

**SOCIAL-EMOTIONAL ADJUSTMENT OF POST-INSTITUTIONALIZED CHILDREN FROM  
12 TO 36 MONTHS OF AGE**

by

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Submitted to the Graduate Faculty of  
The Dietrich School of Arts & Sciences in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy

University of Pittsburgh

2015

UNIVERSITY OF PITTSBURGH

THE DIETRICH SCHOOL OF ARTS AND SCIENCES

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University of Pittsburgh, 2015

Every year thousands of children are adopted into USA families. Many of these children are adopted from countries where the primary form of care is institutions. While much research has focused on adjustment in middle childhood and adolescence, little is known about post-institutionalized (PI) children's adjustment in early childhood. The primary goal of this study was to examine the social-emotional adjustment of PI children during the first three years of life. Furthermore, this study examined the association between age at adoption and time in the adoptive home on children's outcomes. Also, attachment and indiscriminate friendliness (IF) were examined in relation to children's social-emotional outcomes. Adoptive parents provided demographic and adoption information and filled out the Infant-Toddler Social and Emotional Assessment (ITSEA), The Attachment Questionnaire (23 questions), and Chisholm's Indiscriminately Friendly Questions. The sample included 179 children (99 females) adopted between 6 and 30 months of age from Russia (85%), Belarus (8%), and other Eastern European countries (7%) and had lived in the adoptive families for 1-27 months ( $M = 12.83$  months). PI children were compared to the standardization sample of the ITSEA on mean standardized scores and percentage of children in the "*Of Concern*" range. Overall, results showed that PI children had *lower* social-emotional problem scores and a *lower* percentage of children with extreme scores than the standardization sample of the ITSEA. Also, PI children did not differ on competencies and attention skills from the standardization sample of the ITSEA. Age at adoption was related to most outcomes, consistent with the literature, but not time in the adoptive home. In addition, better security of attachment was associated with less behavior problems. PI children's better than expected functioning was surprising considering the social-emotional deprivation of the institutional environment in which these children lived for most of their lives prior to adoption and possible reasons for the unexpectedly normative scores for PI children are discussed.

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## **1.0 INTRODUCTION**

Every year thousands of children are adopted to the United States (U. S. Department of State, 2014). Many of these children are adopted from orphanages and while a lot of research has focused on adjustment in middle childhood and adolescence, little is known about post-institutionalized (PI) children's adjustment in early childhood. In general, institutions provide limited opportunity for child-caregiver relationships and social-emotional deprivation is likely to occur (Smyke et al., 2007). Infants and toddlers placed in institutional care constitute a high risk group of youngsters who are exposed to caregiving environments that may hinder typical developmental processes. Thus, the current study aims to examine PI children adopted and assessed during the first three years of life to understand children's adjustment to the adoptive home and examine catch-up growth.

### **1.1 THE INSTITUTIONAL ENVIRONMENT**

In general, institutions do not provide rearing environments that promote the development of relationships with caregivers (Rosas & McCall, 2011; Smyke et al., 2007). Infants who enter institutions experience several disruptions in relationships during their childhood, beginning with their separation from their biological parents, and then moving from ward to ward within an institution as they grow older (The St. Petersburg-USA Orphanage Research Team, 2005). Institutions differ from one another within and between countries and over time with respect to the level of deprivation to which infants and young children are exposed (Gunnar, 2001; Rutter & The ERA Study Team, 1998). "Socially emotionally depriving institutions" are acceptable at meeting children's basic medical and nutritional needs but deficient in providing social stimulation via stable interpersonal relationships with consistent caregivers (Gunnar, 2001), whereas "globally depriving institutions" provide inadequate care in almost every respect (medical, sanitary, nutritional, social, and psychological).

Social and emotional deprivation in institutions stems in part from poor structural quality that typically involves large child-to-adult ratios, large group sizes, and multiple and rotating caregivers. These institutional characteristics may lead to poor process quality characterized by stress in the caregiver, an inclination for caregivers to perform activities (i.e., feeding, changing diapers) in a perfunctory manner regardless of the child's needs at a specific moment, very limited time for the caregiver to respond in a contingent manner to the child's cues, and an environment in which caregivers rarely provide warm, sensitive interactions with children.

Most children in the current study were adopted from socially-emotionally depriving "Baby Homes" for children up to four years of age in the Russian Federation. Children were housed in groups of 10-14 children homogeneous with respect to age and disability status. Caregiving activities took place as a group, meaning that all children ate, slept, and played at the same time. Caregivers often worked 24-hour shifts and then were off for three days. A group would have 12 or more caregivers per week, and children periodically graduated to new groups of caregivers and peers. Therefore, children were exposed to 60 to 100 different caregivers during the first 24 months of life (The St. Petersburg-USA Orphanage Research Team, 2008). Caregiving was characterized by minimal verbal communication with children, caregivers rarely responded to children's cries or replied to children's initiations of social interaction, and prompt responses to children's distress were rare (Muhamedrahimov, 2000).

## **1.2 ATTACHMENT THEORY**

Quality and stability of caregiver-child relationships are factors theorized to play an important role in the general development of infants and young children (Ainsworth, 1979; Bowlby, 1951). From the perspective of attachment theory, the quality of the caregiver-child relationship cultivates a set of expectations that the child internalizes about him/herself and others, also known as internal working models of relationships (Ainsworth, Bell, & Stayton, 1974; Bowlby, 1969). This set of beliefs influences present and future relationship experiences. Children who experience warm, responsive, affectionate relationships with their caregivers develop a sense of trust and confidence, and they perceive their caregivers to be a secure base from which they can explore the environment. This exploration offers children opportunities for learning and exercising diverse developmental skills. In contrast, infants who

experience inconsistent, non-contingent caregiving develop feelings of helplessness and distress and behaviorally display a decrease in signaling. Children experiencing this kind of negative care are likely to develop insecure attachment styles, which are risk factors for later psychological, emotional, and social problems as well as delayed physical growth (Blizzard, 1990; Goldberg, 2000; Johnson, 2000; Landry, Smith, & Swank, 2006). In institutions, warm, sensitive caregiver-child relationships are almost non-existent, and children lack the opportunity of having a secure base from which to explore their environments and develop secure attachment styles. Thus, it is not surprising that studies have showed that PI children have higher than expected rates of attachment difficulties with their adoptive parents (Chisholm, 1998; Marcovitch et al., 1997; O'Connor, Marvin, Rutter, Olrick, & Britner, 2003).

### **1.3 EMOTION REGULATION**

One of the functions of attachment relationships among parent-reared children is to support the regulation of emotions in infants and young children (Cassidy, 1994; Thompson, 1994). Early in infancy, the caregiver takes an important co-regulating role because infants rely almost exclusively on caregivers to regulate their emotions. Over time, the role is gradually taken on by the child using the scaffolding provided by the caregiver, a process known as self-regulation (Eisenberg et al., 2004).

In addition, the caregiver's contingent and reciprocal response to the child's cues plays an important role in the dyadic interaction and co-regulation of emotions. The caregiver is the child's first and most important interactive partner. The caregiver provides social interchanges during which infants and young children have the opportunity to develop and practice skills necessary for typical development (i.e., attention, share emotions, effective social engagement). This caregiver-child turn-taking behavior, known as joint attention, serves as the optimal form of social stimulation for the infant. Children with well-developed joint attention skill have positive affect, better attention skills, better social interactions with peers, higher social-emotional skills, and better social competence (Dunham & Dunham, 1990; Moore & Dunham, 1997; Raver, 1996).

There is a clear association between self-regulation competence in early childhood and stable, contingent, sensitive caregiving, as well as an association between disrupted infant-caregiver relationships or negative and unresponsive care and children's dysregulation (Eisenberg et al., 2001, 2004; Eisenberg,

Spinrad, & Eggum, 2010; Fox & Calkins, 2003). In addition, emotional dysregulation is associated with externalizing (Eisenberg et al., 2001; Eisenberg et al., 2010; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005) and internalizing problems in children (Chaplin, Cole, & Zahn-Waxler, 2005; Eisenberg et al., 2010; Yap, Allen, & Sheeber, 2007). Further, emotional regulation may serve as a mediating pathway between lack of responsive care and children's adjustment problems (Belsky, Fearon, & Bell, 2007; Eiden, Edwards, & Kenneth, 2007; Eisenberg et al., 2005).

Thus, a competent caregiver is essential to help infants and young children develop appropriate regulatory capabilities (Repetti, Taylor, & Seeman, 2002), and the absence of early caregiver-child interactions and relationships, such as children experience in institutional care, are associated with longer-term attachment, social emotional development, and behavior problems.

#### **1.4 EARLY LIFE STRESS MODEL**

The early life stress model theorizes that the quality of the caregiver-child interaction is a powerful regulator of the stress response system in the infant (Gunnar & Quevedo, 2007; Kertes, Gunnar, Madsen, & Long, 2008; Nelson III, Bos, Gunnar, & Sonuga-Barke, 2011). Chronic activation of the stress response system adversely affects the development of brain structures and neural systems, and this could lead to negative social, behavioral, and emotional outcomes. Infants with parents who do not consistently respond to their signals display hypo-responsive neuroendocrine activity in the stress response systems (Gunnar & Cheatham, 2003).

Institutions provide an unpredictable environment characterized by lack of sensitive care, inconsistency of caregivers, and poor caregiver-child interactions that could lead to children experiencing high and chronic levels of stress. In addition, insensitive caregiving results in chronic stress, because the child experiences a sense of vulnerability and the expectation that they do not have access to assistance from a caregiver when needed. Thus, the development of the infant's stress response system is contained within the development of an attachment to a primary caregiver. In fact, physiological stress responses are mediated by attachment security (Gunnar, Brodersen, Nachmias, Buss, & Rigatuso, 1996; Spangler & Schieche, 1998; Sroufe & Waters, 1977). While infants and young children with secure attachments do not show an imbalance in neuroendocrine activity, those with insecure attachments do show an imbalance

when exposed to distress-eliciting events (Gunnar & Donzella, 2002). Thus, absence and/or disruption in relationships with a primary caregiver early in life can interfere with the emerging regulatory system. Institutionalized children have shown imbalances in their stress response system (Carlson & Earls, 1997), and research on PI children has shown imbalances within the first month post-adoption (Gunnar, 2000) and several years after adoption (Gunnar, Morison, Chisholm, & Schuder, 2001).

As the theoretical perspectives mentioned above posit, a sensitive, responsive, and warm relationship with a stable caregiver is important for the development of an attachment relationship, emotional regulation skills, and healthy development of the stress response system. Thus, given the lack of contingent and responsive care experienced in institutional environments, it is not surprising that PI school-age children and adolescents, especially those adopted at somewhat older ages, have higher than expected rates of internalizing and externalizing problems, emotion dysregulation, inattention, and indiscriminate friendly behaviors that may persist even after placement into more favorable environments (Audet & Le Mare, 2010; Fisher, Ames, Chisholm, & Savoie, 1997; Hawk & McCall, 2010; Merz & McCall, 2010; Roy & Rutter, 2006; Rutter et al., 2010; Vorria et al., 2006). The current project asked whether PI children 1-3 years of age adopted by USA families would display similar social-emotional issues.

