

**The Impact of Early Adversity on
Mental Health in Young Adulthood:
Findings from the Romanian Adoption Project**

by
Zahra Mozaffari

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Approval

Name: Zahra Mozaffari

Degree: Master of Arts

Title: The Impact of Early Adversity on Mental Health in Young Adulthood: Findings from Romanian Adoption Project

Examining Committee: Chair: Allan MacKinnon
Associate Professor

Lucy Le Mare
Senior Supervisor
Professor

Philip Winne
Supervisor
Professor

Paul Neufeld
External Examiner
Associate Professor

Date Defended/Approved: April 26, 2018

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Abstract

This longitudinal study is a part of the fifth phase of the Romanian Adoption Project and explored the impact of early adversity on mental health and behaviour problems in adolescence and early adulthood in a group of Romanian adoptees (N= 47; 22 males; mean age at assessment= 26.77) who were adopted to Canada in 1990/91 and have been followed in this project since early childhood. Behaviour problems in adulthood were assessed with parent reports on the Adult Behaviour Checklists (ABCL, Achenbach, 1997). In adolescence behaviour problems were assessed with the parent report form of the Child Behaviour Checklist (Achenbach, 1991). Mental health problems both in adolescence and adulthood were assessed using parents' responses to 12 questions asking if adoptees had received any of a list of mental health diagnosis. The effect of duration of deprivation was examined by dividing adoptees into two groups based on time they spent in adversity pre-adoption; those who spent less than 4 months in adversity, and those who spent more than 8 months in adversity. Statistical analyses showed that in adolescence 34% of the sample had at least one mental health diagnosis and this number increased to 50% in adulthood. Levels of behaviour problems were relatively stable from adolescence to adulthood. Females had higher levels of Internalizing behaviour problems than males in adulthood, but no other gender differences were found. Adolescents with more behaviour problems were more likely to have a mental health diagnosis in young adulthood. Also, adoptees with more than one diagnosis in adulthood had more behaviour problems both concurrently and in adolescence than adoptees with one or no mental health diagnoses. Longer experience of early adversity prior adoption was not associated with either more mental health diagnoses or more behaviour problems at either 16.5 or 26.5 years of age.

Keywords: Adoption; extreme early adversity; post-intuition; behaviour problems; mental health disorders; longitudinal study

To mom, dad, and madarjooon.

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Chapter 1. Introduction

This thesis is based on data gathered from the fifth phase of a longitudinal study initiated in the early 1990s investigating the development of children adopted by Canadian families from excessively depriving Romanian orphanages (see Ames, 1997). These children have been followed from shortly after their adoptions in early childhood to early adulthood. At the outset, there were two groups of adoptees: a) the late adopted group consisted of children who were abandoned at birth and adopted by Canadian families from institutions in Romania at 8 months of age or older; and b) the early adopted group included Romanian children whom were adopted by Canadian families from orphanages, hospitals, or their, birth families prior to 4 months of age. Dr. Elinor Ames (1992), who pioneered the Romanian Adoption Project (RAP), described the conditions in Romanian institutions as extremely depriving. The children were underweight, ill, under-stimulated, and received no individual attention beyond minimal routine physical care. Since their adoptions, information about these children has been gathered five times: at 11 months post-adoption (Time 1), and at 4 ½ (Time 2), 10 ½ (Time 3), 16 ½ (Time 4), and 26 years of age (Time 5). At each of the first three phases of the study (early to middle childhood), the Late Adopted (LA) group was compared to two groups: non-adopted, non-institutionalized Canadian-born (CB) children and the Early Adopted (EA) group. Participants were assessed in the domains of attachment, IQ, physical growth, school achievement, and behaviour problems. Results indicated the LA group consistently displayed the poorest outcomes across all domains, followed by the EA group and then the CB group who experienced the most positive outcomes.

At Time 4 (adolescence), among other measures, adoptees' mental health status, use of medications for mental health problems, and behaviour problems were assessed. These variables were examined in association with duration of deprivation and gender. Findings at Time 4 indicated that 40% of the sample had at least one mental health diagnosis and those who had more behaviour problems in childhood were at greater risk of having a mental health diagnosis in adolescence. Gender did not relate to diagnosis rate (Le Mare & Audet, under review).

Findings from RAP studies from Time 1 to Time 4 are consistent with other studies of post-institutionalized children. Children reared in institutions tend to be developmentally

delayed at the time of adoption and experience elevated risk for a variety of challenges throughout childhood and adolescence including: insecure attachment (Juffer & van IJzendoorn, 2005; Rutter et al., 2007b; van den Dries, Juffer, van IJzendoorn, & Bakermans-Kranenburg, 2009), behaviour problems (Sonuga-Barke, Schlotz, & Kreppner, 2010; Tieman, van der Ende, & Verhulst, 2006a; & Verhulst, Althaus, & Versluis-den Bieman, 1990a), low IQ (Hodges & Tizard, 1989a; Van IJzendoorn, Juffer, & Poelhuis, 2005), difficulties in school (Hodges & Tizard, 1989b; Tieman et al., 2006b; Van IJzendoorn et al., 2005), and mental health issues (Miller, Fan, Christensen, Grotevant, & van Dulmen, 2000; Stevens et al., 2008; Rutter, Kreppner, et al., 2007c; & Tieman, van der Ende, & Verhulst, 2005).

The mental health and social adjustment of international adoptees in adolescence and adulthood has become an important issue in North America as many international adoptees are now reaching this age in their host countries. Yearly, over 30,000 children are internationally adopted throughout the world by non-blood-related families (Selman, 2002). For nearly two decades, almost 2000 international children have been adopted by Canadian families each year (Statistics Canada, 2010) and very little is known about their behavioural and mental health outcomes in emerging adulthood. Most recently, RAP participants were assessed for a fifth time when they were on average 26 years old, making it one of the few studies to follow early-deprived international adoptees into adulthood.

The present investigation focuses on the Romanian adoptees' mental health as well as their behaviour problems in early adulthood. Specifically, the purposes of this study are to: 1) evaluate the prevalence of mental disorders in the longitudinal sample of young adult Romanian adoptees and compare it to the prevalence of mental disorders seen in their adolescence; 2) evaluate longitudinal change in levels of behaviour problems from adolescence to adulthood; 3) analyze associations between behaviour problems and mental health in adolescence (Time 4) and mental health problems in early adulthood (Time 5); and 4) examine the association of duration of deprivation experienced pre-adoption with mental health and behaviour problems in adulthood (Time 5).

In the literature review that follows, I first introduce the notion of institutional care and early adversity. Then, I discuss findings regarding behaviour problems and mental health status in international adoptees. Findings concerning the effect of duration of

deprivation on each of behaviour problems and mental health problems are also presented. This is followed by a discussion of associations between behaviour problems and mental health problems with a link to experience of extreme early adversity.

Chapter 2. Literature Review

2.1. The Impact of Childhood Adversity

2.1.1. Findings from general population

Evidence from epidemiological studies in the general population shows that childhood adversity is associated with the development of mental health problems, not only in childhood, but also in adolescence and adulthood. Specifically, individuals who have been exposed to adverse childhood experiences are at elevated risk of developing a wide range of mental disorders, including mood, anxiety, behaviour, and substance use disorders (Cohen, Brown, Smailes, 2001; Green et al., 2010; Kessler, Davis, & Kendler, 1997; McLaughlin et al., 2012). These findings suggest that children's cognitive, physical, and social-emotional development is affected by the relative adversity and deprivation they experienced in infancy and early childhood. Furthermore, it has been proposed that adversity even before birth can affect one's later mental health. Some population-based findings suggest that early exposure to environmental stress confers risk of psychosis even when this stress is experienced as an embryo. In a prospective cohort study, risk of psychosis in adulthood was raised if the mother, while pregnant, reported that the child was unwanted (Myhrman, Rantakallio, Isohanni, Jones, & Partanen, 1996).

2.1.2. Adversity associated with institutional care

Children raised in institutions often do not receive adequate physical or emotional care and typically experience what has been referred to as "structural neglect" that may include insufficient and unstable staffing patterns, inadequate social and emotional care and caregiver-child interactions, and minimal physical resources (van Ijzendoorn et al., 2011, p.8). Consequently, while in institutional care, children do not receive the type of environmental stimulation and nurturance that is required for healthy psychological, social-emotional, and physical development. Children in institutions typically show developmental delays, scoring on average 1 standard deviation below the expected level for the general population in physical, cognitive, and behavioural domains (Bakermans-Kranenburg et al., 2011). It is suggested that risks are higher for children who have been exposed either to longer institutional care or to very poor quality care (Rutter & Sonuga-

Barke, 2010). It is also reported that among international adoptees, children who experience multiple adversities are at higher risk for having mood disorders, anxiety disorders, or substance abuse in adulthood (van der Vegt et al., 2009). Moreover, the severity of behaviour problems and mental health issues has been found to be associated with the degree of abuse, neglect, and number of placements in early childhood (van der Vegt et al., 2009).

Gunnar (2001) classified residential institutions for children into three levels based on the quality of care they offer: 1) institutions with general deprivation of the child's nutritional, health, stimulation and relationship needs; 2) institutions characterized by acceptable health and nutritional support, but deprivation of stimulation and relationship needs of the child; and 3) institutions that meet all needs of the child except for long-term, stable relationships with consistent caregivers. van Ijzendoorn et al. (2011) suggested a fourth level of institution that offers what children need for healthy development, including stable and consistent caregiving, with children only being deprived of a regular family life embedded in a regular social environment. While quality of care varies across institutions, there is increasing recognition that any institutional rearing in early life, with the features of deprivation it typically entails, puts children at increased risk for various physical, intellectual, behavioural, and emotional difficulties in their development (Johnson & Nelson, 2000; MacLean, 2003).

