties would also yield important insights regarding the factors contributing to their resiliency.

In conclusion, it is clear that the Romanian orphans have more attentional and self-regulatory difficulties than the Canadian born and early-adopted children. However, there is great variability within the RO group with not all children experiencing these difficulties. These children will continue to need support and stimulation in their home and school environments as they mature and face continued and new challenges. While the early experiences faced by the RO children cannot be changed these intervention measures are the least that we can do.

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APPENDICES

Appendix A: Ethics Approval

SIMON FRASER UNIVERSITY

OFFICE OF RESEARCH ETHICS



BURNABY, BRITISH COLUMBIA
CANADA V5A 1S6
Telephone: 604-291-3447
FAX: 604-268-6785

October 21, 2003

Ms. Karyn Audet
Graduate Student
Faculty of Education
Simon Fraser University

Dear Ms. Audet:

**Re: Attentional and Self-Regulatory Difficulties of Romanian
Orphans Ten Years After Begin Adopted to Canada:
A Lonitudinal Study**

The above-titled ethics application has been granted approval by the Simon Fraser Research Ethics Board, at its meeting on October 20, 2003 in accordance with Policy R 20.01, "Ethics Review of Research Involving Human Subjects".

Sincerely,

Dr. Hal Weinberg, Director
Office of Research Ethics

Appendix B: Introductory Letter to Parents

December 1, 1998

Dear parents of children in the Romanian Adoption Study:

In September you received a letter from Dr. Elinor Ames letting you know that she has retired and that I, Dr. Lucy Le Mare, will now be directing the Romanian Adoption Study. I am honored to be part of such an important project and to have the opportunity to work with you and your children. I have recently been granted funding from the Hospital for Sick Children Foundation to conduct a "Time 3" visit with you and I am writing to request your continued participation in the Study.

We plan to begin the Time 3 visits in February 1999 starting with the oldest children first. We will be assessing your child's development in many of the areas that were assessed in previous visits. These areas include attachment, behaviour problems, intellectual development, physical development and health, and parenting stress. In addition, as your child is now of school age, we are very interested in how he/she is doing at school, both academically and socially.

For the Time 3 visits we would ask if we can make a visit to your home and a visit to your child's school. During the home visit we would like to interview you, do a number of tasks with your child, and leave a package of questionnaires for you to complete and mail back to us. On either the day before or after the home visit, we would like to visit your child's classroom and leave questionnaires for his or her teacher to complete and send back to us. During the classroom visit we also hope to collect information from the entire class about the social dynamics in the classroom. The children in the class will be told that we are interested in how children of their age get along with one another and your child will not be singled out in any way.

At present, our research team consists of myself and graduate students Linda Warford and Lynda Fernyhough. Both Linda and Lynda are in the counselling psychology Masters program. They both have a strong commitment to the well-being of children and share a great deal of experience working with families and youngsters of various backgrounds and abilities.

One of us will be telephoning you within the next couple of weeks to discuss your participation, any questions you may have, and to schedule a visit. In that phone call we will ask for the name of your child's teacher and school and permission to contact them.

With your help, the Romanian Adoption Study will become the most comprehensive research ever done on the lives of children adopted from orphanages. What we learn from this study will have important implications for policies related to infant, child, and youth services in the fields of education, health, and adoption. We are truly appreciative of your involvement and we look forward to speaking with you later this month.

With warm regards,

Lucy Le Mare, Ph.D.

Assistant Professor

Email: lemare@sfu.ca

Phone: 604 291-3272; Fax: 604 291-3203

Appendix C: Consent form for Parents

Dear Parents:

Enclosed are a number of questionnaires concerning the health, social development, behaviour, academic achievement, and physical development of your child. Each of these questionnaires should be self-explanatory. Please note that there are two (2) copies of the Parenting Practices Questionnaire in the package. One is for the mother to complete and one is for the father. All other questionnaires can be completed by either or both parents. You may notice that there is some repetition of questions in this package. This is a function of there being some overlap in the measures we have selected. Please bear with us.

Of course your responses to these questionnaires are completely confidential and will only be used for research purposes. Your participation in this research is entirely voluntary and you can withdraw from the study at any time without penalty. When you have completed the questionnaires please put them and the signed consent form (attached) into the self-addressed stamp envelop provided and return it to us by mail.

I cannot stress enough how much I appreciate your help with this research. I am more than happy to share the results of this research with you and will send copies of any resulting written reports to all participating families.

If you have any questions or concerns about completing the questionnaires or any other aspect of the research, please do not hesitate to call me at 291-3272 or the research office at 291-5687. Again, thank you so much for your help.