## **1.5 LIMITATIONS OF THE LITERATURE ON ADOPTEES**

There are several limitations in the available literature on adopted PI children that this study addresses. First, researchers examining the development of international adoptees sometimes combine children adopted from families, hospitals, institutions, and foster care into one group of adoptees (Cohen, Coyne, & Duvall, 1993; Cohen & Farnia, 2011; Fergusson, Lynskey, & Horwood, 1995; Juffer & van IJzendoorn, 2005; Singer, Brodzinsky, Ramsay, Steir, & Waters, 1985; van den Dries, Juffer, Van IJzendoorn, & Bakermans-Kranenburg, 2009; van IJzendoorn, Juffer, & Klein Poelhuis, 2005). Children in such mixed groups may have a variety of different early experiences, which circumstance does not permit a specific focus on the role of institutionalization (MacLean, 2003). Children adopted at an early age from less-depriving placements usually have developmental trajectories similar to non-adopted family-reared children; if these children are combined with a group of adopted children from depriving

institutions, it can result in biased or diluted findings, which would then underestimate the effects of institutional deprivation on children's outcomes. Thus, the current sample includes only children who lived in institutions for at least three months.

Second, there is very limited research on the social-emotional development of PI adopted children under four years of age, and one group of such studies focused on children adopted from the 1990s globally depriving Romanian institutions (Fisher et al., 1997; Marcovitch et al., 1997; Rutter & The ERA Study Team, 1998). These studies show lasting effects of deprivation through adolescence, even after living in the adoptive home for more than a decade (Fisher et al., 1997; Groza, Ryan, & Cash, 2003; Rutter et al., 2010). Thus, most of the longitudinal data on post-institutionalized children's development is derived from children who experienced extremely depriving conditions early in life. The current study involved children from socially-emotionally depriving institutions who were assessed in the first few years after adoption.

Third, another group of studies on infants and young children involved children adopted from institutions in China (Tan, Camras, Deng, Zhang, & Lu, 2012; Tan & Marfo, 2006; Tan & Yang, 2005). Children adopted from China comprise a different group of adoptees; most of them are girls that are abandoned by their families because of the One Child policy as opposed to poverty, parental drug and alcohol abuse, parental mental illness, and/or neglect/abuse, which are the main reasons for placing infants in institutional care in many other low-resource countries. It is likely that Chinese children had better prenatal care, and most children who are sent to institutions for international adoption are healthy (Cohen & Farnia, 2011). In general, research shows that children adopted from China and East Asia have better developmental outcomes than children adopted from Russia (Pomerleau et al., 2005). But, empirical information on the quality of institutions in China is almost nonexistent.

Therefore, the influence of social-emotional deprivation on the early adjustment of post-institutionalized infants and young children remains unclear. Most children included in this study (85%) were adopted from Russian institutions, which mainly fall into the socially emotionally depriving category and have been extensively empirically described (The St. Petersburg-USA Orphanage Research Team, 2005, 2008).

Fourth, the majority of the existing literature has focused on social-emotional and behavior problems, failing to take into account children's social-emotional competencies. Competencies reflect the presence of age-appropriate skills necessary for children to make and maintain healthy relationships with their family and peers that could influence children's current and future behavioral and social-emotional development. Therefore, to have a more rounded understanding of the social-emotional development of

children, it is necessary to examine behavioral competencies as well as problems, which was done in this study.

Fifth, there is limited literature and mixed findings on the association between PI infants' and toddlers' social-emotional development and age at adoption and time in the adoptive home. The majority of studies assessing school age children and adolescents have found age-at-adoption effects, with children adopted later having higher rates of developmental problems than children adopted earlier. Therefore, given the limitations in the literature just mentioned, it would be important to examine the role of age at adoption in younger PI children's development.

## **1.6 SOCIAL-EMOTIONAL DEVELOPMENT OF POST-INSTITUTIONALIZED CHILDREN**

Researchers have consistently found that even though most PI children have typical developmental trajectories, a subgroup of children have poorer attachment relationships, more internalizing and externalizing problems, attention difficulties, poorer emotion regulation, and poorer executive functioning (Ames et al., 1997; Fisher, Ames, Chisholm, & Savoie, 1997; Morison, Ames, & Chisholm, 1995; O'Connor, Marvin, Rutter, Olrick, & Britner, 2003; Rutter et al., 2010; Tizard & Rees, 1975; Verhulst, Althaus, & Versluis-Den Bieman, 1990). Research on adopted children is challenging because there is not a perfect comparison group (Ames et al., 1997). In general, studies comparing adopted children with non-adopted children or standardized norms find that during middle childhood and adolescence adoptees have more behavior problems (Ames et al., 1997; Hoksbergen, Rijk, Dijkum, & Laak, 2004; Stams, Juffer, Rispen, & Hoksbergen, 2000; Verhulst, Althaus, & Versluis-Den Bieman, 1990). When children between 6 and 18 years of age from socially-emotionally depriving Russian institutions were compared to children from globally depriving Romanian institutions, the former group had lower percentages of children within the clinical/borderline range of externalizing problems. But, higher rates of externalizing problems were reported in children from socially-emotionally depriving institutions when compared to the CBCL standardization sample (Merz & McCall, 2010).

In addition, among school-age children and adolescents adopted early in life from socially-emotionally depriving institutions, rates of behavior problems are not associated with poor birth circumstances, such as low birth weight or prematurity (Merz & McCall, 2010); so it is likely that their



institutional experience plays a major role. It is important to examine whether the higher rates of problems found in middle childhood and adolescence are also found early in life. The literature reviewed below includes only studies that involved samples of post-institutionalized children assessed within the first 3 years of life.

### **1.6.1 Attachment**

Security of attachment is reflected in the child's use of the caregiver as a base for exploration and as a source of comfort when experiencing distress (Ainsworth, Blehar, Waters, & Wall, 1978). A meta-analysis on attachment security found that children adopted after their first year of life showed significantly lower attachment security than non-adopted children (van den Dries et al., 2009).

Attachment security was examined in Romanian children adopted into Canada before 5 years of age with parental report using a matched-pair design. PI children adopted after 8 months of age had significantly lower attachment security than non-adopted children (as measure with the Attachment Security Questionnaire), and attachment scores were not associated with time in the adoptive home (Chisholm, Carter, Ames, & Morison, 1995). A follow-up study of the same children showed that attachment security significantly increased for PI children from the first assessment (when children were between 17 and 76 months of age) to the second assessment (three years later) when PI children no longer differed from non-adopted children (Chisholm, 1998). Insecurely attached PI children scored significantly higher on total behavior problems and externalizing problems on the CBCL than securely attached children (Chisholm, 1998).

Adoptive mothers of Chinese adoptees perceived a non-linear pattern in the trajectory of attachment security on the Attachment Security Questionnaire from the first to the 24-month assessment. In the last assessment, there were no differences in maternal ratings for adopted vs. non-adopted parent-reared children. Overall, the trajectory showed rapid acceleration of attachment behaviors from the first weeks post-adoption to 6 months post-adoption and less variation in the follow-up assessments. Thus, results suggested that PI children formed an attachment relationship within the first six months post-adoption (Cohen & Farnia, 2011).

Overall, the literature suggests that security of attachment increases over time in the adoptive home, and that age at adoption could be associated with the extent of later improvements.

### **1.6.2 Indiscriminate Friendliness**

Over the last three decades, researchers have described institutionalized and post-institutionalized adopted children as displaying overly friendly behaviors towards adults including strangers. Researchers have used different labels for this behavior, such as, indiscriminate friendliness (Chisholm et al., 1995; Chisholm, 1998), disinhibited attachment behavior (O'Connor, Bredenkamp, Rutter, & The ERA Study Team, 1999), and indiscriminate behavior (Zeanah, Smyke, & Dumitrescu, 2002), and they have used different measures to assess it. However, a study found that a single concept was being measured (Zeanah et al., 2002), and thus the term indiscriminate friendliness will be used hereafter.

Research on indiscriminate friendliness of toddlers and young children adopted from socially-emotionally depriving institutions is scarce. Most research on indiscriminate friendliness in post-institutionalized adopted children has focused on samples of children adopted from globally depriving institutions, and the children have been assessed after 3 years of age (Chisholm, 1998; Rutter et al., 2010). Thus, examination of indiscriminate friendliness in relation to other behaviors within the first three years of life is important to clarify whether previous findings on PI adoptees assessed during adolescence are also found in toddlers and young PI adoptees. In general, indiscriminate friendliness is not related to age at assessment or gender (Bruce, Tarullo, & Gunnar, 2009; Oliveira et al., 2012; Zeanah et al., 2002), but mixed results have been found for time in institutional care and age at adoption.

Longitudinal research on children adopted from globally-depriving 1990s Romanian institutions has shown that indiscriminate friendliness persists over relatively long periods of time in the adoptive home and that it could be related to age at adoption. For example, Rutter and colleagues followed children adopted into the United Kingdom and found that at 11 years of age the rate of indiscriminate friendliness, measured using observational measures, for children adopted after 6 months of age was significantly higher (39.1%) than in the comparison group (7%), which included children adopted before 6 months of age from Romanian institutions and domestic UK adoptees (Rutter et al., 2010). Indiscriminate friendliness was also examined in Romanian children adopted into Canada before 5 years of age. Using parent report and a matched-pair design, results showed that children adopted before 4 months of age displayed significantly less indiscriminately friendly behavior than children adopted after 8 months of age. In addition, indiscriminate friendliness did not decrease in late adoptees from the first assessment (when children were between 17 and 76 months of age) to the second assessment (three years later), whereas for early adoptees, indiscriminately friendliness did significantly decrease (Chisholm, 1998).

Indiscriminate friendliness may be present even after living in the adoptive home for almost a decade and is more prevalent in children adopted from globally depriving institutions after 6 to 8 months

of age. A literature review on age at adoption suggests that in some studies, children adopted at a later age were more likely to show indiscriminate friendliness (Julian, 2013); however, most of the studies that found an age-of-adoption effect assessed children after 4 years of age, while mixed and null results were more frequent in studies of children assessed at earlier ages. Thus, more research is needed in children assessed within the first 3 years of age to elucidate this issue.

Some researchers believe that the function of indiscriminately friendly behaviors in institutionalized children is to obtain a little more attention and social contact from institutional caregivers (Chisholm, 1998). But its function after adoption is less clear, with some suggesting that indiscriminately friendly behaviors are rewarded by friends and relatives (Chisholm et al., 1995). There is limited information on the etiology of indiscriminate friendliness. Some researchers believe that it is related to attachment problems, while others suggest that is related to attention and/or inhibitory control problems. Research has shown significant associations between indiscriminate friendliness and attention problems (Chisholm, 1998; O'Connor et al., 1999; O'Connor, Rutter, & The ERA Study Team, 2000; Roy, Rutter, & Pickles, 2004) but not with attachment problems (see below).

Researchers have examined whether indiscriminate friendliness is related to inconsistent caregiving experience prior to adoption by comparing scores of children adopted from institutions to children adopted from foster care. A study by Van den Dries and colleagues (2012) compared Chinese girls adopted between 11 and 16 months of age from institutions versus foster care. Girls were assessed using parental report 2 and 6 months after arriving in The Netherlands. There were no significant differences in total scores between the two groups (as measured with the Indiscriminate Friendliness Questions (Chisholm et al., 1995)) during both assessment times and no significant changes over time (Van Den Dries, Juffer, van IJzendoorn, Bakermans-Kranenburg, & Alink, 2012). Similar results were found on a sample of children adopted into the United States before 36 months of age from institutions (mainly in Eastern Europe and China) and foster care (from South Korea) but assessed between 6 and 7 years of age (Bruce et al., 2009) using a combination of observational measures and parental report. There were no significant differences on mean scores of indiscriminate friendliness; having multiple placements before adoption also was not associated with indiscriminate friendliness. Therefore, inconsistency of care does not seem to fully explain the development of these behaviors.