Although it is difficult to generalize about all institutional care due to variability in the services and care they each provide, van Ijzendoorn et al. (2011) provided a narrative that captures what is typical and common among the heterogeneity in institutional care,

They reported that generally in residential care institutions:

- Group sizes tend to be large (typically 9–16 children per ward, although in extreme cases, the number may approach 70). The number of children per caregiver is large (approximately 8:1 to 31:1, although a few institutions have fewer children per caregiver).
- Groups tend to be homogeneous with respect to ages and disability status. Children are periodically “graduated” from one age group to another perhaps as many as two or three times in the first 2 or 3 years of life.
- Caregivers for any single child tend to change constantly because there may be a high staff turnover; caregivers may work long shifts (e.g., 24 hours) and be off 3 days; caregivers may not be consistently assigned to the same group; and caregivers may get up to 2 months' vacation. The result is that a child

may see anywhere from 50 to 100 different caregivers in the first 19 months of life.

- Other adults tend to come and go in children's lives, including medical and behavioural specialists, prospective adoptive parents, and volunteers who may visit for only a week or a few months.
- Caregivers typically receive little training, and the training they do receive is more focused on health issues than on social interaction. They spend the vast majority of their hours feeding, changing, bathing, cleaning children and the room, and preparing food rather than interacting with the children. Caregivers are overwhelmingly female, so children rarely see men.
- When caregivers perform their caregiving duties, it is likely to be in a business-like manner with little warmth, sensitivity, or responsiveness to individual children's emotional needs or exploratory initiatives. (van Ijzendoorn et al., 2011, p.10)

2.1.3. Institutional experience for Romanian children

Children adopted from Romanian orphanages in the early 1990s suffered from the severest form of institutional deprivation that could potentially affect all aspects of their development. After visiting Romanian orphanages in 1990, Ames described that the children spent a majority of the day in cribs and had very limited interactions with caregiver(s) or each other. The caregiver to child ratio for infants ranged from 1:10 to 1:20. Also, children's feeding, cleaning, and toileting were scheduled based on the caregiver's timing and needs, not the children's. Additionally, auditory and visual stimulation were reported to be almost absent (Ames & Carter, 1992). In brief, the orphanage environment was "bleak, nutrition, hygiene, and medical provisions were poor, and minimal routine care was provided" (Le Mare, Audet, & Kurytnik, 2007, p. 243). Based on what Ames and others have described, Romanian institutions at that time would be included in Gunnar's (2001) first level (global deprivation) and children in those institution suffered from extreme "structural neglect", placing them at high risk for later life behaviour and mental health problems.

2.2. Behaviour Problems

Findings from previous research show that experiencing early institutional rearing can have long lasting effects on one's behaviour in later life (see Juffer et al., 2011 for review). For instance, in a series of meta-analyses including 15,790 adoptees,

international adoptees who experienced severe institutional adversity and deprivation displayed more Externalizing behaviour problems than international adoptees who did not experience such form of deprivation (Juffer & Van IJzendoorn, 2005).

2.2.1. Childhood

Numerous studies have examined the behaviour problems of post-institutionalized children in childhood. Despite the majority of post institutionalized international adoptees falling within the normal range on measures of behaviour (Gunnar & Van Dulmen, 2007), many studies indicate they are at heightened risk for a range of behaviour problems when compared to non-adopted and non-institutionalized adopted peers (MacLean, 2003; Merz & McCall, 2010). For example, Tizard and colleagues conducted a pioneering longitudinal study of children who experienced institutional rearing for the first year of life and then were adopted or fostered in the United Kingdom. They assessed these children at ages 2, 4, 8, and 16 years. At age 8, teachers reported most of the post-institutionalized children displayed notable attention-seeking behaviour, restlessness, disobedience, and poor peer relationships (Tizard & Hodges, 1978). Likewise, Miller, Chan, Tirella and Perrin (2009) reported that among fifty 8-11 years old children adopted from orphanages in Eastern Europe, 50% scored in the clinical range for Total behaviour symptoms, 44% scored in the clinical range for Externalizing, and 14% for Internalizing symptoms. In another study, 273 international adoptees adopted from six countries into Spain were compared to their non-adopted classmates, first in 1995 and again in 2001 (Palacios, Sánchez-Sandoval, & Sánchez, as cited in Juffer et al., 2011; Palacios & Sánchez-Sandoval, 2005). At the first data collection – when children’s mean age was 7.5 years, although there were no differences found for preschool children, for older children, adoptees showed higher scores on Total behaviour problems and the anxious-fearful and antisocial subscales than non-adopted children (Palacios, Sánchez-Sandoval, & Sánchez, as cited in Juffer et al., 2011). Six years later, in the follow-up study, similar results were reported. Previously institutionalized children had more behavioural and emotional problems than the non-adopted age-matched group (Palacios & Sánchez-Sandoval, 2005). Likewise, in a longitudinal study conducted in the Netherlands (Verhulst et al. 1990a), international adoptees were followed from late childhood into adulthood. Adoptees were compared to the general population at four times: at late childhood, adolescence, young adulthood, and adulthood. Results from first assessments showed that in late

childhood, internationally adopted children displayed more Internalizing and Externalizing behaviour problems than non-adopted children with older children at higher risk than younger (Verhulst et al., 1990a; Versluis-den Bieman & Verhulst, 1995). The authors also reported that age at placement did not predict later behaviour problems, however, neglect, abuse and multiple placement before adoption increased the risk for later maladjustments (Verhulst, Althaus, & Versluis-den Bieman, 1990b, 1992). In another Dutch study, 160 internationally adopted children were followed from infancy into adolescence (Juffer, as cited in Juffer et al., 2011; Juffer & van IJzendoorn, 2009). These investigators compared adoptees to age-matched norms for non-adopted children and found that at the age of 7, adopted children showed statistically detectably more behaviour problems compared to non-adoptees (Stams, Juffer, Rispens, & Hoksbergen, 2000).

Based on their meta-analysis, Juffer and van IJzendoorn (2005) concluded that internationally adopted and non-adopted group differences in behaviour problems are actually relatively small. However, Hawk and McCall (2010) have argued that including the results of studies that differ in measurement of behaviour problems and sample characteristics in a meta-analysis may obscure or minimize some effects. Hawk and McCall reviewed 18 studies of internationally adopted children that all used a common measure of behaviour problems, the Child Behaviour Checklist (CBCL; Achenbach, 1991), and attended to several distinctions among samples (e.g., age at adoption, institutional experience, severity of early deprivation, and age at assessment) that may have affected results. Result showed that when internationally adopted children are younger, they have more Internalizing problems than non-adopted age-mates. When they become older (i.e., later in their adoptions), they have more Externalizing problems than non-adopted age-mates. Also, international adoptees were found to have more Internalizing and Externalizing problems than were found in mixed/non-institutionalized Internationally adopted samples.

These findings are consistent with findings from the RAP that indicated in childhood the LA group had more serious and higher rates of difficulties than either the EA or CB groups (Le Mare et al., 2007). Specifically, previous reports from Time 1 indicated that at 11 months after adoption, LA children exhibited statistically detectably more Internalizing and Total behaviour problems than both the EA and CB groups, which did not differ from each other. At Time 2 when adoptees were 4.5 years old, the LA group had higher rates of Externalizing problems, such as aggression and acting out than both

the EA and CB groups (Ames, 1977; Juffer et al., 2011; Le Mare et al., 2007). These differences remained at the later assessments (Juffer et al., 2011; Le Mare & Audet, 2014). At all phases of the RAP, the CBCL (Achenbach, 1991) was used for examining behaviour problems.

2.2.2. Adolescence and adulthood

Of the 18 studies reviewed by Hawk and McCall (2010), 12 were focused on children under the age of 10 years and only 3 focused on adolescents (3 other studies included participants ranging in age from early childhood to adolescence). In other words, most of what we know about the behaviour problems in PI adoptees is based on studies of children. In a follow up study, Hawk and McCall (2011) focused on post-institutionalized adoptees in childhood (6 to 11 years) and adolescence (12 to 18 years) and found a much higher rate of behaviour problems in the older group. However, these authors cautioned that because the study was cross-sectional, it could not be concluded that the findings demonstrated late-onset problems. Indeed, in a longitudinal study of Romanian adoptees, Sonuga-Barke et al. (2010) in the ERA project looked at the developmental trajectory of behaviour problems. They found little evidence for increases in behaviour problems across the ages of 6, 11, and 15 years but did find that at all ages the Romanian adoptees had higher levels of behaviour problems than the domestically adopted non-institutionalized comparison sample.

Some studies on international adoptees with experience of early adversity prior to adoption show that many adoptees display behavioural improvements in adolescence (Colvert et al., 2008; Hodges & Tizard, 1989a; Palacios & Sánchez-Sandoval, 2005; Stamset al., 2000). For example, Bagley (1991) conducted a study of the well-being of Canadian aboriginal, Caucasian, and intercountry adoptees who were living in Canada and compared them to a control group of non-adopted Caucasian Canadians. The sample of international adoptees consisted of 20 adolescents aged 13-17. The adolescents and their parents were interviewed about parent-child relationships and behaviour problems (rebellion, school truancy, running away from home, substance use, delinquency, sexual acting out). In another study, they completed a measure of suicidal ideation and behaviour (Ramsay & Bagley, 1985). Results from both studies showed that international adoptees did not exhibit more behaviour problems or report more suicidal thoughts or acts than non-adopted Caucasian adolescents. Likewise, the Leiden longitudinal study reported results

indicating that adolescent international adoptees exhibited fewer behaviour problems than when they were in childhood (Jaffari-Bimmel, Juffer, Van IJzendoorn, Bakermans-Kranenburg, & Mooijaart, 2006). A longitudinal analysis from the Rotterdam study suggested that from childhood into adolescence Externalizing behaviours decreased both in adoptees and the general population, but this decrease was smaller for the adoptees population. Rosenwald (1994) reported similar results in an Australian study in which she used parental reports on the CBCL to assess the adjustment of 67 12- to 16-year-old international adoptees. She compared the adopted group with a sample of 985 non-adopted adolescents from the Western Australian Child Health Survey. Forty-two of the 67 adolescent adoptees showed normal levels of behaviour problems.