Sincerely,
Dr. Lucy Le Mare

I, (your name) _____ have agreed to participate in the research project being conducted by Dr. Lucy Le Mare of the Faculty of Education, Simon Fraser University. I understand that my involvement entails the completion of questionnaires concerning the health, social development, behaviour, academic achievement, and physical development of my child and that I can withdraw from the project at any time. Any complaint about the project may be brought to the chief researcher named above or to Dr. Robin Barrow, Dean, Faculty of Education, Simon Fraser University.

NAME (please print): _____

ADDRESS: _____

SIGNATURE: _____

DATE: _____

Appendix D: Consent form for School Principals

Dear Principal:

Further to our recent phone conversation, I would like to thank you for your interest in our research on children's social and intellectual development. Attached is a consent form that we would ask you to sign to confirm your willingness to allow us to conduct this research in your school. As we have discussed, this will entail the teacher of _____ completing questionnaires on that student's social and academic progress and the administration of a peer sociometric rating scale in his/her classroom. This study is funded by the Hospital for Sick Children Foundation and has received approval from the University Ethics Board.

I cannot stress enough how much we appreciate your help with this research. If you have any questions or concerns about the research, please do not hesitate to contact me at 604 291-3272 or email at lemare@sfu.ca. Again, thank you so much for your help.

Sincerely,

Lucy Le Mare, Ph.D.
Assistant Professor

I (your name) _____ have agreed to allow the research on intellectual and social development being conducted by Dr. Lucy Le Mare of the Faculty of Education at Simon Fraser University to take place at my school. I understand that involvement entails the completion of questionnaires by the teacher of the child named above and the administration of a peer sociometric rating scale in the child's class. Further I understand that we may withdraw from the project at any time. Any complaint about the project may be brought to the chief researcher named above or to Dr. Robin Barrow, Dean, Faculty of Education, Simon Fraser University.

Name (please print): _____ Date: _____

School: _____

Signature: _____

Appendix E: Consent form for Teachers

Dear Teachers:

Further to our recent phone conversation, I would like to thank you for your interest in our research on children's social and intellectual development. Attached is a consent form that we would ask you to sign to confirm your willingness to participate in this study. Participation will involve completing 3 questionnaires concerning the academic, behavioural, and social adjustment of _____.

Your participation in this research is entirely voluntary and you may withdraw from the study at any time without penalty. Your responses to these questionnaires are completely confidential and will be used only for research purposes. Please read the directions carefully before beginning each questionnaire.

This study is funded by the Hospital for Sick Children Foundation and has received approval from the University Ethics Board.

I cannot stress enough how much we appreciate your help with this research. Dr. Lucy Le Mare, the project director, is more than happy to share the results of the research with you and will send copies of any resulting written reports to all participating teachers upon request.

If you have any questions or concerns about completing the questionnaires or any other aspect of the research, please do not hesitate to call us at 29103272 or send email to lemare@sfu.ca. Again, thank you so much for your help.

Sincerely,

Linda Warford
Research Assistant

I, (your name): _____ have agreed to participate in the research on intellectual and social development to be conducted by Dr. Lucy Le Mare of the Faculty of Education, Simon Fraser University. I understand that my involvement entails completion of questionnaires and that I can withdraw from the project at any time. Any complaint about the project may be brought to the chief researcher named above or to Dr. Robin Barrow, Dean, Faculty of Education, Simon Fraser University.

Name (please print): _____ Date: _____

School: _____

Signature: _____

Appendix F: Demographic Questionnaire

5. Age at Adoption _____
9. Mother's highest level of education
 ___ elementary school
 ___ some high school
 ___ high school completion
 ___ vocational or some college/university
 ___ college or university graduate
 ___ graduate or professional school
13. Father's highest level of education
 ___ elementary school
 ___ some high school
 ___ high school completion
 ___ vocational or some college/university
 ___ college or university graduate
 ___ graduate or professional school
17. Please estimate your gross annual family income
- | | | |
|------------------------|---------------|-------------------|
| ___ Less than \$20,000 | ___ 50-60,000 | ___ 90-100,000 |
| ___ 20-30,000 | ___ 60-70,000 | ___ Above 100,000 |
| ___ 30-40,000 | ___ 70-80,000 | |
| | ___ 40-50,000 | ___ 80-90,000 |

Appendix G: Child Behaviour Questionnaire Attention problems scale (parent and teacher forms)

1) Acts too young for his/her age

0 = Not True (as far as you know)

1 = Somewhat or sometimes True

2 = Very True or Often True

8) Can't concentrate, can't pay attention for long

10) Can't sit still, restless, or hyperactive

13) Confused or seems to be in a fog

17) Day-dreams or gets lost in his/her thoughts

41) Impulsive or acts without thinking

45) Nervous, highstrung, or tense

46) Nervous movements or twitching (describe)