Studies on the association between consistent caregiving in institutions and indiscriminate friendliness have found that indiscriminate friendly behaviors are also exhibited by children living in institutions that provide high quality care (Tizard & Rees, 1975) and by children living in smaller groups with consistent caregivers (Zeanah et al., 2002). Zeanah et al. (2002) compared institutionalized children living in a “care as usual” unit (i.e., with typical institutional characteristics) with children living in a Pilot

Unit (groups of 10 – 12 children with only four consistent caregivers) and Never Institutionalized children. Institutional caregivers were interviewed on children’s attachment behaviors and signs of disordered attachment. Results showed that a total of 69% of children in the “care as usual” unit and 34% of children in the Pilot Unit exhibited high levels of indiscriminate friendly behaviors, and having a preferred caregiver did not prevent children from exhibiting the behaviors. Results suggest that indiscriminate friendliness may not be totally related to the presence/absence of consistent care from a few stable caregivers prior to adoption and that additional elements have to be examined.

Research on the connection between attachment classification and security of attachment with indiscriminate friendliness in institutionalized and post-institutionalized adopted children has shown no significant association (see review by Bakermans-Kranenburg et al., 2011). Indiscriminate friendliness has been found in institutionalized children who had a preferred caregiver, by those who displayed organized patterns of attachment towards institutional caregivers (Zeanah, Smyke, Koga, Carlson, & The BEIP Core Group, 2005), and by PI children who displayed organized attachments and high levels of secure attachment towards their adoptive parents (Bruce et al., 2009; Van Den Dries et al., 2012). Also, one study found a significant positive correlation between indiscriminate friendliness after adoption and being a favorite child in the institution (Chisholm, 1998).

In sum, PI adopted children who spent their first months or years of life in both globally and social-emotionally depriving institutions may show indiscriminately friendly behavior, the behavior seems to persist and may not completely disappear over several years in the adoptive home, and it is displayed even after PI children have formed attachments to their adoptive parents (Beckett et al., 2002; Bruce et al., 2009; Chisholm, 1998; Kreppner et al., 2010; Marcovitch et al., 1997; O’Connor et al., 1999, 2003; Smyke, Dumitrescu, & Zeanah, 2002; Tizard & Hodges, 1978; Tizard & Rees, 1975; Van Den Dries et al., 2012; Zeanah et al., 2002).

### **1.6.3 Attention**

There is limited information on attention problems in post-institutionalized children under the age of 4 years. Thus, research reviewed below pertains to attention problems in children assessed after 4.5 years of age.

Cross-sectional research on attention consistently shows that institutionalized and post-institutionalized school-age children and adolescents have higher rates of attention problems than non-adoptees, children in foster families, and standardization samples (Groza, 1999; Roy et al., 2004). In

addition, longitudinal studies of children adopted from globally depriving institutions have shown that post-institutionalized children have significantly higher inattention and over-activity scores than children adopted earlier (within the first 6 months from institutions and within the first 8 months from hospitals, families, and institutions) and non-adopted children (Audet & Le Mare, 2010; Rutter et al., 2010). The study by Audet and Le Mare assessed children at 4.5, 10.5 and 17 years of age and found that post-institutionalized children had significantly higher rates of scores in the borderline clinical range as measured with the Attention Problems subscale of the CBCL at all three time points than non-adopted children. In addition, the study found a significant positive correlation between time in the institution and inattention/overactivity at the first assessment but not at the other two assessments, but further examination showed that the magnitude of the association did not diminish over time (Audet & Le Mare, 2010).

Studies of PI children from the same population as the current study have also found higher rates of attention problems. For example, PI children between 6 and 18 years of age had significantly higher percentages of children in the clinical/borderline range on the Attention Problems subscale than children in the standardization sample of the CBCL (Merz & McCall, 2010). Another study found that when dividing children into two groups of age at assessment (6-11 years and 12 to 18 years) and two groups of age at adoption (< 18 months and > 18 months), both earlier and later adopted PI children assessed between 6 and 11 years of age did not differ from non-PI children, but PI children adopted after 18 months and assessed between 12 and 18 years of age had significantly higher mean T-scores than children from the standardization of the CBCL (Hawk & McCall, 2011).

In addition, a study of school age children and adolescents from the same population from which the current sample was drawn examined the association between direct assessment of inhibitory control and working memory with attention functioning. PI children were assessed between 8 and 17 years of age at their homes using the CANTAB inhibitory control and working memory tasks and their parents filled out the Conners' Parent Rating Scale. Results comparing early adoptees (children adopted  $\leq 9$  months of age) and older adoptees (adopted  $\geq 14$  months of age) showed that older adoptees performed more poorly on inhibitory control and working memory than PI children adopted earlier, and older adoptees had significantly higher *T* scores on the Inattention and Hyperactive-Impulsive scales of the Conners' than those adopted  $\leq 9$  months. Results also showed that inhibitory control and working memory were not associated with Inattentive scale scores but were significantly correlated with the Hyperactive-Impulsive scale (Merz, McCall, Wright, & Luna, 2013). In sum, studies of post-institutionalized children consistently show attention problems in school-age children and in adolescents.

Therefore, it is important to examine whether PI children also display problems with attention when assessed within the first years of life.

#### **1.6.4 Internalizing and Externalizing Problems**

Internalizing and Externalizing problems have been largely studied in older populations of post-institutionalized children, and there is scarce research on infants and toddlers. Only four studies with independent samples were found that included children 3 years of age or younger. One of the studies included children from globally depriving institutions, and the other three studies included children adopted from China.

The study of children from globally depriving institutions was done by Fisher and colleagues (1997). The study examined behavior problems using the Child Behavior Checklist (CBCL) in 17- to 43-month-old children. Children adopted from globally depriving institutions after the age of 8 months were matched in age and sex to a group of Romanian children adopted from families and hospitals who would end up in institutions if they had not been adopted within their first 4 months of age and to a group of Canadian-born non-adopted children. Results showed that PI children had significantly higher Internalizing scores than early adoptees and Canadian-born children, but no differences in Externalizing scores were found among the three groups (Fisher et al., 1997). This study did not examine age at adoption effects.

Two cross-sectional studies included children adopted from Chinese institutions into the U.S. Tan and Marfo (2006) found that 18- to 60-month-old adopted girls had significantly lower/better Internalizing and Externalizing scores than the standardization sample of the CBCL. Results also showed that age at adoption did not predict CBCL scores, while history of neglect and initial rejection behaviors towards adoptive parents were positively associated with Internalizing and Externalizing problems (Tan & Marfo, 2006). Rojewski and colleagues (2000) assessed Chinese-born children between 1.8 and 9.6 years of age. Results showed that children scored within the normal range in most areas of the Behavior Assessment System for Children (BASC). To examine age-at-adoption effects, children were divided in two groups, children adopted before 18 months and those adopted at 18 months or after, but no significant differences were found between the two groups. The study also examined time in the adoptive home (<2 years vs  $\geq 2$  years) and found that children who had been in the adoptive home for 2 years or more had significantly *higher/worse* scores on hyperactivity, aggression, and somatization (Rojewski, Shapiro, &

Shapiro, 2000). One of the weaknesses of the study was the small sample size ( $N = 45$ ) and the wide range of ages at adoption (1 month to 7 years).

The third study of children adopted from China included girls between 8- and 21- months of age at adoption and longitudinally assessed at 1, 6, 12, and 24 months post-adoption using the CBCL (Cohen & Farnia, 2011). The majority of children were from institutions (77%), some children had institutional and foster care experience (18%), and some had experienced foster-care only (4.3%). Results of trajectories of Internalizing and Externalizing problems showed linear increases in Internalizing behaviors from 6 to 24 months post-adoption. Further examination within the Internalizing scale showed a significant difference on the Emotion Reactivity subscale between adopted children and the non-adopted parent-reared (not of Chinese ancestry) comparison group (Cohen & Farnia, 2011). Results showed that age at adoption was not related to either Internalizing or Externalizing scores.

In sum, studies showed that children adopted from China do not exhibit internalizing or externalizing problems during the first few years of life. However, the study of children adopted from Romanian institutions showed that post-institutionalized children had higher internalizing problems than Romanian children adopted from hospitals and families. Internalizing problems would be expected more than externalizing problems given the conditions of the institutions where children spend most waking hours in their cribs and caregivers fail to respond to the children's behaviors (i.e., crying, sounds) leading the child to withdraw. Interestingly, the two studies that looked at time in the adoptive home showed increases in internalizing scores with increasing time in the adoptive home, and further exploration of this variable could clarify outcomes of school-age children and adolescents. As mentioned above, it is difficult to infer the influence of social-emotional deprivation on children's initial adaption to the adoptive home from these samples of post-institutionalized children, and this paper aims to fill this gap.

In terms of age of adoption, none of the studies of children adopted from China showed age-at-adoption effects on internalizing or externalizing behaviors. Even though Fisher and colleagues did not examine the effect of age at adoption, results of time in the Romanian institution (which is usually highly correlated with age at adoption) were presented in another article using the same sample of children. Correlational analyses showed that children who had lived longer in institutions had more internalizing and externalizing problems (Ames et al., 1997). Thus, it is unclear if age at adoption would be associated with behavior problems in young children adopted from socially emotionally depriving institutions.

## **2.0 SPECIFIC AIMS**

The overarching goal of this study is to examine the social-emotional adjustment of 1- to 3-year-old children adopted from socially-emotionally depriving institutions.

### **2.1 AIM 1**

Determine whether PI infants and young children differ from parent-reared children in their social-emotional development as measured with the ITSEA.

The caregiving environment experienced by institutionalized children differs in structural characteristics and process quality from family environments. Children living in socially-emotionally depriving institutions lack the opportunity to experience an interactive partner and an environment where they can develop and practice the skills necessary for typical development. However, prior studies have shown mixed results in social-emotional outcomes of samples of infants and toddlers after adoption, with some studies finding poor outcomes (Fisher et al., 1997) and others finding no differences (Tan & Marfo, 2006). Consistent with the literature reviewed above, PI children exhibit higher rates of internalizing problems but no differences on externalizing problems compared to non-adopted parent-reared children. The first aim of this study was to examine PI children's social-emotional problems and competences compared to the standardization sample of non-PI, parent-reared, USA children.



### **2.1.1 Aim 1 hypotheses**

There are four hypotheses for Aim 1.

2.1.1.1 It is expected that PI children will have more internalizing problems, dysregulation problems, and Negative Emotionality than the ITSEA standardization sample of non-PI, parent-reared, USA children. No differences in externalizing problems are expected.

2.1.1.2 It is expected that PI children will have poorer competencies and poorer attention skills than the ITSEA standardization sample of non-PI, parent-reared, US children.

2.1.1.3 It is expected that a higher percentage of PI children will score in the *Of Concern* range in the Internalizing, Dysregulation and Competence domains and the Negative Emotionality and Attention subscales than the ITSEA standardization sample of non-PI, parent-reared, US children. No significant differences are expected in the Externalizing domain.

2.1.1.4 It is expected that PI children will have a higher percentage of subscales in the *Of Concern* range within a given domain than the ITSEA standardization sample of non-PI, parent-reared, US children.

## **2.2 AIM 2**

Investigate the extent to which age at adoption and time in the adoptive home are related to children's social-emotional adjustment.