However, other studies report not only persistence in behaviour problems into adolescence but also the appearance of new challenges (Hodges & Tizard, 1989b; Versluis-den Bieman & Verhulst, 1995). In most studies post-institutionalized adolescents are found to have more difficulties than comparison adolescents (Hodges & Tizard, 1989b; Wierzbicki, 1993). For instance. In a large cross-sectional study, Versluis-den Bieman and Verhulst, (1995) examined the prevalence of behavioural problems in 1538 adolescent international adoptees who were living in the Netherlands. Results from both parent and self-reports revealed statistically significant higher Total problem scores for adopted adolescents than those from the general population. According to self-reports, the behaviour problem rate was 40 percent among the adopted adolescents, while this number was about 10 percent in the non-adopted comparison group. This difference was found to be ten times larger for adopted boys among the adoptees as among the non-adoptees and the largest difference between the groups was for delinquent behaviour. Bimmel et al. (2003) conducted a meta-analysis reviewing ten studies that included over 2,000 internationally adopted adolescents and more than 14,000 non-adopted adolescents in the general population. Results showed a small but statistically detectable difference between the two groups indicating that adoptees exhibited more behaviour problems than non-adopted adolescents. These differences were larger when they included behaviour problems in the clinical range, suggesting that international adoptees in adolescence are at higher risk for extreme behaviour problems than non-adopted teens.

As concerns Romanian adoptees who experienced extreme adversity, the English Romanian Adoption (ERA) study team reported that in adolescence Romanian adoptees had statistically detectably higher levels of behaviour problems than the comparison group

(Sonuga-Barke et al., 2010). Behaviour problems in adolescence have also been examined in the RAP. Specifically, Le Mare and Audet (2014) found that among adolescents with a history of institutional deprivation, about a quarter to a third of the sample had clinically significant Internalizing, Externalizing, and Total behaviour problems.

2.2.3. Effect of duration of deprivation on later life behaviour problems

Length of deprivation before adoption has been found to be an important explanatory variable in several studies of post-institutionalized adopted children. Most longitudinal cohort studies of international adoptees suggest that duration of deprivation impacts the degree of risk for negative outcomes (Ames, 1997; O'Connor et al. & English Romanian Adoptees study team, 2000) and developmental trajectory of those problems (Beckett et al., 2006).

Regarding the relationship between behaviour problems and duration of deprivation, some studies found a linear relationship between the two (e.g. Groza, 1999). In the case of Romanian adoptees who have participated in the RAP, when they were in early childhood (Time 1 and Time 2) length of stay in institutional care for adopted children was positively associated with behaviour problems (Fisher et al., 1997). Other researchers have found an association between duration of deprivation and outcomes such that there is a step-like increase in risk for behaviour problems after a certain cutoff-point for age at adoption (e.g. Hoksbergen, Rijk, Van Dijkum, & Ter Laak, 2004; Gunnar et al., 2007; Krenpper et al., 2007). The ERA study group has consistently found that 6 months institutional experience prior to adoption is an important threshold (Sonuga-Barke et al., 2010; Sonuga-Barke et al., 2017; Stevens et al., 2008). Risk for negative outcomes – such as impairment in social and cognitive functioning – jumped for those who spent more than 6 months in deprivation pre-adoption. Children with less than 6 months experience of deprivation were at no greater risk than domestic adoptees who experienced no deprivation (Sonuga-Barke et al., 2017). Similarly, in the early phases of the RAP when comparisons were made among groups, LA children with 8 months or more deprivation were at much greater risk of negative outcomes and had the poorest outcomes – such as insecure attachment, lower IQ, more inattention/hyperactivity, and more behaviour problems – than those with less than 4 months (EA group) pre-adoption deprivation. In most areas, the EA group and Canadian born comparison group with no

history of adversity did not differ from one another (Audet & Le Mare, 2011; Le Mare et al., 2001; Le Mare & Audet, 2006). Findings from late childhood (Time 3) – when Romanian adoptees were 10.5– also revealed that the LA group statistically detectably differed from the EA and CB groups in both Externalizing and Total behaviour problems using the CBCL. However, no significant result was found for Internalizing behaviour problems between the groups at Time 3 (Audet, Kurytnik, & Le Mare, 2006). Marcovich et al. (1997) in a study of Romanian-Canadian adoptees, examined behaviour problems of 56 Romanian children adopted in Ontario using the CBCL. They reported that those children who spent less than 6 months in institutional care had statistically detectable less behaviour problems than those who stayed in institutional care for more than 6 months.

Such findings suggest that Romanian adoptees who experienced longer duration of deprivation will be at higher risk for behavioural and mental health problems in adulthood than those who experienced shorter durations of deprivation prior to adoption.

2.3. Mental Health Problems

While numerous studies have documented increased risk for behaviour problems in post-institutionalized adoptees, far fewer have examined whether this risk translates into increased risk for mental health diagnoses. Among the few studies that have reported on the mental health of international adoptees, most have found that international adoptees are at higher risk for mental health problems than non-adoptees (Borczykowski, Hjren, Lindblad, & Vinnerljung, 2006; Hjren, Lindblad, & Vinnerljung, 2002; Lindblad, Hejern, & Vinnerljung, 2003; Storsbergen, Juffer, van Son, & Hart, 2010). For instance, in a large sample Swedish study, Hjren et al. (2002) compared international adoptees, immigrants, and a general population of Swedish-born residents. They found that international adoptees were three to four times more likely to have serious mental health issues which resulted in a suicide attempt or psychiatric disorder compared to same age immigrants or the general population of adults in Swedish society after controlling for socioeconomic status of the family (Hjren et al., 2002). Also in Sweden, based on “national health discharge and cause of death registers”, Borczykowski et al. (2006, p.96), reported higher risk for suicide attempts and suicide death among adult international adoptees than among either domestically adopted adults or the Swedish-born general population. Moreover, among these groups, the relative risks were higher for women than men. In

another Swedish cohort study, Lindblad et al. (2003) examined the prevalence of mental health problems in international adoptees and the same age general population. They concluded that international adoptees were up to three times more likely to develop psychiatric problems compared to the same age general Swedish-born population. Similarly, in the Rotterdam study, Tieman et al. (2005) found that internationally adopted young adults from a range of countries of origin were one and a half to nearly four times as likely as non-adopted individuals at the same age to show serious mental health problems including anxiety and mood disorders.

Nearly all evidence to date for links between experiencing early adversity and later mental health problems of international adoptees comes from studies of internationally adoptees in childhood and adolescence, but not adulthood. For instance, the ERA research group found that emotional difficulties in Romanian adolescent adoptees were significantly and strongly related to their previous deprivation-related problems, such as disinhibited attachment, cognitive impairment, inattention/overactivity and quasi-autism (Colvert et al., 2008). Verhulst and Versluis-den Bieman (1995) looked at the effect of early adversity on the mental health of adolescent Swedish international adoptees and found that international adoptees showed an increased rate of maladaptive functioning in adolescence compared to when they were younger. This indicates that mental health in adolescence and adulthood are linked to experiences of deprivation in childhood.

Not all international adoptees experience such pronounced difficulties in adulthood. Presumably, when the quality of care received by children in orphanages is acceptable, later outcomes are better. For example, in a Dutch study, Storsbergen et al. (2009), compared 53 international Greek adoptees who had been adopted by Dutch families with same age non-adopted Dutch-born adults in their psychological adjustment. Results showed higher rates of depression disorder for adopted than non-adopted men, yet they found no statistically detectable difference between mental health problems of adopted and non-adopted adults. The authors suggested that their overall finding of “adequate adjustment” for the adoptees group might be influenced by the relative high quality of care in Greek orphanages, since Greek institutions are ranked highest in Gunnar’s (2001) classification. Similarly, in the British Chinese study that compared internationally adopted women from Hong Kong with their non-adopted UK-born peers, it was found that psychological adjustment was comparable between groups. More specifically, they found no statistically detectable differences for help seeking from

professionals for depression, anxiety, or any other mental health problems between adopted and non-adopted women (Grant, Rushton, & Simmonds, 2016). It was noted that adopted children from Hong Kong were experiencing an acceptable quality of care in the orphanages. Indeed, according to van der Vegt et al. (2009), severity of behaviour problems and mental health issues in international adoptees is associated with the degree of abuse, neglect, and number of placements in early childhood. Findings from the two latter studies suggest that where institutionalized care is not globally depriving and where adoptees have good care after adoption for the remainder of childhood and adolescence, the time spent in the institutional care does not necessarily associate with later mental health problems.

In the case of Romanian adoptees who experienced the most severe adversity among international adoptees, results indicated that these adoptees are at high risk for mental health problems. In the last phase of ERA study, researchers looked at the trajectory of mental health problems in Romanian adoptees in young adulthood and the UK control group with respect to duration of deprivation experienced by adoptees (>6 months>). They found that Romanian adoptees had a greater increase in rates of cognitive impairments and more emotional symptoms (including depressed mood, social anxiety, and worry) than the UK non-adopted control group (Sonuga-Barke et al., 2017). Furthermore, Le Mare and Audet (under review) examined the prevalence of mental health problems in 82 post-institutionalized Canadian-Romanian adoptees using both parental and self-report measures. They found that 40% of the adolescent Romanian adoptees with a history of global adversity had received at least one mental health diagnosis, which compared to a rate of 15% in the Canadian general population. This finding suggests that Romanian adoptees are at heightened risk for developing mental disorders.