61) Poor school work

62) Poorly coordinated or clumsy

80) Stares blankly

Appendix H: Child Behaviour Questionnaire

Activity Level (AL)

- 1) Seems always in a big hurry to get from one place to another.
 1 = extremely untrue of your child
 2 = quite untrue of your child
 3 = slightly untrue of your child
 4 = neither true or false of your child
 5 = slightly true of your child
 6 = quite true of your child
 7 = extremely true of your child
- 25) Tends to run, rather than walk, from room to room.
 41R) When outside, often sits quietly.
 48) Moves about actively (runs, climbs, jumps) when playing in the house.
 88R) Sometimes sits quietly for long periods of time in the house.
 102R) Prefers quiet activities to active games.
 123R) Rarely runs or moves quickly in the house.
 126R) Plays games slowly and deliberately.
 145R) Sits quietly in the bath.
 153) Plays actively outdoors with other children.
 172) Is full of energy, even in the evening.
 187) Has difficulty sitting still at dinner.
 192R) Likes to sit quietly and watch people do things.

Attentional focusing (AF)

My Child:

- 16) When picking up toys or other jobs, usually keeps at the task until it's done.
 38R) When practicing an activity, has a hard time keeping her/his mind on it.
 47R) Will move from one task to another without completing any of them.
 125) When drawing or coloring in a book, shows strong concentration.
 144) When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.
 160) Has difficulty leaving a project s/he has begun.
 171R) Is easily distracted when listening to a story.
 186) Sometimes becomes absorbed in a picture book and looks at it for a long time.
 195R) Has a hard time concentrating on an activity when there are distracting noises.
- R) Has trouble concentrating when listening to a story.
 R) When watching TV, is easily distracted by other noises or movements.
 R) Is distracted from her/his projects when you enter the room.
 R) Often shifts rapidly from one activity to another.
 R) Will ignore others when playing with an interesting toy.

Impulsivity (IM)

My Child:

- 13) Usually rushes into an activity without thinking about it.
- 26) Sometimes interrupts others when they are speaking.
- 46) Decides what s/he wants very quickly and goes after it.
- 59) Often rushes into new situations.
- 71R) Takes a long time in approaching new situations.
- 79R) Usually stops and thinks things over before deciding to do something.
- 90R) Is slow and unhurried in deciding what to do next.
- 104) Tends to say the first think that comes to mind, without stopping to think about it.
- 114) When eager to go outside, sometimes rushes out without putting on the right clothes.
- 137R) Approaches slowly places where s/he might hurt her/himself
- 155) When s/he sees a toy or game s/he wants, is eager to have it right then.
- 169) Is among the last children to try out a new activity.
- 183R) Is “slow to warm up” to others.

Inhibitory Control (IC)

My Child:

- 4) Can lower his/her voice when asked to do so.
- 20) Is good at games like “Simon Says,” “Mother, May I?” and “Red Light, Green Light.”
- 32R) Has a hard time following instructions.
- 63) Prepares for trips and outings by planning things s/he will need.
- 75) Can wait before entering into new activities if s/he is asked to.
- 93R) Has difficulty waiting in line for something.
- 108R) Has trouble sitting still when s/he is told to (at movies, church, etc.).
- 116) Is able to resist laughing or smiling when it isn’t appropriate.
- 136) Is good at following instructions.
- 147) Approaches places s/he has been told are dangerous slowly and cautiously.
- 162R) Is not very careful and cautious in crossing the streets.
- 168) Can easily stop an activity when s/he is told “no.”
- 185) Is usually able to resist temptation when told s/he is not supposed to do something.

Appendix I: Correlations between Phase 3 Demographic Characteristics and Attentional and Self-Regulatory Difficulties

CB Group ($n = 37-41$)

| | Momage | Momed | Dadage | Daded | Income |
|-------|--------|-------|--------|-------|--------|
| CBCLp | -.05 | .05 | .15 | -.03 | -.02 |
| CBCLt | -.22 | -.07 | .05 | -.29 | .04 |
| CBQAL | -.10 | -.26 | -.31 | -.41* | -.24 |
| CBQAF | .15 | .08 | -.19 | .24 | .14 |
| CBQIM | .20 | -.37* | -.19 | -.24 | -.20 |
| CBQIC | .11 | .16 | -.07 | .16 | .09 |