Longer exposure to depriving environments has been found to be a risk factor for lasting social and emotional problems. Research on PI children has shown that age at adoption is a proxy for time in the institution (Hawk, McCall, Groark, Muhamedrahimov, Palmov, & Nikiforova, 2012). Findings of prior studies suggest that children adopted at later ages have higher rates of problems than children

adopted earlier (Julian, 2013; Merz & McCall, 2010; Rutter et al., 2010). The second aim explored age at adoption and time in the adoptive home in relation to children's social emotional development.

### **2.2.1 Aim 2 hypotheses.**

There are three hypotheses for Aim 2.

2.2.1.1 It is expected that as age at adoption increases, children will show poorer social-emotional development.

2.2.1.2 It is expected that as children spend more time in the adoptive home, children will show more secure attachment. However, no specific hypotheses were made for behavior problems since there are mixed findings in the literature.

2.2.1.3 It is hypothesized that age at adoption will be associated with children's social-emotional development over and above time-in-the-adoptive home. Children adopted later, who also have spent less time in the adoptive home, are expected to have more social-emotional problems and poorer social competence than children adopted early regardless of time in the adoptive home.

## **2.3 AIM 3**

Analyze how children's social-emotional adjustment is related to security of attachment to their parents and indiscriminate friendly behavior towards adults and children.

Infants' and toddlers' social-emotional development is linked to consistency of care, caregiver sensitivity and social interactions with caregivers (Ainsworth et al., 1974; Eisenberg et al., 2005).

Previous studies have found that children's attachment patterns are related to behavior problems;

specifically, PI children displaying insecure attachment styles scored higher on Total behavior problems (as measured with the CBCL) and Externalizing problems (Chisholm, 1998).

As mentioned above, in PI children, indiscriminate friendliness could be an adaptive behavior in the institutional setting, and it is displayed even in children with organized patterns of attachment (Zeanah et al., 2005). Thus, it seems unrelated to attachment problems in PI children (Bruce et al., 2009; Van Den Dries et al., 2012). This study's third aim was to assess attachment-like behaviors and indiscriminate friendliness and their relations to social emotional development.

### **2.3.1 Aim 3 hypotheses.**

2.3.1.1 It is expected that children's security of attachment will be unrelated to children's indiscriminate friendly behavior.

2.3.1.2 It is expected that PI children with lower/worse attachment security will have poorer social-emotional development than children perceived to show closer attachments to their mothers.

2.3.1.3 It is anticipated that PI children who display more indiscriminate friendly behaviors will have poorer social-emotional development (except for the internalizing domain) than children displaying less indiscriminate friendliness behaviors.

### **3.0 METHOD**

#### **3.1 PROCEDURE**

Packets were mailed to all parents who had adopted a child through a single adoption agency based in Pittsburgh that specializes in placing predominately Russian children into the US. Each packet contained questionnaires, a letter, a consent form, and a stamped return envelope. The letter described the purpose of the study and assured parents of confidentiality for the information they provided. Parents were offered a small monetary compensation for completion of the questionnaires.

There were four rounds of data collection (2001, 2003, 2008, and 2010). In each round, questionnaires were sent to all parents on the agency's list, which meant that children varied in age and some parents could respond in more than one round. Only the first round in which a parent responded was used in the present study. The rate of returned questionnaires (i.e., out of total number of surveys mailed, excluding undeliverable ones) was 40% for questionnaires sent in 2001, 37% for those sent in 2003, 51% in 2008, and 38% in 2010. These response rates are lower than the 66% reported by Gunnar et al. (2007), where parents had previously indicated an interest in participating through a research registry; but they are higher than the 28-36% response rate reported by Groza and Scott (2002) of parents of Romanian adoptees. A study on the current population indicated that children of parents who responded vs children of parents who did not respond did not differ on demographic characteristics such as gender, age at adoption, or age at assessment and did not differ in general ratings of their children's adjustment (Hawk et al., 2013), indicating no bias in this regard as to who returned and did not return questionnaires.

### 3.2 PARTICIPANTS

Participants are a subset of parents of children from a larger study on the development of post-institutionalized children adopted into the US mostly from socially-emotionally depriving Russian institutions. Data were collected for 226 children between 12 and 36 months of age. Children were excluded if they had an incomplete ITSEA ( $n = 1$ ), had a parent-reported professionally diagnosed disability ( $n = 8$ ), or had been exposed to a social-emotional intervention while in the institution ( $n = 38$ ). Thus, the present sample includes 179 children (99 females). ITSEA data were collected in 2001 for 38.5% of the total sample, in 2003 for 36%, in 2008 for 16%, and in 2010 for 9.5%. Children were adopted from the Russian Federation (85%), Belarus (8%), and “other” countries (7%). Children were between 6 and 30 months of age at adoption ( $M = 11.89$ ;  $SD = 4.11$ ) and had been living in their adoptive home between 1 and 27 months ( $M = 12.83$ ,  $SD = 6.67$ ).

Descriptions of Russian institutions for young children show that this set of institutions provides adequate medical care, nutrition, safety, hygiene, toys and play equipment, and caregiver-to-child ratios, but are deficient in terms of psychosocial care (The St. Petersburg-USA Orphanage Research Team, 2005). Children are exposed to multiple rotating caregivers, experience limited caregiver-child social interactions, and lack appropriate responses from the caregivers to their social overtures.

### 3.3 MEASURES

The following was gathered from parents.

#### 3.3.1 Child’s information

Parents reported the child’s date of birth and date on which they filled out the survey; this information permitted calculating the child’s *age at assessment*. Parents also reported the date on which the child

came into the parent's full-time care, which helped to define *age at adoption*. *Time in the adoptive home* was obtained by subtracting age at adoption from age at assessment (Table 1).

**Table 1.** Descriptive Data of the PI Sample

	N	Mean	SD	Range
Boys/Girls	80/99			
Country of birth				
Russia	152 (84.9%)			
Belarus	15 (8.4%)			
Other	12 (6.7%)			
Age (months)	179	24.72	6.18	12.06 – 35.98
Time in the institution (months)	164	10.67	3.96	3.00 – 23.00
Age at adoption (months)	179	11.89	4.11	5.65 – 29.80
Time in adoptive home (months)	179	12.83	6.67	1.18 – 27.17
Children living in a two-parent household	169			
Household income <sup>a</sup>	106	125,000 – 150,000		
Mother's age	176	40.14	5.04	28.96 – 52.38
Father's age	168	41.77	6.13	29.19 -63.65

<sup>a</sup> Information about household income was not collected during the data collection done on 2003. Thus, the *N* is so low.

In addition, parents reported their child's birth weight and whether the child was born premature. Birth weight information was available for 65% of children. Children with and without birth weight data did not differ significantly on age at adoption  $t(177) = -.887, p = .38$ , time in the adoptive home  $t(177) = .718, p = .47$ , or age at assessment  $t(177) = .181, p = .86$ . Birth weight was dichotomized into *low birth weight* (defined as weighing less than 2500 grams – score of 1) or not (score of 0). Twenty-three percent of children scored in the low-birth-weight range. Information about premature birth was available for 84% of children. Children with and without data about prematurity did not differ significantly on age at adoption  $t(177) = .622, p = .54$ , time in the adoptive home  $t(177) = -.081, p = .94$ , or age at assessment  $t(177) = .327, p = .74$ . Twenty-two percent of children were born prematurely.

### **3.3.2 Time in the institution**

Of the 164 children with information about the amount of time spent living in an institution, 135 children spent more than 80% of their lives in an institution before adoption. Nine adoptive parents reported that their children had spent some time with their biological parents before entering the institution. However, the highest percentage of a child's life spent with their biological parents was 30% ( $M = 16\%$ ). The correlation between parent-reported *time in an institution* and *age at adoption* was  $r = .85, p < .001$ . Age at adoption was used in analyses rather than time in an institution because it was more likely to be accurately reported.

### **3.3.3 Family characteristics**

Parents reported on their highest level of education obtained: (a) less than a high school degree; (b) high school diploma/GED; (c) some college; (d) associate degree in college occupational/vocational program; (e) associate degree in college academic program; (f) registered nurse; (g) bachelor's degree; (h) master's degree; (i) professional school degree; (j) doctorate degree. These responses were dichotomized into parents who completed a bachelor's degree or higher vs. parents with a lower level of education. A total of 85.5% of parents had obtained a bachelor's degree or higher.

Parents reported on their marital status: (a) married; (b) remarried; (c) living with partner; (d) separated; (e) divorced; (f) single; and (g) widowed. These responses were dichotomized into 2-parent household (which included the first 3 choices) vs. 1-parent household. A total of 95.5% of children lived

in a 2-parent household. Also, parents were asked about family income before taxes in the year prior to completion of the survey. Income was reported in \$25,000 increments from <\$50,000 to ≥\$200,001 and assigned a number from 1 to 8. The mean household annual income was \$125,000 - \$150,000.

Parents responded to several questionnaires with regard to their children's current behavior.

### **3.3.4 Infant-Toddler Social and Emotional Assessment**

The Infant-Toddler Social and Emotional Assessment (ITSEA; Briggs-Gowan & Carter, 1998) is a parent-report questionnaire designed to identify competencies and social-emotional problems in children between 12 and 35 months of age. For each statement parents indicate if the child displayed the behavior described Rarely/Not True (0), Sometimes (1), Often/Very True (2), or No Opportunity to Observe (0).

The ITSEA consists of four domains: Externalizing, Internalizing, Dysregulation, and Competence. The Externalizing Domain (24 items) contains three subscales: Activity/Impulsivity, Aggression/Defiance, and Peer Aggression. The Internalizing Domain (31 items) has four subscales: Depression/Withdrawal, General Anxiety, Separation Distress, and Inhibition to Novelty. The Dysregulation Domain (34 items) has four subscales: Negative Emotionality, Sleep, Eating, and Sensory Sensitivity. The Competence Domain (37 items) is comprised of six subscales: Compliance, Attention, Mastery Motivation, Imitation/Play, Empathy, and Prosocial Peer Relationships.

To score the ITSEA for each subscale, the sum of the values of each answered item is divided by the total number of questions that were answered resulting in a subscale mean raw score. Subscale's mean raw scores range from 0 to 2. Then, subscale mean raw scores are used to compute the mean domain score.

#### **3.3.4.1 Standardization Sample of the ITSEA**

The standardization sample included 600 children (300 males) between 12 and 35 months and 30 days of age. Data were collected from different sites across 42 states. Children were divided into four age bands (12-17, 18-23, 24-29, and 30-35 months) with equal numbers of boys and girls (i.e., 150 children (75 males) per age band). *T*-scores were calculated separately for age bands because significant differences were found on all Competence subscales (i.e., increased competence across age bands) and for gender (i.e., girls were rated higher/better on the Competence domain). Each age band was stratified to match the 2002 U.S. census in ethnicity, parent education level, and region. Flyers were displayed in many



different settings, including Women, Infants, and Children Program (WIC) offices, doctors' offices, apartment complexes, and community centers. Assessments took place in the parent's home, the clinician's office (school psychologists, clinical psychologists, speech-language pathologists, occupational therapists, educational diagnosticians, developmental psychologists, and teachers), hospitals, clinics, and schools (Carter & Briggs-Gowan, 2006).