2.3.1. Effect of duration of deprivation on later life mental health problems

Studies of links between duration of deprivation and subsequent mental health problems among international adoptees are also almost exclusively limited to childhood and adolescence. Results from studies of children reveal worse outcomes in subsamples who experienced the longest duration of adversity (e.g. Colvert et al., 2008; Tieman et al., 2005; see Juffer et al., 2011 for review). For instance, at Time 3 (10.5 year of age) of the RAP, the LA group had much higher rates of attention deficit disorder (ADD) or ADHD

(34%) than the CB and EA group, in which rates were 2.5% and 9%, respectively (Juffer, et al., 2011).

Only a few studies have reported on the effect of duration of deprivation on the mental health of post-institutionalized adoptees in adulthood. In the third phase of a longitudinal Dutch study with a large sample size, Dekker et al. (2017) compared the mental health of Dutch young adult domestic adoptees with Dutch non-adopted peers and Dutch international adoptees (N=1331, aged 22–30 years). They indicated that in early adulthood, duration of deprivation was not related to international adoptees' mental health. However, these authors examined duration of deprivation only as a continuous variable and did not address whether there was a cut-off point for duration of deprivation at which risk for mental health problems increased. On the other hand, the ERA study group reported that in adulthood, adoptees who spent more than 6 months in institutional care had statistically detectably higher rates of symptoms of autism spectrum disorder, disinhibited social engagement, and ADHD than those with less than 6 months of institutional care. Rates of these problems were similarly low for both Romanian adoptees who spent less than 6 months in institutional care and the domestic adoptee comparison group (Sonuga-Barke et al., 2017). It was noted though that a fifth of adoptees with more than 6-month duration of deprivation had no problems across all the domains. Few findings of the effect of duration of deprivation on mental health outcomes in adulthood highlights the need for further investigations of this link.

2.4. Associations between Behaviour Problems and Mental Health Disorders

Findings in the general population indicate that behaviour problems in childhood are predictive of mental health disorders later in life. For example, Hofstra et al. (2002) followed 1,578 4-year-old children from the Dutch general population into their adulthood (18- to 30-year-old) to find whether childhood behavioural and emotional problems were predictive of problem behaviour and mental diagnoses later in life. Results showed that individuals with high levels of behaviour problems in childhood were at 2 to 6 times greater risk for receiving DSM-IV (2000) diagnoses in adulthood than individuals who displayed normal behaviour on the CBCL in childhood.

These findings are consistent with findings from longitudinal studies of post-institutionalized adoptees in childhood and adolescence. For example, based on Time 3 and 4 data from the RAP Le Mare and Audet (under review) found that behaviour problems in childhood were predictive of adolescent mental health status. Moreover, both a systematic review (Juffer & van IJzendoorn, 2005) and meta-analysis (Bimmel et al., 2003) of the behaviour and mental problems in international adoptees showed a link between early behaviour problems and later mental disorders. According to these two reports, adoptees had more behaviour problems, especially Externalizing problems (Bimmel et al., 2003; Juffer & van IJzendoorn, 2005) and they were overrepresented in mental health services compared to the control groups (Juffer & van IJzendoorn, 2005).

2.5. The Present Study

Here I examine continuity in behaviour problems and mental health diagnoses from adolescence to young adulthood in a group of Romanian adoptees. Data for this study comes from the Romanian Adoption Project at Times 4 and 5. Based on previous findings of (a) links between length of deprivation and outcomes in post-institutionalized samples (e.g. Colvert et al., 2008; Tieman et al., 2005; see Juffer et al., 2011 for review); and (b) associations between behaviour problems and mental health diagnoses in the general population (e.g. Boyle et al., 1992; Capaldi & Dishion, 1993; Hofstra et al., 2002; Le Mare & Audet, 2014; Windle, 1990; Hofstra et al., 2002). I also examine associations between behaviour problems and mental health as well as associations of each with duration of pre-adoption deprivation.

Chapter 3. Method

3.1. Participants

Since 1992, the RAP has followed a sample of Romanian adoptees drawn from the population of children adopted from Romania by families in British Columbia in 1990 and 1991. At the outset, this sample was comprised of two groups of adoptees; (1) a late adopted (LA) group of 46 children, adopted between 8 and 68 months of age, who had spent their entire lives prior to adoption in an institution and (2) an early adopted (EA) group of 29 children, who were adopted from Romanian institutions or their birth homes at less than 4 months of age. These participants have been assessed at five times; at 11 months post adoption and at the ages of 4 ½ -years, 10 ½-years-, 16 ½-years-, and 26 years. Due to attrition, at Time 4 (age 16 ½ years) the sample of adoptees was expanded through recruiting 42 more participants from across Canada. Results from Time 4 revealed no statistically detectable differences between longitudinal participants and new Time 4 participants on age at adoption, Total behaviour problems, number of psychotropic medications taken, and number of mental health diagnoses. At Time 5 all adoptees and their parents who participated at Time 4 were contacted and invited to participate in the research again. Of Time 4 participants who were contacted, 47 participated in the study at Time 5.

Participants in the present study include the 47 (22 male; 25 female) young adults (mean age = 26.77 years; SD = 1.60 years) for who there are data at Times 4 and 5. Males and females did not statistically detectably differ in age at assessment (males = 26.72 years; females = 26.80 years; $t(45) = -.153, p = .88$) or age at adoption (males = 16.07 months; females = 20.34 months; $t(45) = -.835, p = .41$). Age at adoption ranged from 2 weeks to 68 months ($M = 18.34$ months; $SD = 17.44$ months).

3.2. Procedure

All adoptees and their parents who participated in any previous phase of the RAP were invited to participate at Time 5. All data were collected via the Internet on a secure website hosted by SFU (rap.educ.sfu.ca). The website link along with a unique ID number was provided to each participant. At the website, participants (adoptees and their parents)

were given further information about the study and opportunity to consent to participate. Questionnaires were completed in the FluidSurveys (Canadian) system. Those participants who did not have access to the Internet were mailed a paper copy of the questionnaires along with a return envelope. Responses of those who completed and returned paper copies were entered into FluidSurveys by hand by research assistants. Parent report data were collected for all 47 participant adoptees. For 25 of the 47, self-report data were also collected, however, to maximize sample size, only parent report data were used.

3.3. Time 5 Measures

3.3.1. Demographic information

Adoptees' parents provided information about adoptees' age, age at adoption, sex, time spent in institutional care, as well as information about finishing school in Canada, leaving the parental home, being employed, attaining financial independence, and having a romantic partner. Parents also reported their own age, education level, annual income status, ethnicity, and type of employment.

3.3.2. Mental and behaviour problems of adoptees

The Achenbach System of Empirically Based Assessment (ASEBA) includes a family of standardized forms with well-established, strong psychometric properties. The instruments assess adaptive functioning and mental and behavioural problems within different age groups, i.e., childhood, adolescence, and adulthood (Achenbach & Rescorla, 2000, 2001; McConaughy, 2001). The Adult Behaviour Check List (ABCL; Achenbach, 1997) is a parent report of adult mental and behaviour problems that includes 126 items clustered into syndrome scales and DSM-oriented scales (described below). Each item is responded to on a 3-point Likert scale (0-Not True, 1-Somewhat or Sometimes True, 2-Very True or Often True). Additionally, the questionnaire includes 3 items assessing use of tobacco, alcohol, and nonmedical drugs (Achenbach & Rescorla, 2003).

3.3.3. Behaviour problems

The syndrome scales of the ABCL arise from 113 items that yield scores for two broad bands of behaviour problems – Internalizing and Externalizing, as well as a Total Behaviour Problems score. The Internalizing scale is a composite of three subscales: Anxious-depressed (18 items; e.g. cries, feels worthless, nervous/tense), Withdrawn (9 items; e.g., rather be alone, refuses to talk, trouble making friends), and Somatic complaints (12 items; e.g., tired without a good reason, trouble sleeping, somatic complaints without known medical cause). The Externalizing scale includes the three subscales: Aggressive (15 items; e.g., mean to others, attacks people, threatens people), Rule-breaking (14 items; e.g., uses drugs, gets drunk, trouble with the law), and Intrusive behaviour (6 items; e.g., brags, demands attention, showing off). The Total behaviour score is a combination of Internalizing, Externalizing, Attention problems (15 items; e.g., forgetful, dependent, can't concentrate, daydreams), Thought problems (10 items; e.g., hears sounds that aren't there, strange behaviour, strange ideas), and Other problems (21 items; e.g., poor relation, gets hurt, must be perfect, clumsy). To avoid problems in the data analyses associated with multicollinearity due to the fact that Total behaviour problems includes Internalizing and Externalizing problems, a fourth behaviour problems variable, labelled Additional problems, was formed to isolate items outside those included in Internalizing and Externalizing subscales. The Additional problems cluster comprised the sum of the Attention problems, Thought problems, and Other problems ABCL scales.

3.3.4. Mental health diagnoses

Adoptees' parents reported whether (yes/no) adoptees had been formally diagnosed by a mental health professional (family doctor, psychiatrist, pediatrician, psychologist, or other) with a depressive, anxiety, attention deficit/hyperactivity, oppositional defiance (ODD), borderline personality, schizophrenia, post-traumatic stress (PTSD), eating, bipolar, autism spectrum (ASD), obsessive compulsive (OCD), and/or panic disorder. Respondents were also asked to indicate the age at which their son or daughter was diagnosed has having one of these conditions. Mental health was coded categorically as no diagnosis, one diagnosis, or more than one diagnosis.