EA Group ($n = 18-25$)

| | Momage | Momed | Dadage | Daded | Income |
|-------|--------|-------|--------|-------|--------|
| CBCLp | -.21 | -.04 | -.02 | -.32 | -.22 |
| CBCLt | -.30 | -.11 | -.17 | -.42 | .22 |
| CBQAL | -.11 | .03 | .01 | -.26 | .21 |
| CBQAF | .27 | -.03 | -.04 | .28 | -.07 |
| CBQIM | -.25 | .04 | .03 | -.11 | .23 |
| CBQIC | .13 | -.34 | -.03 | .49* | .04 |

Note. CBCLp= Child Behaviour Checklist parent report form attention scale; CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Child Behaviour Questionnaire- activity level scale; CBQAF=Children's Behavior Questionnaire attentional focusing; CBQIM= Children's Behaviour Questionnaire impulsivity; CBQIC= Children' Behaviour Questionnaire inhibitory control; Momage = Mother's age in years at time target child was assessed; Momed = mother's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school; Dadage = Father's age in years at time target child was assessed; Daded = father's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school; Income = gross annual income with 1 = less than \$20,000, 2 = \$21-30,000, 3 = \$31-40,000, 4 = 41,000-50,000, 5 = 51-60,000, 6 = 61,000-70,000, 7 = \$71,000-80,000, 8 = 81,000-90,000, 9 = 91,000, 10 = above \$100,000.

* $p < .05$.

Appendix J: Correlations Between Measures of Attentional and Self-Regulatory Difficulties in Phase 3

| RO group | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|
| | CBCLp | CBCLt | CBQAL | CBQAF | CBQIM | CBQIC |
| CBCLp | - | .66** | .40* | -.77** | .64** | -.81** |
| CBCLt | .66** | - | .53** | -.62** | .66** | -.73** |
| CBQAL | .40* | .53** | - | -.55** | .68** | -.73** |
| CBQAF | -.77** | -.62** | -.55** | - | -.73** | .88** |
| CBQIM | .64** | .66** | .68** | -.73** | - | -.85** |
| CBQIC | -.81** | -.73** | -.73** | .88** | -.85** | - |

| CB group | | | | | | |
|----------|--------|-------|--------|--------|-------|--------|
| | CBCLp | CBCLt | CBQAL | CBQAF | CBQIM | CBQIC |
| CBCLp | - | .25 | .24 | -.65** | .32 | -.78** |
| CBCLt | .25 | - | .31 | -.28 | .07 | -.34 |
| CBQAL | .24 | .31 | - | -.43* | .65** | -.51** |
| CBQAF | -.65** | -.28 | -.43* | - | -.38* | .71** |
| CBQIM | .32 | .07 | .65** | -.38* | - | -.53** |
| CBQIC | -.78** | -.34 | -.51** | .71** | -.53* | - |

| EA group | CBCLp | CBCLt | CBQAL | CBQAF | CBQIM | CBQIC |
|----------|--------|--------|-------|--------|-------|--------|
| CBCLp | - | .65** | -.03 | -.69** | -.06 | -.80** |
| CBCLt | .65** | - | .23 | -.65 | .16 | -.70** |
| CBQAL | -.03 | .23 | - | -.39 | .40 | -.32 |
| CBQAF | -.69** | -.65** | -.39 | - | -.36 | .82** |
| CBQIM | -.10 | .16 | .40 | -.36 | - | -.21 |
| CBQIC | -.80** | -.70** | -.32 | .82** | -.21 | - |

Note. CBCLp= Child Behaviour Checklist parent report form attention scale;
 CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Child
 Behaviour Questionnaire- activity level scale; CBQAF=Children's Behavior
 Questionnaire attentional focusing scale; CBQIM= Children's Behaviour Questionnaire
 impulsivity scale; CBQIC= Children's Behaviour Questionnaire inhibitory control scale.
 *p <.05 **p<.01

Appendix K: Stability of Attentional and Self-Regulatory Difficulties from Phase 2 to Phase 3

CB Group:

| | CBCLp2 | CBCLt2 | PBQp | PBQt |
|-------|--------|--------|--------|------|
| CBCLp | .54** | -.00 | .38* | -.10 |
| CBCLt | -.14 | .19 | .38* | .44* |
| CBQAL | .02 | .11 | .35 | .12 |
| CBQAF | -.54** | -.21 | -.45** | -.11 |
| CBQIC | -.40* | -.07 | -.31 | .01 |
| CBCIM | .11 | -.10 | .04 | -.10 |

EA group:

| | CBCLp2 | CBCLt2 | PBQp | PBQt |
|-------|--------|--------|--------|--------|
| CBCLp | .70** | .75** | .61** | .61* |
| CBCLt | .53* | .66* | .49* | .34 |
| CBQAL | -.11 | .32 | .40 | .46 |
| CBQAF | -.37 | -.70** | -.53** | -.72** |
| CBQIC | -.49* | -.63* | -.63** | -.73* |
| CBCIM | .10 | .10 | .13 | .10 |

Note: CBCLpph2=Child Behaviour Checklist parent report form attention scale Phase 2, PBQp= parent Phase 2 hyperactive/distractible scale; PBQt= teacher Phase 2 hyperactive/distractible scale; CBCLp= Child Behaviour Checklist parent report form attention scale; CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Children's Behaviour Questionnaire –activity level scale; CBQAF=Children's

Behavior Questionnaire attentional focusing; CBQIM= Children's Behaviour
Questionnaire impulsivity; CBQIC= Children' Behaviour Questionnaire inhibitory
control.