In the standardization sample, Cronbach's alpha coefficients for the four domains ranged from .80 (Internalizing) to .90 (Competence), and between .59 (Imitation/Play) and .84 (Negative Emotionality) for the subscales (Carter, Briggs-Gowan, Jones, & Little, 2003). The ITSEA has shown good test-retest reliability over a 44-day period ranging from .82 to .90 for domains and from .69 to .85 for subscales. In terms of construct validity (Carter & Briggs-Gowan, 2006), the ITSEA has shown strong associations with the Child Behavior Checklist (CBCL 1.5-5), the Ages and Stages Questionnaire: Social Emotional (ASQ-SE), the Adaptive Behavior Assessment System: Second Edition (ABAS-II), and the Bayley Scales of Infant and Toddler Development – Third Edition (Bayley-III). In the current sample, Cronbach's alpha coefficients ranged from .75 (Internalizing) to .91 (Competence) for domains and .53 (Sensory Sensitivity) to .84 (Negative Emotionality) for the subscales.

### **3.3.5 Attachment Questionnaire**

The Attachment Questionnaire (AQ; Chisholm, 1998) is comprised of 23 items with the highest and lowest loadings on the security scale of the Attachment Q-Sort (Waters & Deane, 1985). The items have a 5-point response scale ranging from Very Unlike (1) to Very Like (5) the child. The measure does not contain subscales so the total score was used. Higher scores on this measure mean that the child displays more securely attached behaviors. Examples of items include: "Your child clearly shows a pattern of using you as a base from which to explore, that is, he/she moves out to play, returns, and then moves out play again" and "when something upsets your child, he/she tends to stay where he/she is and cries" (See Appendix 1).

Studies of PI children who spent at least 8 months in an institution had alpha coefficients for the AQ that ranged from .72 (Chisholm et al., 1995) to .80 (Chisholm, 1998). In the current sample the Cronbach's alpha coefficient was .81 for the AQ.

### **3.3.6 Indiscriminate Friendliness questions**

Chisholm's Indiscriminately Friendly (IF) behavior measure (Chisholm, 1998) consists of five questions about children's reaction when meeting new adults. In addition, the current study added four more questions about children's reactions to new children. Items included: How friendly is your child with new adults? Has your child ever been shy or acted warily around new adults? What does your child do when she/he meets new adults? How willing would your child be to go home with an adult he/she had just met? Does your child have a tendency to wander away from you? if yes, is your child distressed when he/she finds him/herself separated from you?(see appendix 2 for question about IF towards children).

The type and number of available responses for each question varied (See Appendix 1). This study follow the scoring procedure used by Chisholm et al. (1995) in which responses are dichotomized into 1 for indiscriminately friendly responses (e.g., "Yes, my child would always be willing to go home with an adult he/she just met") vs. 0 (all other responses) for non-indiscriminately friendly behaviors ("No, my child would never be willing to go home with an adult he/she just met"). Three subscales were calculated and used: (a) Adult subscale; (b) Child subscale; and (c) Total score.

Studies of PI children who spent at least 8 months in an institution had alpha coefficients that ranged from .65 (Chisholm et al., 1995) to .72 (Chisholm, 1998) for children for the Adult subscale. There is no available information for the Child subscale because it was designed for this study. In the current sample, the Cronbach's alpha coefficient was .77 for Total score, .66 Adult subscale, and .70 Child subscale.

## **3.4 MISSING DATA**

Each measure was checked for missing data, and certain parameters were defined to allow imputation of missing data points to avoid biased estimation and loss of sample size due to list-wise deletion. For missing ITSEA data, the average of the answered items of the subscale was computed for each child and the whole number closest to that mean was used to replace the missing item/s. Rules on the number of

allowed missing data points were taken from the ITSEA manual (Carter & Briggs-Gowan, 2006). A total of 2% of ITSEA items were entered in place of missing items.

For the Attachment Questionnaire the average of the answered items of the questionnaire was computed for each child and the whole number closest to that mean was used to replace the missing item/s. The maximum number of missing data points was four items. The same procedure to compute the missing score was followed for the indiscriminately friendliness questions; however, only one item per subscale was allowed to be replaced.

### 3.5 DATA PREPARATION

ITSEA domain mean raw scores were converted to *T*-scores. *T*-scores were normed in the standardization sample separately for boys and girls and adjusted for differences in levels of behavior problems and competences for four age groups (i.e., 12 to 17 months, 18 to 23 months, 24 to 29 months and 30 to 35 months of age). For the three problem domains, higher *T*-scores indicate more behavior problems and *T*-scores at or above 65 are considered in the “*Of Concern*” range (1.5 standard deviations above the mean). For the Competence domain, higher *T*-scores represent greater competence, and *T*-scores at or below 35 are in the “*Of Concern*” range. In addition, a new dichotomized variable was created for each domain indicating if *T*-scores were in the “*Of Concern*” range (score of 1) or not in the “*Of Concern*” range (score of 0).

ITSEA subscale mean raw scores were converted to *Z*-scores based on the mean and standard deviation of the standardization sample (*T*-scores are not available for the subscales scores). In addition, ITSEA subscale mean raw scores equal or less than a percentile rank of 10% are considered “*Of Concern*” as specified in the manual (Carter & Briggs-Gowan, 2006). In the standardization sample, percentile ranks were also normed separately for boys and girls and for the same four age groups mentioned above. For subscales, the standardization sample’s raw score corresponding to the 10<sup>th</sup> percentile was used to create dichotomized variables indicating PI children with scores in the “*Of Concern*” range (score of 1) or not in the “*Of Concern*” range (score of 0).

The Attachment Questionnaire and the Indiscriminately Friendliness measures do not have *t*-scores or age-specific means available, thus, raw scores were used.

## **3.6 ANALYTIC PLAN**

### **3.6.1 Aim 1**

Group differences (PI children vs standardization sample) in social-emotional development, as measured with the ITSEA, were explored using *t*-tests. Next, group differences in the percentage of children in the *Of Concern* range in each domain and subscale and the percentage of children with one or more subscales in the *Of Concern* range within each domain were explored using chi-square tests.

### **3.6.2 Aim 2**

The relation between age at adoption and time in the adoptive home with the dependent variables was first explored using bivariate correlations. Then, to examine whether age at adoption had an effect over and above time-in-the-adoptive home, hierarchical regression analyses were conducted. Two regressions were conducted for each outcome variable. The first regression had three steps, including time in the adoptive home in the first step, age at adoption in the second step, and the interaction between time in the adoptive home and age at adoption in the third step. Steps 1 and 2 were used to determine the main effects of these variables on the outcome measure and Step 3 was used to determine if there was an interaction effect. The second regression had two steps including age at adoption in the first step and time in the adoptive home in the second step to examine if time in the adoptive home had an effect over and above age-at-adoption.

### **3.6.3 Aim 3**

The relation between attachment behavior and indiscriminate friendliness was explored using bivariate correlations. Then, multiple regression analyses were performed to examine relations between attachment behavior and social-emotional development. Also, multiple regression analyses were utilized to examine relations between total number of indiscriminately friendly responses and social-emotional development.

## **4.0 RESULTS**

### **4.1 PRELIMINARY ANALYSES**

Analyses were conducted to examine possible confounding variables. No outcome variables were significantly associated with low birth weight or premature birth.

In addition, there were no gender differences on any outcome measures of the ITSEA, Attachment Questionnaire  $t(169) = -1.33, p = .19$ , or IF: Total  $t(174) = -1.39, p = .17$ ; Adults  $t(176) = -1.85, p = .07$ ; Children  $t(174) = -.65, p = .52$ . Finally, there were no gender differences on age at adoption  $t(177) = .166, p = .87$ , or time in the adoptive home  $t(177) = -.333, p = .74$ . Therefore, gender and birth characteristics were not included in any further analyses. Characteristics of the adoptive family were also examined. Neither maternal nor paternal age was associated with children's social-emotional development. Also, neither one- vs. two-parent household nor parental education were significantly correlated with children's social-emotional development. Thus, family characteristic variables were not included further. In addition, children did not differ on any outcomes by of country of birth.

### **4.2 AIM 1: DETERMINE IF PI INFANTS AND YOUNG CHILDREN DIFFER FROM PARENT-REARED CHILDREN IN THEIR SOCIAL-EMOTIONAL DEVELOPMENT AS MEASURED WITH THE ITSEA**

#### **4.2.1 Hypothesis 1**

It is expected that PI children will have more internalizing, dysregulation, and negative emotionality than the ITSEA standardization sample. No differences in Externalizing problems are expected.

This hypothesis was not supported. PI children had significantly *lower* mean *T*-scores on the Internalizing  $t(770) = -4.85, p < .001$  ( $d = -.42$ ) and Dysregulation  $t(772) = -12.70, p < .001$  ( $d = -1.10$ ) domains, and significantly lower *z*-scores on the Negative Emotionality subscale  $t(775) = -4.13, p < .001$  ( $d = -.35$ ) than children in the standardization sample. In addition, PI children had significantly *lower* mean *t*-scores on the Externalizing domain  $t(753) = -4.51, p < .001$  (Cohen's  $d = -.41$ ). Thus, results showed that PI adopted children have fewer, not more, problems than children from the general population (Table 2).

**Table 2.** Descriptive Data for the ITSEA Domains and Subscales for PI Children

	<i>N</i>	<i>M</i>	<i>SD</i>	Range
Externalizing <sup>a</sup>	155	46.15*	7.03	29.00 – 64.00
Internalizing <sup>a</sup>	172	45.86*	9.43	25.00 – 71.00
Dysregulation <sup>a</sup>	174	39.11*	9.81	21.00 – 67.00
Negative Emotionality <sup>b</sup>	177	-.35*	.96	-1.93 – 2.53
Competence <sup>a</sup>	148	50.50	10.84	10.00 – 70.00
Attention <sup>b</sup>	179	-.01	1.18	-4.50 – 1.91

Note. <sup>a</sup> Results represent *t*-scores; <sup>b</sup> results represent *z*-scores. In the standardization sample, *t*-scores had a mean of 50 and a standard deviation of 10. \* $p < .05$ ; \*\* $p < .01$  \*\*\* $p < .001$

#### 4.2.2 Hypothesis 2

It is expected that PI children will have poorer competencies and poorer attention skills than the ITSEA standardization sample of non-PI, parent-reared, US children.

This hypothesis was not supported. PI children did not significantly differ in Competence skills  $t(746) = .54, p = .59$  ( $d = .05$ ) or ability to pay attention  $t(777) = -.11, p = .91$  ( $d = -.01$ ) from children in the standardization sample.

### 4.2.3 Hypothesis 3

It is expected that a higher percentage of PI children will be in the *Of Concern* range in the Internalizing, Dysregulation, and Competence domains and the Negative Emotionality and Attention subscales than the ITSEA standardization sample of non-PI, parent-reared, USA children. No significant differences are expected in the Externalizing domain.

This hypothesis was not supported. Overall, a significantly *lower* percentage of PI children were in the *Of Concern* range in the three problem domain areas than the standardization sample of 10% (Carter & Briggs-Gowan, 2006). However, no significant differences were found on the Negative Emotionality subscale (See Table 3). Similarly, PI children did not significantly differ from the standardization sample on the percentage of children in the *Of Concern* range on the Competence domain or the Attention subscale.