3.3.5. Duration of deprivation

Consistent with the previous phases of the RAP, age at adoption was used as an index of duration of deprivation since children transitioned directly from a deprived setting (e.g., orphanage, hospital, underprivileged birth home) to their adoptive family in Canada. Fifty-five percent of the adoptees were adopted from orphanages, 28% from hospitals, and 13% from their birth mothers, while about 4% were adopted from other places. Experiences of adversity began at birth for these adoptees; in fact, for children adopted from orphanages, age at adoption and time in spent in institution were almost perfectly correlated ($r = .97$) (Ames, 1997). In the present study duration of deprivation was calculated as both a continuous (age at adoption in months) and ordinal (age at adoption <4 months or >8 months) variable. Sixty eight percent of the adoptees experienced more than 8 months and 32% experienced less than 4 months deprivation before adoption.

3.4. Time 4 Measures

3.4.1. Behaviour problems

At Time 4, behaviour problems of adoptees were assessed with the parent form of the Child Behaviour Check List (CBCL; Achenbach, 1991). The CBCL consists of 113 behaviour problem items rated by parents on a 3-point scale ('not true', 'somewhat or sometimes true' and 'very true'). The 113 items are partitioned to form the following scales: Anxious/Depressed (13 items; e.g. cries, fears school, feels unloved, feels worthless), Withdrawn (8 items; e.g. enjoys little, refuses to talk, shy), Somatic Complaints (11 items; e.g. tired, dizzy, aches, nausea), Thought Problems (15 items; e.g. hears sounds that aren't there, repeat acts, twitch, harm himself), Attention Problems (53 items; e.g. acts young, fails to finish, impulsive, stares), Aggressive Behaviour (18 items; e.g. argues, fights, screams, mood change, stubborn), Delinquent Behaviour (17 items; e.g. drinks alcohol, has no guilt, breaks rules, run away), Social Problems (11 items; e.g. dependent, not getting along, jealous, clumsy), and Other problems (17 items; e.g. brags, not eat, is cruel to animals, wets him/herself, bite nails). These subscales comprise two broad-band syndromes, labelled Internalizing and Externalizing. The Internalizing scale is a summary score derived from the Withdrawn, Somatic Complaints and Anxious/Depressed scales. Similarly, the Externalizing Scale is derived from the Delinquent Behaviour and Aggressive Behaviour Scales. Finally, the Total Problem Score consists of the sum of all problem item

scores. As with the Time 5 ABCL data, to avoid problems in analyses associated with multicollinearity a fourth behaviour problems variable, labelled Additional problems, was computed. Additional problems comprised the sum of the Attention problems, Thought problems, Social problems and Other problems CBCL scales.

3.4.2. Mental health diagnosis

At Time 4 adoptive parents reported whether (yes/no) their child had been formally diagnosed by a health professional with any of the following conditions: anxiety, depressive, attention deficit/hyperactivity, autism spectrum, psychosis, obsessive compulsive, bi-polar, gender identity, eating, Tourette's, and/or attachment disorder(s). Respondents also had opportunity to identify diagnoses not listed in the questionnaire but none were provided. Mental health was coded categorically as no diagnosis, one diagnosis, or more than one diagnosis.

Chapter 4. Results

Preliminary Analysis – Descriptive Data

Prior to conducting the main analyses, descriptive statistics were computed for duration of deprivation and all behaviour problem variables. Mean levels of duration of deprivation, Internalizing, Externalizing, Total behaviour problems, and Additional behaviour problems at Times 4 and 5, split by gender are displayed in Table 4.1. The only statistically detectable difference between males and females was on Internalizing at Time 5, with females having detectably higher scores than males.

Table 4.1. Descriptive statistics for behaviour problems at Time 4 and 5 by gender

	Females				Males			
	<i>M</i>	Range	<i>SD</i>	<i>N</i>	<i>M</i>	Range	<i>SD</i>	<i>N</i>
Internalizing behaviour problems (Time 4)	12.30	0-42	12.14	23	9.1	0-29	8.2	22
Externalizing behaviour problems (Time 4)	12.66	0-53	15.61	24	12.9	0-45	12.43	22
Total behaviour problems (Time 4)	41.58	1-142	44.71	24	35.13	1-106	28.39	22
Additional behaviour problems (Time 4)	17.12	0-63	18.4	24	13.13	1-41	11.07	22
Internalizing behaviour problems (Time 5)	15.32*	0-37	12.48	25	7.91*	0-26	6.57	22
Externalizing behaviour problems (Time 5)	16.44	0-50	14.83	25	13.86	0-44	11.96	22
Total behaviour problems (Time 5)	56.24	2-146	45.18	25	40.27	2-113	29.24	22
Additional behaviour problems (Time 5)	24.48	0-61	19.36	25	18.5	1-61	14.08	22

* $p < .05$.

Continuity in Behaviour Problems from Time 4 to Time 5

To examine continuity in behaviour problems between Time 4 and Time 5, bivariate correlations were calculated. There was moderate continuity for Internalizing,

Externalizing, Total behaviour problems, and Additional behaviour problems from Time 4 to Time 5 (Table 4.2).

Table 4.2. Association between Time 4 and Time 5 behaviour problems

CBCL Total behaviour problem and ABCL Total behaviour problems (N=46)	.633**
CBCL Internalizing behaviours and ABCL Internalizing behaviours (N=45)	.608**
CBCL Externalizing behaviours and ABCL Externalizing behaviours (N=46)	.591**
CBCL Additional behaviour problems and ABCL Additional behaviour problems (N=46)	.605**

** $p < .001$

In order to compare problem behaviour scores at Time 4 and Time 5, raw scores for Internalizing, Externalizing and Total behaviour problems at each Time were converted to average item scores by dividing the sum of responses by the number of items in each scale. This created 8 new variables: Time 4 average Internalizing, Time 4 average Externalizing, Time 4 average Additional, Time 4 average Total, Time 5 average Internalizing, Time 5 average Externalizing, Time 5 Additional, and Time 5 average Total. To examine changes in Internalizing, Externalizing, Additional and Total behaviour problems in adoptees from Time 4 to Time 5, paired-sample *t*-tests were calculated using these new scores. No detectable differences were found between Time 4 and Time 5 for Internalizing ($t(45) = .566, p = .58$) or Externalizing ($t(45) = -1.19, p = .24$). However, Total and Additional behaviour problems increased detectably from Time 4 to Time 5 (Total, $t(45) = -2.08, p = .04$, Additional, $t(45) = -6.58, p < .01$) (Table 4.3).

Table 4.3. Association between Time 4 and Time 5 behaviour problems

Outcome	In adolescence (time 4)		In adulthood (Time 5)		<i>N</i>	95% CI for Mean Difference	<i>df</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Internalizing behaviour problems	.33	.32	.30	.27	46	-.07-.12	45	.56	.57
Externalizing behaviour problems	.36	.40	.43	.38	46	-.19-.05	45	-1.18	.24
Additional behaviour problems	.17	.18	.47	.37	46	-.39-.20	45	-6.58	.00
Total behaviour problems	.31	.30	.40	.32	46	-1.82-.003	45	-2.08	.04

Duration of Deprivation and Behaviour Problems

Duration of deprivation was examined in relation to behaviour problems in adolescence and adulthood, separately. A MANOVA comparing Time 4 Internalizing, Externalizing and Additional behaviour problems between adoptees with less than 4 months deprivation experience and those with more than 8 months deprivation experience yielded a multivariate effect that was not statistically detectable, Pillai's trace = .11, $F(3, 41) = 1.68$, $p = .18$ (Table 4.4). A MANOVA comparing Time 5 Internalizing, Externalizing and Additional behaviour problems between adoptees with less than 4 months deprivation experience and those with more than 8 months deprivation experience also yielded a multivariate effect that was not statistically detectable, Pillai's trace = .08, $F(3, 43) = 1.21$, $p = .32$ (Table 4.4).

Table 4.4. Mean differences of behaviour problems within different levels of duration of deprivation

	Duration of deprivation	N	Mean	SD	F	Partial Eta Squared
CBCL Externalizing behaviours	Less than 4 months	14	16.5	18.43	1.2	.02
	More than 8 months	31	11.38	11.7		
CBCL Internalizing behaviours	Less than 4 months	14	9.92	10.03	.12	.003
	More than 8 months	31	11.1	10.71		
CBCL Additional behaviour problems	Less than 4 months	14	15.07	15.57	.008	0
	More than 8 months	31	15.51	15.63		
ABCL Internalizing behaviours	Less than 4 months	14	12.67	11.34	.125	.003
	More than 8 months	31	11.47	10.58		
ABCL Externalizing behaviours	Less than 4 months	14	17.2	13.26	.463	.01
	More than 8 months	31	14.31	13.69		
ABCL Additional behaviour problems	Less than 4 months	14	21.06	16.6	.02	.001
	More than 8 months	31	21.96	17.7		

* $p < .05$

Finally, correlations between duration of deprivation and behaviour problems (Internalizing, Externalizing and Additional) at Time 4 and Time 5 were all not statistically detectable (Table 4.5).

Table 4.5. Association between duration of deprivation with mental health diagnosis and behavioural problems

	Age at adoption (months)
CBCL Internalizing problems (N=45)	.228
CBCL Externalizing problems (N=46)	-.011
CBCL Additional behaviour problems (N=46)	.213
ABCL Internalizing problems (N= 47)	.109
ABCL Externalizing problems (N= 47)	-.048
ABCL Additional behaviour problems (N= 47)	.117

Continuity in Rates of Mental Health Diagnoses from Time 4 to Time 5

A chi-square analysis examining the continuity of the categories of no diagnosis, 1 diagnosis, and more than one diagnosis from Times 4 to 5 was also statistically detectable ($\chi^2 = 19.59$, $p = .001$). For the small cells that had size of less than 5, Fisher's exact test –that is a non-parametric alternative to the chi-square test- was used instead of Chi-square using R-studio software. Results of Fisher's exact test also showed statistical detectable association between numbers of diagnoses groups at Time 4 and Time 5 ($p < .001$).