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

Appendix L: Correlation Between the Home Environment at Phase 2 and Attentional and Self-Regulatory Difficulties at Phase 3

CB group:

| Attentional abilities | Home environment |
|-----------------------|------------------|
| CBCLp | -.34* |
| CBCLt | -.12 |
| CBQAL | -.41* |
| CBQAF | .38* |
| CBQIM | -.31 |
| CBQIC | .37* |

EA group

| Attentional abilities | Home environment |
|-----------------------|------------------|
| CBCLp | -.32 |
| CBCLt | -.36 |
| CBQAL | -.66** |
| CBQAF | .40 |
| CBQIM | -.37 |
| CBQIC | .42 |

Note: CBCLp= Parent report of the Child Behaviour Checklist, attention abilities scale;
 CBCLt = Teacher report of the Child Behaviour Questionnaire- attention abilities scale;

CBQAL= Children's Behaviour Checklist –activity level scale; CBQAF = Child behaviour Questionnaire- attentional shifting scale, CBQIM = Child Behaviour Questionnaire- impulsivity scale; CBQIC = Child Behaviour Checklist- inhibitory control scale. Home environment = Home Observation for Measurement of the Environment Inventory in Phase 2.

*p < .05 **p < .01

Appendix M: Phase 3 Mean Scores and Standard Deviations of Phase 3 Attentional and
Self-Regulatory Difficulties and Phase 2 Security and Insecurity

| CB group | SECURE | | INSECURE | |
|-------------------------|----------|-----------|----------|-----------|
| | (n = 21) | | (n = 12) | |
| Attention/hyperactivity | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> |
| CBCLp | 1.64 | 2.70 | 2.64 | 3.05 |
| CBCLt | 3.19 | 3.94 | 2.58 | 3.79 |
| CBQAL | 49.90 | 8.97 | 55.08 | 9.31 |
| CBQAF | 46.14 | 5.98 | 41.08 | 11.01 |
| CBQIM | 53.48 | 11.10 | 57.30 | 7.58 |
| CBQIC | 70.56 | 8.67 | 66.17 | 15.25 |

| EA group | SECURE | | INSECURE | |
|-------------------------|----------|-----------|----------|-----------|
| | (n = 10) | | (n = 21) | |
| Attention/hyperactivity | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> |
| CBCLp | 3.63 | 4.16 | 3.80 | 4.71 |
| CBCLt | 4.33 | 5.37 | 5.00 | 3.83 |
| CBQAL | 51.80 | 11.85 | 60.50 | 2.08 |
| CBQAF | 39.07 | 11.21 | 40.20 | 10.03 |
| CBQIM | 53.53 | 8.18 | 56.20 | 12.74 |
| CBQIC | 62.30 | 12.20 | 62.00 | 13.17 |

Note: CBCLp= Child Behaviour Checklist parent form, CBCLt= Child Behaviour Checklist teacher form, CBQAL= Child Behaviour Questionnaire- activity level scale, CBQAF= Child Behaviour Questionnaire- attentional focusing scale, CBQIM= Child Behaviour Questionnaire- Impulsivity scale, CBQIC= Child Behaviour Questionnaire- Inhibitory control scale

TABLES

Table 1: Mean Scores and Standard Deviations for Demographic Characteristics of All Groups