**Table 3.** Percentage of Children with Scores in the *Of Concern* Range

	PI children	Standardization sample	<i>df</i>	$\chi^2$
Externalizing <sup>a</sup>	0%	10%	(1, <i>N</i> = 755)	11.11***
Internalizing <sup>a</sup>	3.48%	10%	(1, <i>N</i> = 772)	4.72*
Dysregulation <sup>a</sup>	1.72%	10%	(1, <i>N</i> = 774)	7.62**
Negative Emotionality <sup>b</sup>	6.21%	10%	(1, <i>N</i> = 776)	1.60
Competence <sup>a</sup>	8.11%	10%	(1, <i>N</i> = 748)	0.40
Attention <sup>b</sup>	10.1%	10%	(1, <i>N</i> = 776)	0.001

For the domains, % represent the number of children with  $T \geq 65$ . \* $p < .05$ ; \*\* $p < .01$  \*\*\* $p < .001$

### 4.2.4 Exploratory analyses

Exploratory analyses were conducted to examine whether there was a subgroup of children with elevated scores in both internalizing and dysregulation problems. Results show that 0% of children scored in the

*Of Concern* area in both internalizing and dysregulation problems. Further analyses showed that only 1.35% of children were in the *Of Concern* range in both competence and internalizing scores and 0% in both competence and dysregulation problems. Thus, results suggest that there is not a subgroup of children who are experiencing problems in more than one domain.

#### 4.2.5 Hypothesis 4

It is expected that PI children will have a higher of percentage of subscales in the *Of Concern* range within a given domain than the ITSEA standardization sample of non-PI, parent-reared, US children.

Results are presented separately by gender because percentages were not available for a combined sample of boys and girls in the standardization sample (see Tables 4 and 5). Overall, the hypothesis was not supported. PI males did not significantly differ from males in the standardization sample in the number of subscales in the *Of Concern* range within the Externalizing and Internalizing domains. In the Dysregulation domain, PI males had a significantly *lower* percentage of children with one or more subscales in the *Of Concern* range within the domain than the standardization sample (Table 4). While this PI sample was similar to the standardization sample in the percentage of children with  $\geq 1$ ,  $\geq 2$ , and  $\geq 3$  subscales in the *Of Concern* range, PI males had a significant percentage of children with 6 subscales in the *Of Concern* range compared to the standardization sample (1.4% vs. 0%).

Similar to PI males, PI females did not significantly differ from the standardization sample in the number of subscales in the *Of Concern* range within the Externalizing and Internalizing domains. PI females had a significantly *lower* percentage of children scoring in the *Of Concern* range in one or more and two or more subscales within the Dysregulation domain (Table 5). No significant differences on the Competence domain were found for PI females.



**Table 4.** Percentage of Males Scoring in the *Of Concern* Range in One or More Subscales within a Domain

Domain # of subscales		PI children	Standardization sample	<i>df</i>	$\chi^2$
Externalizing					
# of subscales in the Of Concern range	$\geq 1$	10.8%	13.3%	(1, <i>N</i> = 374)	0.54
	$\geq 2$	2.7%	4.0%	(1, <i>N</i> = 361)	0.44
	$\geq 3$	-	1.3%	-	-
Internalizing					
# of subscales in the Of Concern range	$\geq 1$	21.5%	22.7%	(1, <i>N</i> = 379)	0.08
	$\geq 2$	3.8%	6.7%	(1, <i>N</i> = 366)	1.35
	$\geq 3$	-	2.0%	-	-
	$\geq 4$	-	1.3%	-	-
Dysregulation					
# of subscales in the Of Concern range	$\geq 1$	13.8%	24.0%	(1, <i>N</i> = 380)	5.70*
	$\geq 2$	2.5%	6.3%	(1, <i>N</i> = 371)	2.45
	$\geq 3$	-	1.7%	-	-
	$\geq 4$	-	1.3%	-	-
Competence					
# of subscales in the Of Concern range	$\geq 1$	30.0%	30%	(1, <i>N</i> = 370)	0.0
	$\geq 2$	12.9%	13.0%	(1, <i>N</i> = 358)	0.001
	$\geq 3$	4.3%	5.0%	(1, <i>N</i> = 352)	0.10
	$\geq 4$	-	2.7%	-	-
	$\geq 5$	-	1.0%	-	-
	$\geq 6$	1.4%	0.0%	(1, <i>N</i> = 350)	196*

Percentages represent the number of children with scores above the mean cut-off on the subscales. \* $p < .05$ ; \*\*  $p < .01$

**Table 5.** Percentage of Females Scoring in the *Of Concern* Range on the Domains and on One or More Subscales Within a Domain

Domain # of subscales		PI children	Standardization sample	<i>df</i>	$\chi^2$
Externalizing					
# of subscales in the Of Concern range	$\geq 1$	9.9%	15.3%	(1, <i>N</i> = 381)	2.25
	$\geq 2$	-	4.7%	-	-
	$\geq 3$	-	1.7%	-	-
Internalizing					
# of subscales in the Of Concern range	$\geq 1$	18.3%	21.3%	(1, <i>N</i> = 393)	0.54
	$\geq 2$	5.4%	5.3%	(1, <i>N</i> = 382)	0.01
	$\geq 3$	2.2%	2.0%	(1, <i>N</i> = 379)	0.02
	$\geq 4$	-	0.3%	-	-
Dysregulation					
# of subscales in the Of Concern range	$\geq 1$	14.9%	23.7%	(1, <i>N</i> = 394)	4.28*
	$\geq 2$	1.1%	5.7%	(1, <i>N</i> = 381)	3.94*
	$\geq 3$	-	2.3%	-	-
	$\geq 4$	-	0.0%	-	-
Competence					
# of subscales in the Of Concern range	$\geq 1$	32.1%	31.3%	(1, <i>N</i> = 378)	0.03
	$\geq 2$	7.7%	11.3%	(1, <i>N</i> = 359)	1.30
	$\geq 3$	-	5.3%	-	-
	$\geq 4$	3.9%	2.0%	(1, <i>N</i> = 356)	1.84
	$\geq 5$	1.3%	0.3%	(1, <i>N</i> = 355)	3.34
	$\geq 6$	-	0.0%	-	-

Percentages represent the number of children with  $T \geq 65$ . For the subscales, percentages represent the number of children with scores above the mean cut-off on the subscales. \* $p < .05$ ; \*\*  $p < .01$

### 4.3 AIM 2: INVESTIGATE THE EXTENT TO WHICH AGE-AT-ADOPTION AND TIME IN THE ADOPTIVE HOME ARE RELATED TO CHILDREN'S SOCIAL-EMOTIONAL ADJUSTMENT

Table 6 displays descriptive data of the relevant variables.

**Table 6.** Descriptive Data for Attachment, and Indiscriminate Friendliness

	<i>N</i>	<i>M</i>	<i>SD</i>	Range
Attachment <sup>a</sup>	171	89.64	10.63	60 - 113
Indiscriminate Friendliness <sup>a</sup>	176	2.31	2.16	0 – 8
IF towards adults <sup>a</sup>	178	0.87	1.20	0 - 5
IF towards children <sup>a</sup>	176	1.44	1.30	0 - 4

Note. <sup>a</sup> Results represent raw scores.

#### 4.3.1 Hypothesis 1

It is expected that as age at adoption increases, children will show poorer social-emotional development.

This hypothesis was partially supported. As seen in Table 7, age at adoption was significantly correlated with Externalizing problems,  $r(153) = .18, p = .02$ , and Negative Emotionality,  $r(175) = .17, p = .02$ , such that children adopted at older ages displayed more externalizing problems and more Negative Emotionality; while correlations were significant, they are very small. On the other hand, age at adoption was not significantly correlated with the Internalizing, Dysregulation, or the Competence domains or the Attention subscale.

**Table 7.** Bivariate Correlations for Age at Adoption and Time in the Adoptive Home with Social Emotional Outcomes

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age at adoption													
2	Time in home	-.42**												
3	Externalizing	.18*	-.13											
4	Internalizing	-.01	.05	.13										
5	Dysregulation	.11	-.12	.40**	.34**									
6	Neg Emot.	.17*	-.15*	.52**	.33**	.70**								
7	Competence	-.08	.02	-.34**	-.13	-.25**	-.35**							
8	Attention	-.12	.09	-.33**	-.09	-.19*	-.33**	.79**						
9	Attachment	-.21**	.28**	-.49**	-.23**	-.47**	-.65**	.57**	.46**					
10	IF – Total	.03	-.01	.11	-.57**	-.06	-.05	.05	.03	-.02				
11	IF – adults	.11	-.06	.12	-.48**	.01	-.01	-.02	-.03	-.08	.85**			
12	IF - children	-.05	.03	.06	-.50**	-.11	-.08	.10	.08	.05	.87**	.48**		
13	Age	.21**	.80**	-.02	.05	-.06	-.05	-.04	.02	.18*	.00	.00	.02	
14	Gender	-.01	.03	.02	.02	-.07	-.06	-.00	-.02	-.01	.10	.10	.14	.05

\*\* . Correlation is significant at the 0.01 level. \* . Correlation is significant at the 0.05 level.

Table 7 also shows the correlations among ITSEA variables. Overall, results are coherent. For example, higher externalizing problems were associated with higher dysregulation problems,  $r(154) = .40, p < .001$ , higher negative emotionality,  $r(176) = .17, p = .02$ , fewer competence skills,  $r(145) = -.34, p < .001$ , and lower attention skills,  $r(154) = -.33, p < .001$ . Internalizing problems were also associated with higher dysregulation problems,  $r(171) = .34, p < .001$ , and higher negative emotionality  $r(171) = .33, p < .001$ , but not associated with competence skills. Finally, higher dysregulation problems were associated with lower competence skills,  $r(146) = -.27, p = .006$ .

#### 4.3.2 Exploratory Analyses

Exploratory analyses were conducted to examine whether PI children adopted before one year of age differ from PI children adopted at 12 months or older. Twelve-months of age-at-adoption was chosen as the cut-off because it was the mean age at adoption of the sample. Research studies have found significant age-at-adoption effects in PI children's outcomes at 6-months of age at adoption for children adopted from globally depriving institutions (Rutter et al., 2010) and 18-months of age at adoption for children adopted from socially-emotionally depriving institutions (Merz & McCall, 2010). Eighteen-months of age at adoption would have been the most appropriate cut-off for the current sample; however, given that only 16 children were 18-months or older at adoption, 12-months seemed appropriate.

There were significant differences between the earlier and later adoptees on several outcome variables. Earlier adoptees had significantly lower scores in the Externalizing domain,  $t(153) = -2.10, p = .037$ , and significantly lower scores on the Negative Emotionality subscale,  $t(175) = -2.15, p = .033$ . In addition, earlier adoptees had significantly better attention skills  $t(177) = 2.06, p = .041$  and marginally higher competence scores,  $t(146) = 1.78, p = .077$ . Later adoptees also had significantly poorer attachment security than earlier adoptees,  $t(169) = 2.86, p = .05$ .

#### 4.3.3 Hypothesis 2

It is expected that as children spend more time in the adoptive home, children will show more secure attachment. However, no specific hypotheses were made for behavior problems since there are mixed findings in the literature.

This hypothesis was supported. Attachment was significantly correlated with time in the adoptive home,  $r(170) = .28, p < .001$ , such that children living longer with their adoptive families show more security of attachment. Time in the adoptive home was significantly correlated with negative

emotionality,  $r(175) = -.15, p = .048$ , such that children living longer in the adoptive home had less negative emotionality (Table 6). However, time in the adoptive home was not significantly correlated with any of the other social-emotional outcomes examined.

#### **4.3.4 Hypothesis 3**

It is hypothesized that age at adoption will have an effect on children's social-emotional development over and above time-in-the-adoptive home. Children adopted later, who also have spent less time in the adoptive home, are expected to have more social-emotional problems and poorer social competence than children adopted earlier.