As can be seen in Table 4.6, 30 participants (68%) were stable in the number of mental health diagnoses. When change occurred between Time 4 and Time 5 it was more likely to be gaining a diagnosis rather than losing one. Across Times 4 and 5, 10 participants (23%) increased in number of diagnoses (6 went from none to one, 3 went from none to more than one and 1 went from one to more than one) while 4 participants (10%) decreased in the number of diagnoses (1 went from one to no diagnoses, 1 went from more than one diagnosis to none and 2 went from more than one to one diagnosis) (Table 4.6).

Table 4.6. Frequencies of diagnosis rate in the Longitudinal sample in Time 4 and Time 5

	Responses of Parents to adoptees number of diagnosis			Total (N)
	No diagnoses (Time 4) (N)	One diagnosis (Time 4) (N)	More than one diagnosis (Time 4) (N)	
No diagnoses (Time 5) (N)	20	1	1	22
One diagnosis (Time 5) (N)	6	3	2	11
More than one diagnosis (Time 5) (N)	3	1	7	11
Total (N)	29	5	10	44

$\chi^2=19.59$
 $p=.001$

Frequencies of individual mental health diagnoses were also examined (Table 4.7). According to parents' reports at Time 5, the most commonly diagnosed disorder in early adulthood was Depression, which occurred at a rate of 31.1%. This was followed by ADHD that occurred at the rate of 26.7% and anxiety disorder at the rate of 20%. The relative prevalence of these disorders at Time 5 is comparable to the Time 4 findings that show in adolescence the most common diagnosis was ADHD (27.1%), followed by Depressive (14.6%) and Anxiety (10.4%) disorders. Although the three most common diagnoses were the same at both Time 4 and Time 5, rates of Depressive and Anxiety disorders were considerably higher at Time 5 than Time 4. Diagnosis rates of disorders related to anxiety and depression, such as PTSD and Panic Disorder, were also relatively high at Time 5.

Table 4.7. Prevalence of Romanian adoptees mental health disorders in adulthood and adolescence

Disorder	Prevalence in Time 5 sample (%), N=45	Prevalence in the Time 4 sample (%), N=48
ADHD	12 (26.7%)	13 (27.1%)
Depression	14 (31.1%)	7 (14.6%)
Anxiety	9 (20%)	5 (10.4%)
Borderline Personality Disorder	2 (4.4%)	0
Schizophrenia	1 (2.2%)	0
ODD	1 (2.2%)	-
Eating Disorders	2 (4.4%)	0
Bipolar Disorder	2 (4.4%)	0
Panic Disorder	5 (11.1%)	0
ASD	1 (2.2%)	1 (2.1%)
PTSD	3 (6.7%)	-
OCD	1 (2.2%)	0

Duration of Deprivation and Mental Health Disorders

Duration of deprivation was examined in relation to mental health diagnosis status and behaviour problems at Time 5. A chi-square analysis showed no detectable association between number of diagnoses group (none, one, more than one) and age at adoption group (>8 months, < 4 months) ($\chi^2 = .328, p = .85$). As can be seen in Table 4.8, among adoptees with more than 8 months deprivation experience, 52% had no diagnosis, 26% had one diagnosis, and 22% had more than one diagnosis. Among adoptees with less than 4 months deprivation experience, 46% had no diagnosis, 23% had one diagnosis, and 31% had more than one diagnosis. For the small cells that sizes

had less than 5, Fisher's exact test was used instead of Chi-square using R-studio software. Results of Fisher's exact test also showed no statistical detectable association between number of diagnoses group and age at adoption group ($p = .91$).

Table 4.8. Frequencies of adoptees diagnosis rate based on duration of deprivation

	Responses of Parents to adoptees diagnosis (N=44)			χ^2 p value
	No diagnosis	1 diagnosis	More than 1 diagnosis	
Over 8 months institutional experience	52% (N= 16)	26% (N= 8)	22% (N= 7)	.849
Less than 4 months institutional experience	46% (N= 6)	23% (N= 3)	31% (N= 4)	

$p = .85$

A one-way between-subjects ANOVA was used to compare the mean age at adoption between mental health diagnosis groups: no diagnosed disorder ($M = 18.59$, $SD = 17.26$), one diagnosed disorder ($M = 19.1$, $SD = 18.06$), more than one diagnosed disorders ($M = 20.86$, $SD = 19.41$). This assessment was not statistically detectable, $F(1, 41) = .06$, $p = .94$, partial $\eta^2 = .003$ (Table 4.9).

Table 4.9. Mean differences of duration of deprivation within different levels of metal health diagnosis

Source	df	SS	MS	F	p	Partial Eta Squared	Observed power
Between groups	2	38.42	19.21	.06	.94	.003	.058
Intercept	1	15081.3	15081.3				

Associations between Mental Health Problems and Behaviour Problems

To examine if mental health status groups in adulthood (Time 5) were differentiated by behaviour problems in adolescence (Time 4) or adulthood (Time 5), a multivariate analysis of variance (MANOVA) was computed. The "independent" variable was mental health status at Time 5 (no diagnosed disorders; one diagnosed disorder; more than one

diagnosed disorder). The “dependent” variables were Time 4 Internalizing, Externalizing, and Additional behaviour problems and Time 5 Internalizing, Externalizing, and Additional behaviour problems. Total behaviour problem scores were not examined in this analysis due to their overlap with Internalizing and Externalizing and the associated problem of multicollinearity. Recognizing it is somewhat unconventional to design a MANOVA to include an independent variable (Time 5 mental health status) based on data collected at a later time than a dependent variable (Time 4 behaviour problems), this design enabled me to address whether the 3 mental health status groups in young adulthood were differentiated on the basis of behaviour in adolescence as well as concurrent behaviour in young adulthood.

Box’s M test ($p = .209$) indicated inequality of variance-covariance matrices of the dependent variables across levels of the independent variable. Hence, Pillai’s Trace was used to evaluate the multivariate effect. Results indicated a statistically detectable multivariate effect, (Pillai’s trace = .51, $F(12, 68) = 2$, $p < .05$).

Univariate ANOVAs were calculated on each dependent measure separately to determine the locus of the statistically detected multivariate main effect of mental health diagnosis category. Levene’s Test of Equality of Error Variances indicated homogeneity of variance among groups on each of the Time 5 behaviour problem variables but not on the Time 4 variables. Hence, a more stringent alpha level of .01 was set for identifying effects associated with Time 4 Internalizing, Externalizing, and Additional behaviour problems. Univariate tests showed statistically detectable differences among the three levels of mental health diagnosis on Time 4 Internalizing problems ($F(2, 39) = 4.82$, $p = .01$, $\eta^2 = .198$), and Additional behaviour problems ($F(2, 39) = 5.4$, $p = .009$, $\eta^2 = .217$) (Table 4.10). For Time 4 Externalizing problems differences were not statistically detectable when judged against the conservative alpha level ($F(2, 39) = 4.36$, $p = .02$, $\eta^2 = .183$). Statistically detectable differences among the three levels of mental health diagnosis were found for Time 5 Internalizing problems ($F(2, 39) = 10.06$, $p < .001$, $\eta^2 = .34$), Externalizing problems ($F(2, 39) = 10.57$, $p < .001$, $\eta^2 = .352$), and Additional behaviour problems ($F(2, 39) = 9.55$, $p < .001$, $\eta^2 = .329$) (Table 4.10). An examination of the 6 behaviour problems means indicated a consistent pattern in both adolescence and early adulthood for the highest level of behaviour problems in adoptees with more than one diagnosed disorder compared with adoptees with one diagnosed disorder and those with no diagnosed disorder, respectively (Table 4.10). Tukey-b post hoc tests indicated

that at Time 4, on both Internalizing and Additional behaviour problems, the no disorder group did not statistically detectably differ from the one disorder group ($p = .58$ and $p = .54$, respectively), but the no disorder group and the one disorder group statistically detectably differed from more than one disorder group. At Time 5, on Internalizing, Externalizing and Additional behaviour problems, adoptees with none or one mental health diagnosis did not differ from one another ($p = .56$, $p = .23$, and $p = .15$, respectively), but both these groups were detectably different from adoptees with more than one diagnosis.

Table 4.10. Mean differences of behaviour problems within different levels of mental health diagnosis

Mean scores	Diagnosis	<i>N</i>	Mean	<i>SD</i>	<i>F</i>	Partial Eta Squared
CBCL Internalizing behaviours	0	20	7.05	8.9	4.82*	.198
	1	11	9.1	5.7		
	1 or more	11	18.18	13.6		
CBCL Externalizing behaviours	0	20	7.1	10.3	4.36	.183
	1	11	12.18	11.4		
	1 or more	11	21.18	17.26		
CBCL Additional behaviour problems	0	20	9.55	1.42	5.4*	.217
	1	11	12.81	6.03		
	1 or more	11	26.72	21.23		
ABCL Internalizing behaviours	0	20	7.15	8.1	10.06**	.340
	1	11	9.18	9		
	1 or more	11	22.36	11.43		
ABCL Externalizing behaviours	0	20	8.15	9.47	10.57**	.352
	1	11	13.09	10.39		
	1 or more	11	26.82	13.49		
ABCL Additional behaviour problems	0	20	12.45	11.15	9.56**	.329
	1	11	20.18	13.91		
	1 or more	11	35.63	18.67		

* $p = .01$.