| | RO ^a | | | CB ^b | | | EA ^c | | |
|---------------------|-------------------|-------|----|---------------------|-------|----|-----------------------|------|----|
| | M | SD | N | M | SD | N | M | SD | N |
| Time in Institution | 22.67 | 13.40 | 35 | - | - | - | 2.67 | 1.15 | 4 |
| Age at Adoption | 23.97 | 14.86 | 35 | - | - | - | 2.59 | 1.42 | 17 |
| Age at Assessment | 127.58 | 12.84 | 35 | 127.00 | 12.63 | 42 | 119.65 ^{a,b} | 2.40 | 23 |
| Mother's educ | 4.26 | 1.04 | 35 | 4.30 | .91 | 40 | 4.63 | .82 | 24 |
| Father's educ | 4.28 | 1.42 | 32 | 4.51 | 1.07 | 39 | 4.67 | 1.09 | 24 |
| Mother's age | 44.2 ^c | 6.13 | 35 | 43.1 ^{a,c} | 4.54 | 42 | 47.0 | 6.44 | 25 |
| Father's age | 46.3 ^c | 6.23 | 33 | 44.8 ^{a,c} | 4.89 | 41 | 48.6 | 6.06 | 25 |
| Income | 6.03 | 2.46 | 35 | 6.88 | 2.24 | 40 | 6.67 | 2.62 | 24 |
| Mother's employment | | | | | | | | | |
| No. home full-time | 13 | | | 11 | | | 8 | | |
| Employed part-time | 9 | | | 16 | | | 9 | | |
| Employed full-time | 15 | | | 13 | | | 7 | | |

Note:

Time in institution = time children spent in institutions in months; Age at adoption = age in months; Age at assessment = age in months; Mother's educ = mother's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school. Father's educ = father's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school. Mother's age in years at time target child was assessed; Father's age in years at time target child was assessed. Income = gross annual income with 1 = less than \$20,000, 2 = \$21-30,000, 3 = \$31-40,000, 4 = 41,000-50,000, 5 = 51-60,000, 6 = 61,000-70,000, 7 = \$71,000-80,000, 8 = 81,000-90,000, 9 = 91,000, 10 = above \$100,000.

^{a, b, c,} indicate means that differ significantly ($p < .05$) from one another.

Table 2: Correlations Between Phase 3 Demographic Characteristics and Attentional and Self-Regulatory Difficulties

RO Group (n = 21-36)

| | Momage | Momed | Dadage | Daded | Income |
|-------|--------|-------|--------|-------|--------|
| CBCLp | -.31 | .10 | -.41* | -.06 | -.13 |
| CBCLt | -.03 | .10 | -.06 | .01 | -.11 |
| CBQAL | -.10 | .22 | -.30 | .03 | -.09 |
| CBQAF | .31 | -.01 | .49** | .19 | .10 |
| CBQIM | -.13 | .15 | -.24 | -.04 | -.07 |
| CBQIC | .33 | -.14 | .41 | .05 | .50* |

Note. CBCLp= Child Behaviour Checklist parent report form attention scale; CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Children's Behaviour Checklist –activity level scale; CBQAF=Children's Behavior Questionnaire attentional focusing; CBQIM= Children's Behaviour Questionnaire impulsivity; CBQIC= Children' Behaviour Questionnaire inhibitory control; Momage = Mother's age in years at time target child was assessed; Momed = mother's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school; Dadage = Father's age in years at time target child was assessed; Daded = father's education level with 1 = elementary school, 2 = some high school, 3 = high school completion, 4 = vocational or some college/university, 5 = college or university graduate, 6 = graduate or professional school; Income = gross annual income with 1 = less than \$20,000, 2 = \$21-30,000, 3 = \$31-40,000, 4 = 41,000-50,000, 5 = 51-60,000, 6 = 61,000-70,000, 7 = \$71,000-80,000, 8 = 81,000-90,000, 9 = 91,000, 10 = above \$100,000.

*p <.05 **p < .10.

Table 3: Gender Differences on all Measures of Attentional and Self-Regulatory Difficulties

| Measures | | RO group | | | CB group | | | EA group | | |
|----------|---------|----------|----------|-----------|----------|----------|-----------|----------|----------|-----------|
| | | n | <u>M</u> | <u>SD</u> | n | <u>M</u> | <u>SD</u> | n | <u>M</u> | <u>SD</u> |
| CBCLp | Males | 17 | 7.59 | 5.43 | 18 | 2.11 | 2.78 | 11 | 5.82 | 4.55 |
| | Females | 18 | 7.89 | 5.52 | 22 | 1.82 | 2.78 | 13 | 2.62 | 5.52 |
| CBQAL | Males | 16 | 58.88 | 11.45 | 18 | 53.78 | 11.24 | 10 | 55.20 | 13.90 |
| | Females | 17 | 56.47 | 12.40 | 18 | 50.72 | 6.80 | 12 | 52.25 | 6.62 |
| CBQAF | Males | 16 | 34.31 | 11.09 | 17 | 44.76 | 9.74 | 10 | 36.5 | 13.3 |
| | Females | 18 | 31.33 | 11.89 | 20 | 43.8 | 7.41 | 13 | 41.54 | 11.97 |
| CBQIM | Males | 15 | 63.45 | 12.05 | 18 | 53.56 | 10.36 | 10 | 51.6 | 6.47 |
| | Females | 18 | 55.17 | 13.84 | 20 | 55.9 | 9.23 | 13 | 55 | 10.38 |
| CBQIC | Males | 8 | 53.88 | 25.11 | 16 | 67.62 | 13.05 | 8 | 56.25 | 10.97 |
| | Females | 13 | 54.62 | 15.29 | 18 | 69.83 | 10.30 | 10 | 66.8 | 10.34 |
| CBCLt | Male | 12 | 7.00 | 4.53 | 16 | 4.88*** | 4.69 | 11 | 6.36 | 5.16 |
| | Female | 17 | 5.47 | 4.47 | 21 | 1 | 1.27 | 12 | 2.67 | 2.73 |