Table 8 displays the hierarchical regression analyses predicting Externalizing, Negative Emotionality, Attention, and Attachment using two hierarchical regression models for each outcome found to significantly correlate with either age at adoption or time in the adoptive home or both during previous analyses. Model 1 provides results for the unique predictive association of age at adoption with time in the adoptive home partialled out. Conversely, model 2 provides results for the unique predictive association of time in the adoptive home with age at adoption partialled out.

Results showed that when age at adoption was entered into the regression alone (Step 1), it was significant in predicting Externalizing ( $B = .31, t(154) = 2.28, p = .02$ ), Negative Emotionality ( $B = .04, t(176) = 2.32, p = .02$ ), and Attachment-like behaviors ( $B = -.56, t(170) = -2.73, p < .007$ ), and marginally significant in predicting Attention ( $B = -.04, t(178) = -1.66, p = .098$ ). However, when time in the adoptive home is entered first, age at adoption only marginally predicted Externalizing problems ( $B = .26, t(154) = 1.72, p = .088$ ), but it did not predict negative emotionality, attachment-like behaviors, or attention. None of the interactions were significant. Thus, the hypothesis that age at adoption would have an effect on children's outcomes over and above time in the adoptive home was not supported. Overall, the results showed that age at adoption has an initial effect on children's social-emotional outcomes, but when time in the adoptive home is considered, the effect is no longer significant.

**Table 8.** Hierarchical Regressions of Externalizing, Negative Emotionality, and Attachment on Age at Adoption and Time in the Adoptive Home

		$R^2$	$R^2$ change	$F$ Change	$p$
ITSEA Externalizing					
Model 1	Step 1: Time in adoptive home	.018	.018	2.78	.099
	Step 2: Age at adoption	.037	.019	2.95	.088
	Step 3: Age adoption X time home	.043	.006	.95	n.s.
Model 2	Step 1: Age at adoption	.033	.033	5.22	< .05
	Step 2: Time in adoptive home	.037	.004	.57	n.s.
ITSEA Negative Emotionality					
Model 1	Step 1: Time in adoptive home	.022	.022	3.96	< .05
	Step 2: Age at adoption	.037	.014	2.60	n.s.
	Step 3: Age adoption X time home	.039	.003	.49	n.s.
Model 2	Step 1: Age at adoption	.033	.033	5.22	< .05
	Step 2: Time in adoptive home	.037	.004	.57	n.s.
ITSEA Attention					
Model 1	Step 1: Time in adoptive home	.009	.009	1.584	n.s.
	Step 2: Age at adoption	.017	.009	1.545	n.s.
	Step 3: Age adoption X time home	.017	.000	.001	n.s.
Model 2	Step 1: Age at adoption	.015	.015	2.762	.098

Table 8 (continue)

	Step 2: Time in adoptive home	.017	.002	.382	n.s.
Attachment Questionnaire					
Model 1	Step 1: Time in adoptive home	.081	.081	14.87	< .001
	Step 2: Age at adoption	.090	.009	1.63	n.s.
	Step 3: Age adoption X time home	.090	.000	.07	n.s.
Model 2	Step 1: Age at adoption	.042	.042	7.44	< .01
	Step 2: Time in adoptive home	.090	.047	8.76	<.01

#### 4.4 AIM 3: ANALYZE HOW CHILDREN'S SOCIAL-EMOTIONAL ADJUSTMENT, AS MEASURED WITH THE ITSEA, IS RELATED TO SECURITY OF ATTACHMENT TO THEIR PARENTS AND INDISCRIMINATE FRIENDLY BEHAVIOR TOWARDS ADULTS AND CHILDREN

##### 4.4.1 Hypothesis 1

It is expected that children's security of attachment will be unrelated to children's indiscriminate friendly behavior.

This hypothesis was supported. As expected for PI samples, secure-like attachment behavior was not significantly correlated with total score of indiscriminate friendliness,  $r(168) = -.02, p = .83$ ; indiscriminate friendliness towards adults,  $r(169) = -.08, p = .29$ ; or indiscriminate friendliness towards children,  $r(168) = .05, p = .53$ .



#### 4.4.2 Hypothesis 2

It is expected that PI children with lower/worse security of attachment will have poorer social-emotional development than children perceived to show closer attachments to their mothers.

Age at adoption was significantly correlated with externalizing problems and negative emotionality (See Table 7); therefore, regression analyses of these two variables were performed with age at adoption as a covariate.

This hypothesis was supported. Regression analyses were used to test whether attachment-like behaviors predicted social-emotional development in PI children. Standardized regression coefficients indicated that less secure attachment-like behavior significantly predicted higher levels of externalizing problems, internalizing problems, dysregulation, and negative emotionality (See Table 9). In addition, more secure attachment-like behaviors significantly predicted higher levels of competence and better attention skills. Overall, the regression analyses showed that the display of attachment-like behaviors towards the adoptive mother was substantially associated with fewer Externalizing, Internalizing, Dysregulation problems and better Competence and Attention skills.

**Table 9.** Regression Coefficients Predicting Social Emotional Outcomes from Security of Attachment

	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>	Adjusted $R^2$
Externalizing <sup>a</sup>	-.318	.05	-.472	-6.472***	.240
Internalizing	-.203	.07	-.226	-2.967**	.045
Dysregulation	-.441	.07	-.465	-6.764***	.211
Negative Emotionality <sup>a</sup>	-.059	.01	-.647	-10.498***	.416
Competence	.548	.07	.574	8.318***	.324
Attention	.052	.01	.461	6.748***	.208

Note. <sup>a</sup> Age at adoption was used as a covariate.

#### 4.4.3 Exploratory Analyses

Given that the Attachment Questionnaire does not have standard scores or cut-off scores, the mean score of children in the current sample ( $M = 89.64$ ;  $SD = 10.63$ ) was compared to the mean score reported by Chisholm (1998) for PI Romanian adoptees ( $M = 82.2$ ;  $SD = 10.5$ ), Canadian-born non-adopted children ( $M = 87.3$ ;  $SD = 7.9$ ), and Non-PI Early Adoptees ( $M = 88.8$ ;  $SD = 8.6$ ). Results showed that PI children had significantly higher/better attachment scores than Romanian adoptees  $t(212) = 4.11, p < .001$ . However, PI children in this sample did not significantly differ from Canadian-born parent-reared children  $t(211) = 1.34, p = 0.18$  or early adoptees  $t(196) = 0.38, p = 0.70$  on attachment scores.

#### 4.4.4 Hypothesis 3

It is expected that PI children with more indiscriminate friendliness behaviors (Total IF score) will have poorer social-emotional development (except for the Internalizing domain) than children displaying less indiscriminate friendliness behaviors.

Regression analyses of Externalizing and Negative Emotionality were performed with age at adoption as a covariate. Regression analyses were used to test whether the total number of indiscriminate friendly behaviors predicted PI children's social-emotional development. This hypothesis was not supported. Total number of indiscriminate friendliness behaviors generally was not significantly related to social emotional problems (see Table 10). The only significant finding was that indiscriminate friendly behaviors significantly predicted lower levels of internalizing problems  $F(1, 168) = 81.25, p < .001$ . Thus, results are coherent in that PI children with internalizing problems (i.e., depression/withdrawal, separation distress, inhibition to novelty, and generalized anxiety) are not displaying overly friendly behaviors towards strangers. Indiscriminate friendliness was not a significant predictor of other behavior problems or competences.

**Table 10.** Regression Coefficients Predicting Social Emotional Outcomes from Total Number of Indiscriminate Friendly Behaviors

	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>	Adjusted $R^2$
Externalizing <sup>a</sup>	.314	.27	.095	1.191	.029
Internalizing	-2.504	.28	-.571	-9.014***	.322
Dysregulation	-.268	.35	-.059	-.769	-.002
Negative Emotionality <sup>a</sup>	-.026	.03	-.059	-.784	.021
Competence	.250	.42	.049	.592	-.005
Attention	.018	.04	.032	.423	-.005

Note. <sup>a</sup> Age at adoption was used as a covariate.

## 5.0 DISCUSSION

The main purpose of this study was to examine the early adjustment to the adoptive home of infants and toddlers adopted from socially-emotionally depriving institutions. Findings showed that PI children were functioning at *better* than expected levels between their first and third birthdays, and they had *lower* rates of children in the *Of Concern* range for all the social-emotional variables examined compared to children in the standardization sample of the ITSEA. However, children adopted at later ages showed less security of attachment. Also, better security of attachment was associated with less behavior problems but indiscriminate friendliness was not associated with children's social-emotional development.

PI children's better than expected functioning was surprising considering the social-emotional deprivation of the institutional environment in which these children lived for most of their lives prior to adoption. Research has shown that most older PI children have typical developmental trajectories, although a subgroup of children display more internalizing and externalizing problems and have poorer emotion regulation (Fisher, Ames, Chisholm, & Savoie, 1997; Rutter et al., 2010; Tizard & Rees, 1975). However, such group differences were not found in the current study.

The adequate social-emotional functioning of children in this study was also unexpected based on the prenatal factors and developmental condition in which most Russian children enter the institutions. A study of children entering the Russian institutions from which many of the children in this sample were adopted showed that 60% of children entering the Baby Homes scored below the 10<sup>th</sup> percentile of the USA standardization sample on Total scores of the Battelle Developmental Inventory, and between 35% and 44% of children were below the 10<sup>th</sup> percentile for height, weight, head circumference, and chest circumference relative to the northwestern Russian Federation standards. Also, the same study found that

children residing in Russian Baby Homes gain only 9 months of development for each year of residency (The St. Petersburg-USA Orphanage Research Team, 2005). In general, studies of PI school-age children and adolescents have shown that birth weight and prematurity do not account for individual differences in outcomes at somewhat older ages (Kreppner et al., 2007; Merz & McCall, 2010; Sonuga-Barke et al., 2008), which is consistent with results from the current study. Thus, despite the possible disadvantage of prenatal and perinatal conditions experienced by children adopted from Russian institutions, children were rated as having low rates of social-emotional problems during the ages assessed here. However, these results should not be interpreted to suggest that institutions are acceptable places for children without permanent parents to grow up; the broader literature, especially on older PI children, reveals higher than expected rates of deficiencies and problems (see below).

Next, some possible reasons for the unexpectedly normative scores for PI children are presented. However, it should be noted that ratings were overwhelmingly within the normal range, so these are relative differences.

## **5.1 AGE AT ADOPTION**

Children in the current sample were relatively young at adoption ( $M = 11.89$  months  $SD = 4.11$  months) and only sixteen children (8.4%) were 18-months or older. There is very limited literature on children adopted this early in life from orphanages; most of the literature has focused on older adoptees (i.e., over 18 months of age) and children assessed later in life (i.e., school age and adolescence). In general, the literature on PI children has consistently shown that older adoptees display more internalizing and externalizing problems than early adoptees and non-adopted family-reared children, including studies from the larger population from which this sample was drawn (Hawk & McCall, 2011; Merz & McCall,

2010). Thus, it is possible that the lower scores found in this sample are the result of the disproportionately large number of early adoptees. However, results of lower social emotional problems in the current study are consistent with a study showing that PI Chinese children adopted at a relatively young age ( $M = 14.2$  months) and assessed between 18 and 60 months of age had significantly lower internalizing and externalizing scores than the standardization sample of the CBCL (Tan & Marfo, 2006). Thus, results from this study may not be atypical for PI children adopted at such early age.

## **5.2 SELECTIVE PLACEMENT OF HEALTHIER CHILDREN**

Adoption agencies usually select children for adoption who are without medical problems, major disabilities (i.e., cerebral palsy), and who are not displaying extreme behaviors; consequently, healthier children are adopted earlier. Also, adoptive parents are given the opportunity to choose the child they want to adopt from a specific number of referrals. Thus, selective placement of healthier and more typical developing children is possible.