** $p < .001$

Chapter 5. Discussion

This research was designed to evaluate, in a sample of young adult adoptees from Romania; 1) longitudinal change in levels of behaviour problems from adolescence to adulthood; 2) the prevalence of mental disorders in young adulthood; 3) longitudinal change in the prevalence of diagnosed mental disorders from adolescence to adulthood; 4) the association of duration of deprivation experienced pre-adoption with mental health and behaviour problems in adulthood; and 5) predictive and concurrent associations between behavioural problems and mental health diagnoses in early adulthood.

This study is unique because it follows the same post-institutionalized adoptees across two phases of development – adolescence and early adulthood. The availability of the longitudinal data enabled the examination of within-group changes, unlike most studies that have been limited to the less satisfactory option of cross-sectional between-group comparisons. To my knowledge, only one other study (Sonuga-Barke et al., 2017) has looked at the trajectory of mental health within the same sample of post-institutionalized from adolescence to adulthood.

5.1. Longitudinal Change in Behaviour Problems from Adolescence to Adulthood

5.1.1. Gender differences

Although gender differences were not a central focus of this study, an examination of differences in behaviour problems between males and females revealed results that are consistent with those reported in the literature. Specifically, I found no difference between males and females on all behaviour problems in adolescence. In adulthood, levels of Externalizing, Additional, and Total behaviour problems did not detectably differ across genders, however females had significantly higher levels of Internalizing behaviour problems than males. This finding is consistent with findings from the general population indicating that being female is the strongest risk factor for Internalizing problems (Keenan & Shaw, 1997; Lewinson, Hops, Roberts, Seeley, & Andrews, 1993; Nolen-Hoeksema & Girgus, 1994; Zahn-Waxler, Klimes-Dougan, & Slaterry, 2000).

Findings from post-institutionalized adoptees are also in line with the gender difference in Internalizing problems reported here. For instance, researchers from the Rotterdam study found that among adoptees, women were more likely to have an anxiety disorder than men (van der Vegt et al., 2009). Tieman et al. (2006) also found that internationally adopted adult females from a range of countries of origin were more likely than an age-matched general population sample to meet the criteria for an anxiety disorder and both adopted and non-adopted women were more likely to have an anxiety disorder than men. Further, Geerars and colleagues (as cited in Bimmel et al., 2003) compared the adjustment of 65 adolescents who were adopted from Thailand into the Netherlands to 756 same aged non-adopted Dutch adolescents. Results revealed that the adoptees scored higher on Total behaviour problems than non-adoptees, but the difference was found to be statistically significant only for girls, who scored higher for anxious/obsessive, depressed/withdrawn, schizoid, and delinquent behaviours.

There are several possible explanations for the observed gender difference in Internalizing problems found in this study. One possibility is that females are more sensitive to the effects of trauma, such as was experienced in Romanian orphanages. Findings from the general population suggest that the girls typically show more vulnerability toward stressful life events and experiences and they tend to rely more on others for support for coping compared with boys (Leadbeater, Blatt, & Quinlan, 1995). Another possible explanation relates to cultural and social effects. In Western society, fearfulness, shyness, dependency, and expression of anxiety (all Internalizing behaviours) are considered more acceptable for girls than boys (Simpson & Stevenson-Hinde, 1985; Zahn-Waxler et al., 1993). This gender stereotype may encourage the expression of Internalizing behaviour in girls while discouraging it in boys. The presence of higher rates of Internalizing behaviour problems in female adoptees suggests the need for a better understanding of the environmental and constitutional factors that contribute to such high rates.

5.1.2. Continuity of behaviour problems

Adolescence is often characterized as a tumultuous period in development typified by conflict with parents, moodiness, and risky behaviour (Arnett, 1999) that tends to reduce as individuals move into adulthood and become more mature. Consistent with this view, an examination of changes in behaviour problems from 1989 to 1999 in a sample of adolescents of the general population in the US, using self, parent and teacher reports,

found decreases in behaviour problems over time (Achenbach, Dumenci, & Rescorla, 2002). No evidence was found for such change in the present study. Specifically, my findings indicated that Internalizing and Externalizing behaviour problems neither increased nor decreased from adolescence to adulthood. However, both Additional and Total behaviour problems detectably increased. Since Total behaviour problems is the sum of Internalizing, Externalizing, and Additional behaviour problems and levels of both Internalizing and Externalizing behaviour problems remained constant over time, it appears that the increase in Total behaviour problems was accounted for by the increase in Additional behaviour problems. An examination of the items that comprise the Additional problems subscale indicates that they refer to behaviours that might be considered more extreme or more closely related to psychiatric disturbance than behaviours captured by the other scales. Examples include items such as, “*hurts him/herself; hears and sees things that are not there; talks of suicide; damages others’ things; and, is cruel to animals and others*”. This suggests that while rates of what might be considered more typical or common behaviour problems remained relatively constant from adolescence to adulthood, the more extreme or “red flag” behaviours increased.

As mentioned previously, few researchers have examined behaviour problems in adult post-institutionalized adoptees. It seems that the body of research of post-institutionalized adoptees in adulthood is more focused on mental health diagnoses and substance and alcohol use than behaviour problems (e.g. Hjren et al., 2002; Lindblad et al., 2003). Of the longitudinal studies on post-institutionalized adoptees, only the ERA study group has investigated trajectories of behaviour problems and they found, on the basis of parent reports, that conduct problems did not change from childhood to adolescence, but among adoptees with more than 6 months early deprivation conduct problems increased from adolescence to adulthood. Although it is unclear from published reports what items were included in their measure of conduct problems, this finding appears to be consistent with the increase in Additional problems reported here.

5.2. Effect of Duration of Deprivation on Behaviour Problems

In the present study duration of deprivation was not associated with Internalizing, Externalizing, Additional, or Total behaviour problems in either adolescence or adulthood, which differs from the findings when the Romanian adoptees were children. At Times 1 and

2 of the RAP duration of deprivation was statistically detectably correlated with all behaviour problems with longer deprivation corresponding to more behaviour problems (see Juffer et al., 2011 for review). At Time 3, duration of deprivation was positively associated with Externalizing and Total behaviour problems (Audet et al., 2006). In other words, over time duration of deprivation has become unrelated to behaviour problems. This change in the association between duration of deprivation and behaviour problems over time may be related to an increasing role of the adoptive home environment in explaining outcomes. As adoptees grow older, the effect of the adoptive rearing environment (including the home, school, and other ecologies) in interaction with the child's characteristics may supersede the direct effects of experiencing early global adversity.

The findings of the present study indicating no association between duration of deprivation and behaviour problems in adulthood are at odds with results reported by Sonuga-Barke et al. (2017) who found more behaviour problems in the group of adoptees who had more than 6 months in institutional care than those with less than 6 months of institutional care. However, my findings are consistent with those of Verhulst et al. (1992) who reported that behaviour problems of post-institutionalized adoptees were not statistically detectably related to age at adoption (Verhulst, 2000).

5.3. The Prevalence of Mental Disorders in Young Adulthood and Longitudinal Change in the Prevalence of Mental Disorders since Adolescence

Findings of this study suggest that rates of mental health diagnoses were moderately high in the sample in both adolescence and early adulthood. While this study did not include a comparison group of non-post-institutionalized adoptees, it is enlightening to consider rates of mental health diagnoses in the general population. For example, Waddell, Offord, Shepherd, Hua, and McEwan (2002) reported a rate of mental health problems in the general Canadian youth population of 15%. In comparison, I found a rate of mental health diagnosis of 34% in the adolescent sample studied here. Moreover, the Canadian Mental Health Association (2017) reports that by age 40, about 50% of the Canadian population will have or have had a mental illness. In the present study I found that by age 26 years, 50% of the Romanian adoptees had at least one diagnosed mental disorder. These findings suggest that the group of Romanian adoptees were at

considerably elevated risk for mental health disorders in adolescence and young adulthood.

My findings also suggest considerable continuity in rates of mental health diagnoses from adolescence to early adulthood. However, when change did occur it was more likely to be gaining a diagnosis rather than losing one, which is reflected in the percent of participants at each age group who had at least one diagnosis (34% in adolescence and 50% in adulthood). Findings of this research are in line with those that explored the prevalence of mental health problems in post-institutionalized adoptees – with most of the findings suggesting high risk for mental health problems in adulthood (Dekker et al., 2017; Groza, Nedelcu, & Proctor., 2017; Hjren et al., 2002; Lindblad et al., 2003; Reed, Anthony, & Breslau, 2007; Sonuga-Barke et al., 2017; Tieman et al., 2005; Verhulst, 2017; Woodhouse, Miah, & Rutter, 2018).

Only a few studies have examined international adoptees' mental health problems in adulthood. Some were designed to investigate the impact of early adversity or duration of deprivation on adulthood mental health (e.g., Dekker et al., 2017; Sonuga-Barke et al., 2017; Verhulst, 2017; Woodhouse et al., 2018) and some to examine differences in mental health problems between international adoptees and the general population (e.g., Dekker et al., 2017; Groza et al., 2017; Hjren et al., 2002) and/or domestic adoptees (Dekker et al., 2017). Only the ERA group investigated the trajectory of mental health within the same sample from adolescence to adulthood. Their results were consistent with those reported here to the extent that self- and parent-reported rates of social anxiety, worry, and depression were reported unchanged from childhood to adolescence but increased in young adulthood (Sonuga-Barke et al., 2017). However, they differed from the findings of the present study in that despite the relatively high levels of self- and parent-reported problems in the adoptee group with more than 6 months early institutional deprivation, only 30% had lifetime contact with mental health services and only 10% had a psychiatric diagnosis. It is unclear what factors may account for the higher rate of diagnosis in the RAP participants compared to the ERA participants. Some avenues worth exploring are possible differences between the UK and Canada in attitudes regarding mental health diagnoses, access to mental health services, and the role of schools in making mental health referrals.