Note: CBCLp= Child Behaviour Checklist parent form; CBCLt = Child Behaviour Checklist teacher report form CBQAL= Child Behaviour Questionnaire-activity level scale; CBQAF= Child Behaviour Questionnaire-attentional shifting scale; CBQIM= Child Behaviour Questionnaire- impulsivity scale; CBQIC= Child Behaviour Questionnaire-inhibitory control.

*** = $p < .001$

Table 4: Attentional and Self-Regulatory scores at Phase 3 Across Groups

| | RO ^a | | CB ^b | | EA ^c | |
|-------|---------------------|-------|-----------------|-------|--------------------|-------|
| | M | SD | M | SD | M | SD |
| CBCLp | 7.74 ^{bc} | 5.4 | 1.95 | 2.75 | 4.08 ^b | 5.24 |
| CBCLt | 6.10 ^{bc} | 4.48 | 2.68 | 3.720 | 4.43 ^b | 4.756 |
| CBQAL | 57.64 | 11.82 | 52.25 | 9.29 | 53.59 | 10.40 |
| CBQAF | 32.74 ^{bc} | 11.44 | 44.24 | 8.45 | 39.34 | 12.53 |
| CBQIM | 64.39 ^{bc} | 12.89 | 54.79 | 9.71 | 53.52 | 8.88 |
| CBQIC | 54.33 ^{bc} | 19 | 68.79 | 11.55 | 62.11 ^b | 12.62 |

Note: CBCLp= Child Behaviour Checklist parent report form attention scale;
 CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Child
 Behaviour Questionnaire- activity level scale; CBQAF=Children's Behavior
 Questionnaire attentional focusing; CBQIM= Children's Behaviour Questionnaire
 impulsivity; CBQIC= Children' Behaviour Questionnaire inhibitory control.
 a,b,c,d indicate means that differ significantly ($p<.05$) from one another

Table 5: Percentage of Children in the Borderline and Clinical Ranges on the Parent Form of the CBCL

| | RO | | CB | | EA | |
|-----------|------------|------------|------------|----------|------------|----------|
| | Borderline | Clinical | Borderline | Clinical | Borderline | Clinical |
| Attention | 8.3% (3) | 32.7% (12) | 2.4% (1) | 2.4% (1) | 4% (1) | 12% (3) |

Note:

Attention = Attention scale on the Parent Form of the Child Behaviour Checklist

Borderline = A t-score of 67 to 70;

Clinical = A t-score of over 70.

Table 6: Percentage of Children in the Borderline and Clinical Ranges on the Teacher Form of the CBCL

| | RO | | CB | | EA | |
|-----------|------------|-----------|------------|----------|------------|----------|
| | Borderline | Clinical | Borderline | Clinical | Borderline | Clinical |
| Attention | 5.6% (2) | 22.4% (8) | 9.6% (4) | 2.4% (1) | 4% (1) | 12% (3) |

Note:

Attention = Attention scale on the Teacher Form of the Child Behaviour Checklist

Borderline = A t-score of 67 to 70;

Clinical = A t-score of over 70.

Table 7: Stability of Attentional and Self-Regulatory Difficulties From Phase 2 to Phase 3 for the RO Group

| | CBCLp Ph2 | PBQp | PBQt | CBCLtPh2 |
|-------|-----------|--------|--------|----------|
| CBCLp | .76** | .67** | .49** | .55** |
| CBCLt | .39** | .56** | .51** | .48** |
| CBQAL | .06 | .36 | .30 | .30 |
| CBQAF | -.59** | -.62** | -.48** | -.48** |
| CBQIM | .42* | .36** | .23* | -.43** |
| CBQIC | -.52** | -.58** | -.44** | .19 |

Note: CBCLpPh2=Child Behaviour Checklist parent report form attention scale Phase 2, PBQp= parent Phase 2 hyperactive/distractible scale; PBQt= teacher Phase 2 hyperactive/distractible scale; CBCLp= Child Behaviour Checklist parent report form attention scale; CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Child Behaviour Questionnaire- activity level scale; CBQAF=Children's Behavior Questionnaire attentional focusing; CBQIM= Children's Behaviour Questionnaire impulsivity; CBQIC= Children' Behaviour Questionnaire inhibitory control.

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

Table 8: Variables Measured at Phase 1 and 2 that Predict Attention and Self-Regulatory Difficulties at Phase 3

| | Denver (Ph1) | Totinst |
|-------|--------------|---------|
| CBCLp | .38* | .38* |
| CBCLt | .28 | .27 |
| CBQAL | .04 | -.09 |
| CBQAF | -.28 | -.13 |
| CBQIM | .14 | -.06 |
| CBQIC | -.30 | .01 |

Note: CBCLp= Child Behaviour Checklist parent report form attention scale; CBCLt=Child Behaviour Checklist teacher report form attention scale; CBQAL= Child Behaviour Questionnaire- activity level scale; CBQAF=Children's Behavior Questionnaire attentional focusing; CBQIM= Children's Behaviour Questionnaire impulsivity; CBQIC= Children's Behaviour Questionnaire inhibitory control; Denver = Development of the children at Phase 1 as measured by the Denver; TOTINST= Total time children spent in institutions.

* $p < .05$.

Table 9: Correlation Between the Home Environment at Phase 2 and Attentional and Self-Regulatory Difficulties for the RO group at Phase 3

| Attentional abilities | Home environment |
|-----------------------|------------------|
| CBCLp | -.45** |
| CBCLt | -.56** |
| CBQAL | -.24 |
| CBQAF | .38* |
| CBQIM | -.28 |
| CBQIC | .36 |

Note: CBCLp= Parent report of the Child Behaviour Checklist, attention abilities scale; CBCLt = Teacher report of the Child Behaviour Questionnaire- attention abilities scale; CBQAL= Child Behaviour Questionnaire- activity level scale; CBQAF = Child behaviour Questionnaire- attentional shifting scale, CBQIM = Child Behaviour Questionnaire- impulsivity scale; CBQIC = Child Behaviour Checklist- inhibitory control scale. Home environment = Home Observation for Measurement of the Environment Inventory in Phase 2.

*p < .05 **p < .01

Table 10: Phase 3 Mean Scores and Standard Deviations of Phase 3 Attentional and Self-Regulatory Difficulties and Phase 2 Security and Insecurity for the RO group

| Attention/self-regulation | SECURE (n = 10) | | INSECURE (n = 21) | |
|---------------------------|--------------------|-----------|----------------------|-----------|
| | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> |
| CBCLp | 6.69 | 5.39 | 7.68 | 5.39 |
| CBCLt | 5.08 | 4.06 | 6.80 | 5.02 |
| CBQAL | 56.00 | 13.52 | 57.56 | 11.57 |
| CBQAF | 38.15 | 11.33 | 31.89 | 8.95 |
| CBQIM | 60.67 | 13.84 | 64.67 | 12.05 |
| CBQIC | 63.33 | 15.86 | 49.67 | 21.68 |

Note: CBCLp= Child Behaviour Checklist parent form, CBCLt= Child Behaviour Checklist teacher form, CBQAL= Child Behaviour Questionnaire- activity level scale, CBQAF= Child Behaviour Questionnaire- attentional focusing scale, CBQIM= Child Behaviour Questionnaire- Impulsivity scale, CBQIC= Child Behaviour Questionnaire- Inhibitory control scale

Table 11: Regression Analyses Using Time in Institution, Prescreening Development at Phase 1 and the Home Environment at Phase 2 and Indices of Attentional and Self-Regulatory Difficulties at Phase 3

| | T1&2 Significant Predictors | F-Change | R ² Change | Cum. R ² |
|---------------------------------|-----------------------------|----------|-----------------------|---------------------|
| T3 Dependent Variables CBCLp | Totinst | 5.41** | .17 | .17 |
| | Denver | 1.78 | .05 | .22 |
| | Home | 3.97* | .11 | .33 |
| CBCLt | Totinst | 1.28 | .06 | .06 |
| | Denver | .00 | .00 | .06 |
| | Home | 8.17*** | .27 | .33 |
| CBQAF | Totinst | .01 | .00 | .00 |
| | Denver | 1.34 | .05 | .05 |
| | Home | 4.9** | .16 | .21 |

Note. CBCLp= Parent report form of the Child Behaviour Checklist, attention abilities scale; CBCLt = Teacher report form of the Child Behaviour Checklist, attention abilities scale; CBQAF = Child behaviour questionnaire attentional shifting scale; Totinst= total time in institution; Denver = Prescreening Development Questionnaire at Phase 1; Home = the Home environment measured at Phase 2.

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

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