It is the case that not all studies of adult post-institutionalized adoptees have found poor mental health outcomes for them (e.g. Cederblad et al., 1999; Dekker et al., 2017). Several factors differ between these studies and the RAP that may explain the lower rates of mental health diagnoses reported, including adoptees' country of origin, the quality of care received pre-adoption, the age of adoptees at assessment, and the methods used to assess mental health problems. In both the Cederblad et al. (1999) and Dekker et al. (2017) studies, most of the adoptees came from Asia and Latin America with experience of limited to no adversity and neither study included a sample of adoptees from Eastern Europe or adoptees with reports of global and extreme deprivation. Furthermore, the age-span at which outcomes were assessed by Cederblad et al. (1999) included adulthood as well as adolescence (13-27 years olds) and the sample size was very small (N=20). Dekker et al. (2017) studied international adoptees who were born in 1970 to 1975, however their comparison sample of domestic adoptees was much younger (born between 1980 and 1990). This age difference between the two groups could have affected their results, because international adoptees and domestic adoptees were from different time generations and lived under different social circumstances making comparisons between them difficult to interpret.

5.3.1. Prevalence of specific disorders

Based on the findings of this study, Romanian adoptees were nearly two times as likely to be diagnosed with depression and anxiety in adulthood as they were in adolescence. Also, a substantial increase in rates of those of other disorders related to depression and anxiety was notable. For instance, rates of PTSD and panic disorder diagnoses were 3 to 5 times higher in adulthood compared to adolescence. These findings are in line with the most recent report from the ERA group of a statistically detectable increase from adolescence to adulthood in depression, worry, and social anxiety for Romanian adoptees (Sonuga-Barke et al., 2017). Also, Groza et al. (2017) reported that adult Romanians who were adopted to the US as children had double the rate of depression compared to general population norms. Furthermore, a longitudinal Dutch study reported that male international adoptees had higher chances for having depression and anxiety problems than same aged domestic adoptees and Dutch citizens (Dekker et al., 2017). Likewise, in the study of Tieman et al. (2005) comparing international adoptees

and non-adopted control group mental health, they reported that among all disorders the greatest risk was for mood and anxiety disorders.

One explanation for the observed high rates of depression and anxiety in this sample can be found in attachment theory. Attachment theory as developed by Bowlby (1969, 1988), and elaborated on by Ainsworth (1978) and others (e.g., see Cassidy & Shaver, 1999), claims that starting in early infancy, the degree of sensitivity and responsiveness of the care a child receives, particularly when the child is in need, sets the foundation for the child's "internal working model" (IWM). The IWM is a set of expectations regarding the degree of safety and support to be found in one's social environment and one's worthiness to receive it (Main, 1995; Siegel, 1999; Sroufe, Egeland, Carlson, & Collins, 2005). As such, children with histories of insensitive and unresponsive care develop a sense of insecurity and tend to be less positive, cooperative and flexible in their interpersonal interactions than children with consistent and sensitive care histories (Cohn, 1990; Howes & Hamilton, 1992; Sroufe, 1983, 1986, 1988). Attachment patterns established early in life are believed to be foundational to subsequent development. All of the Romanian adoptees in the present study were exposed to very poor care in their first months or years of life and were denied the opportunity to form secure attachments. The impact of this was seen in their abilities to form secure attachments post-adoption. For example, At Time 2, Chisholm (1998) found that the LA group displayed significantly higher rates of attachment insecurity than either the EA or CB groups. At Time 3, Fernyhough (2003) examined security of attachment in the Romanian adoptees again as well as continuity in attachment from Time 2 to Time 3. Similar to Time 2, at Time 3 the LA children had a higher rate of insecure attachment than either the EA or CB groups. Furthermore, when attachment status changed from Time 2 to Time 3 it tended to go from secure to insecure rather than the other way around. In non-adopted samples, attachment insecurity has been found to be associated with higher risk for depressive symptoms and substance abuse in adolescence (Oldfield et al, 2016; Shochet et al., 2008). Given their histories of early care and their high rates of attachment insecurity in childhood, it is perhaps not surprising the Romanian adoptees are at heightened risk for mental health problems in early adulthood and that depressive problems are especially prevalent.

5.4. Effect of duration of deprivation on mental health

Similar to the results on behaviour problems, the findings of this study showed that longer duration of deprivation in childhood was not associated with poorer mental health outcomes in adulthood. In other words, adoptees with more than 8 months experience of institutional care were no different from adoptees who spent less than 4 months in an institutional care in likelihood of having a mental health diagnosis. Again, this finding is in line with others' reports that age at adoption is not related to later maladaptation in adult post-institutionalized adoptees (Cederblad et al., 1999; Dekker et al. 2017; Howe, 1997; Humphreys et al., 2015).

5.5. Predictive and Concurrent Associations between Behavioural Problems and Mental Health Diagnoses in Early Adulthood

Findings of this study indicated that more behaviour problems in adolescence and adulthood were associated with more mental health diagnoses in adulthood. In other words, I found that behavior problems at age of 16 ½ years differentiated those with and without mental health disorders at age of 25 years. This finding is reasonable, considering that the increase in behaviour problems from adolescence to adulthood was in behaviours – known as critical items in ACBL – that are more related to mental health problems. My finding is consistent with studies of both the general population in the US (Achenbach, 1991) and post-institutionalized adoptees (Juffer & van IJzendoorn, 2005) showing that behavior problems of children (e.g. Verhulst et al., 1990) and adolescents (e.g. Achenbach, 1991; Le Mare & Audet, under review, 2016; Bimmel et al., 2003) are a reliable indicator of psychiatric disorders later in life. This suggest that early interventions for behaviour problems may decrease risks for later mental health issues for the Romanian adoptees in this study.

A possible explanation for the link between early behavior problems and later mental health difficulties could be related to the adoptive environment and more specifically to parenting and parent-child interactions. Many studies of international adoptees show that they are at increased risk for behaviour problems in early and middle childhood (Audet et al., 2006; MacLean, 2003; Merz & McCall, 2010; Miller et al., 2009; Palacios, Sánchez-Sandoval, & Sánchez, as cited in Juffer et al., 2011). The presence of

behavior problems in childhood in turn increases the risk of an insecure attachment bond forming between adoptees and adoptive parents (Easterbrooks, Davidson, & Chazan, 1993; Juffer & Rosenboom, 1997; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996; Stams, Juffer, & van IJzendoorn, 2002; van Bakel & RiksenWalraven, 2004). Research also shows that having an insecure attachment in childhood is strongly linked with development of anxiety and mood disorders in adulthood (Bowlby, 1951; Bifulco et al., 2006). In short, behaviour problems can affect the attachment bond, which in turn may affect one's mental health. This argument is in line with findings of Le Mare and Audet's (under review) study of RAP participants at Time 4, that showed that adolescent adoptees who had at least one mental health diagnosis were raised in adoptive homes featured by less warmth – that is necessary for development of secure attachment – and less appropriate stimulation than adoptees with no diagnosis (Le Mare & Audet, under review).

5.6. Conclusion and Implications

The results of this study suggest that even a short period of extreme early adversity in institutional care can have deep and long-lasting effects on development and mental health that can persist throughout adolescence and into young adulthood. The Romanian adoptees in this study who experienced extreme early adversity, remained vulnerable for mental health and behaviour problems into adolescence and, the risk appears to have increased as they moved into early adulthood. Adoptees who had behaviour problems at both 16.5 and 26.5 years of age were at elevated risk for mental health diagnoses regardless of the amount of time they spent in globally adverse environments prior to adoption. This longitudinal finding of the link between behaviour problems and later life mental health diagnosis suggests that proper interventions for behaviour problems in earlier stages of life may decrease the risks for later mental health problems in post-institutionalized children. Moreover, post-institutionalized adoptees and their parents must have access to services for their mental and behavioural problems, such as access to therapists who are familiar with the effects of early deprivation.

Furthermore, information about the risks associated with early deprivation should be presented to prospective adoptive parents to inform and prepare them about possible current and future risks and to inform them about services they can get an access to. Further research should address interventions for adoptees who are at greater risk (e.g., have more mental health diagnosis) and need immediate help. With providing better

preparation of adoptive parents and providing support for post-institutionalized adoptees and their families it may be possible to decrease risks for new post-institutionalized adoptees and have a positive influence on the development of current adoptees.

5.7. Limitations

Despite the many implications this study may have for post-institutionalized adoptees, this study has limitations. First, the sample was non-random and highly selective. Due to the substantial attrition that has happened over time, many of the original RAP participants were not in the current study. There is no way to determine if those who participated in this study differ from those who did not. Additionally, non-random selection of participants increases the chances for Type I error occurrence, which is incorrectly rejecting a true null hypothesis, known as a false positive finding. There are also limitations for generalizing findings of this study due to the limited sample size. It was challenging to engage adoptees in the study and since few adoptees participated it was necessary to use parent as opposed to self-reports. Although parents were found to be reliable informants at previous phases of the RAP, it would have been interesting to examine adoptees' perspectives. Finally, although all adoptees in this study were exposed to early deprivation there was quite likely some variation in the quality of their early care. Due to limited specific information on these adoptees early care, how variations in such care relate to mental and behavioural outcomes could not be addressed in this study. It is the case that other studies suggest that pre-adoption quality of care received by post-institutionalized adoptees is a better predictor of mental and behaviour outcomes in adulthood than duration of deprivation (see Juffer & van IJzendoorn, 2005 for review).

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