## **5.3 CONFORMITY**

Research on institutional settings has described how institutional caregivers rarely attend to children's cries or attempts to obtain attention. Thus, children learn not to cry or fuss but to conform. A study of children living in institutions, from which many of the children in this sample were adopted, showed that

children seemed lethargic, inactive, and showed limited expressions of positive or negative emotions (The St. Petersburg-USA Orphanage Research Team, 2008). Also, children often stand or sit doing nothing, children played in isolation or in parallel with other children, and play lacked imagination or experimentation. Thus, it is possible to infer that children are continuing to display these behaviors in the months immediately following adoption and parents could have been interpreting the absence of externalizing behaviors as children being “well behaved.” For example, parents reported low/better scores in the Dysregulation domain, which includes the Negative Emotionality subscales with items such as, “cries or tantrums until exhausted,” “often very upset,” “cries if doesn’t get own way,” “trouble calming down when upset,” “wakes grouchy or in bad mood.” Thus, obtaining low/better scores in the Negative Emotionality subscale soon after adoption may not mean that children are doing “well,” but rather an extension of how PI children usually behave while in institutions. Therefore, it is possible that the low/good scores reported in this area represent a continuation of learned behaviors in the institution.

On the other hand, if behaviors observed in PI children in this sample are a continuation of learned behaviors in the institution, it would be expected that children would display more crying and negative emotionality the longer they live in the adoptive home. However, in terms of the ITSEA, only the Negative Emotionality subscale was associated with time in the adoptive home, such that as children lived longer in the adoptive home they displayed less, not more, Negative Emotionality. A study on trajectories of internalizing and externalizing behaviors of Chinese-born PI girls assessed between 8 and 21 months of age found that children initially (i.e., 6 months post adoption) scored lower than the standardization sample of the CBCL on externalizing problems, and there was no acceleration in the externalizing trajectory within the first two years of living in the adoptive home. Children also did not differ on internalizing problems at the first assessment, but there was a rapid increase in internalizing symptoms up to the final assessment (i.e., 24 months post adoption) when PI children scored significantly higher than the comparison group (Cohen & Farnia, 2011). Thus, it is possible that children in the current study have not spent enough time in the adoptive home ( $M = 13$  months) to start showing more behavior problems. It is then possible that the better internalizing scores obtained within the first three years of age

will diminish with more time in the adoptive home. However, it is also possible that children continue to do well and do not display problems as they grow older. At this point it is difficult to draw clear conclusions and future research could clarify this explanation.

## **5.4 PARENTAL REPORTS**

Adoption is considered an intervention characterized by drastic improvements in children's environments (van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2007; van IJzendoorn & Juffer, 2005, 2006).

Adoptive families are usually financially and educationally advantaged, and they choose to be parents.

The adoption process, however, can take between several months and years before adoption is finalized.

Thus, adoptive parents may have been waiting for a long time to have a child, as families considering adoption are screened and undergo a rigorous selection process. Thus, within the first couple of years after adoption, these enthusiastic and devoted parents may be going through a "honeymoon" phase, during which they may be more tolerant of child's misbehavior and see their child's social-emotional development through rose-colored glasses. Also, most of these adoptive parents visited the institutional setting from which they adopted the child, becoming aware, to some degree, of the level of deprivation to which children are exposed. It is possible that adoptive parents expect children to have difficulties adjusting to their new environment and could be more willing to overlook problematic behavior based on the child's preadoption rearing experience. In addition, adoptive parents in this sample had a mean age of 40 years, and for many of these parents their adoptive child was their first child. Thus, parents may lack experience about social and emotional development of children, and may interpret certain behaviors (i.e., being withdrawn, worrying, and/or fears) as age-appropriate.



Finally, it is possible that adoptive parents who responded to the questionnaires have children who display more or less problem behaviors than would be expected more generally. However, a study examined this question within the larger sample of this study (Hawk et al., 2013) found that parents of PI children who responded to a single questionnaire did not differ in their reports of problem behavior from PI parents who did not return a questionnaire. On the one hand, parental report has the advantage of reflecting behaviors that people can observe in everyday life, but on the other hand it is not as sensitive as neurobiological measures or even certain structured direct assessments on children (Gunnar, Morison, Chisholm, & Schuder, 2001).

In sum, although most adoptive parents are eager to be parents, it is possible that they are more tolerant of their children's behaviors, they may lack experience in typical child development, and they may be more willing to overlook problematic behavior. At the same time, these adoptive parents likely provide a high quality caregiving environment to their children. The high social-emotional ratings of the children in this study could reflect a combination of these several factors.

## **5.5 ATTACHMENT AND INDISCRIMINATE FRIENDLINESS**

In terms of attachment, results showed that more security of attachment was associated with less/better externalizing, internalizing, dysregulation problems, and negative emotionality. These results are consistent with attachment theory that posits that security of attachment supports and improves social-emotional development in children. Also, as predicted, results showed that children living longer in the adoptive home had more secure attachments. This result was expected, because more time in the adoptive home provides the family with more opportunity to develop a secure attachment relationship. Consistent with the literature, results showed that children adopted at later ages showed less security of attachment.

Children who do not experience a warm, sensitive relationship with a stable caregiver during the time in which attachment relationships generally develop go on to have less secure attachments. Finally, age at adoption did not predict attachment over and above time in the adoptive home, but time in the adoptive home did predict attachment over and above age at adoption. This indicates that time in the adoptive home is very important for the development of attachment behaviors. This result also suggests catch-up growth in attachment; children are displaying more secure behaviors the longer they live in the adoptive home.

As expected, attachment and indiscriminate friendliness were not correlated. Indiscriminate friendliness in PI children may develop as a learned behavior that provides the child with somewhat more attention from caregivers and visitors and not as a disorder of attachment as often found in family-raised children.

## **5.6 SLEEPER EFFECT**

The current research indicates that even young PI children demonstrate some kind of resilience after experiencing depriving conditions. However, it is possible that the negative effects of social-emotional deprivation experienced in infancy are not observed until later in development when children and adolescents are confronted with more complex social behaviors and cognitive- and attention-demanding tasks. As previous research has shown, PI school-age children and adolescents from the larger group from which the current sample was drawn have shown higher rates of extreme scores on social-emotional problems compared to the standardization sample of the CBCL (Merz & McCall, 2010), higher rates of extreme scores among multiple subscales (Hawk & McCall, 2011), and more problems than younger PI

children (Merz & McCall, 2010). Thus, it is possible that the children in the current study will eventually show higher than expected rates of problems, especially those adopted at older ages.

## **5.7 LIMITATIONS**

This study has a number of limitations. The study used questionnaires only. The use of questionnaires makes it possible to gather data from a large number of families in a short amount of time at a relatively low cost, and the questionnaires used in this study were well-standardized and had good validity and reliability properties. Also, this study used data from only one informant (a parent). The advantage of parent-reported measures is that parents observe their children numerous times across different settings which would be difficult to obtain with observational studies. However, as mentioned above, it is possible that adoptive parents expect their children to have difficulties adjusting to their new environment and report less behavior problems. Also parent reports may be less sensitive to underlying problems in very young children than other types of measurements.

Another limitation is the lack of longitudinal data, especially over a longer period of development. Further, if the current study had data on children's social-emotional development just before children left the institution, it would be possible to determine if children show improvements (rapid catch-up growth) or if their behaviors remain similar to those in the institutions.

In general, there is no perfect comparison sample for studies of PI adopted children, random assignment is not possible, and each comparison group used in the literature (i.e., non-adopted children still living in institutions, within the country adoptees, non-adopted family children) has advantages and disadvantages. The current study used the standardization sample of the ITSEA as the comparison group. The standardization sample of the ITSEA was designed to represent the general population of the US so it

included families with different levels of education (i.e., ranging from elementary education to more than 16 years of education), different races and ethnicities (i.e., White, African American, Hispanic, Asian, and “Other”), and families living in different regions (i.e., Northeast, North Central, South, and West). On the other hand, 98% of the families in the current study were White, 85.5% had a Bachelor degree or higher, and the mean household annual income was between \$125,000 and \$150,000. Thus, the discrepancy of family characteristics could influence the results found.

## **5.8 FUTURE DIRECTIONS**

There are many unanswered questions regarding PI children’s social emotional development that future studies could pursue. First, longitudinal follow-up of children in this sample into childhood and adulthood could reveal changes with development that other research suggests occur at older ages. Longitudinal follow-up studies could reveal intra-individual increases in problem behaviors with age and identify specific characteristics observed at an early age that predict later problems. In addition, future studies should assess PI children immediately after adoption. Having baseline scores of children’s social-emotional development would help determine factors that could foster children’s resilience. The effects of age at adoption and time in the adoptive home should continue to be examined among different social-emotional outcomes to assess catch-up growth. In addition, future studies should assess not only children’s problems but also their competencies to have a more complete representation of the child’s abilities. Finally, future studies would benefit from collecting data from multiple informants (i.e., teachers) to assess for difficulties across different settings.

## **APPENDIX A**

### **ATTACHMENT QUESTIONNAIRE**

1. Your child keeps track of your location when he/she is playing around the house. For example, he/she calls now and then or he/she takes notice if you change rooms or activities
2. Your child sometimes gives the impression that he/she wants to be put down, and then fusses or wants to be picked right back up
3. Your child clearly shows a pattern of using you as a base from which to explore, that is, he/she moves out to play, returns, and then moves out play again
4. If you reassure your child by saying something like “It’s OK” or “It won’t hurt you” he/she will approach or play with things that initially made him/her cautious or afraid
5. At home your child gets upset or cries when you walk out of the room
6. If your child is frightened or upset, he/she stops crying and quickly recovers if you hold him/her
7. Your child uses your facial expressions as a good source of information when something looks risky or threatening
8. Your child recognizes when you are upset. He/she becomes quiet or upset or he/she tries to comfort you, or even asks what is wrong.
9. When something upsets your child, he/she tends to stay where he/she is and cries
10. When you don’t do what your child wants right away, he/she acts as if you were not going to do it at all. For example, he/she fusses, gets angry, walks off to do other activities, etc
11. When you pick up your child up, he/she puts his/her arms around you or puts his/her arm on your shoulder.
12. Your child readily shares with you or lets you hold things if he/she is asked to
13. When your child returns to you after playing, he/she is often fussy for no clear reason
14. Your child follows your suggestions readily even when they are clearly suggestions rather than orders

15. Your child is demanding and impatient with you. He/she fusses and persists unless you do what he/she wants right away
16. Your child follows you when he/she is asked to do so. Refusals or delays which are playful don't count unless they are clearly disobedient.
17. Your child acts like he/she expects you to interfere with his/her activities when you are simply trying to help him/her with something
18. When your child plays with you, he/she plays roughly. For example, he/she bumps, scratches, or bites even though he/she does not necessarily mean to hurt you
19. Your child is easily upset if you make him/her change activities, even if the new activity is something he/she often enjoys
20. When you enter a room that your child is in, he/she quickly greets you, without you having to greet him/her first. For example, he/she smiles, shows a toy, gestures or says "Hi"
21. Your child easily becomes angry at you
22. Your child cries as a way of getting you to do what he/she wants
23. If you move very far when your child is playing, he/she follows along and continues to play in the area you have moved to.

## **APPENDIX B**

### **INDISCRIMINATE FRIENDLINESS QUESTIONS TOWARDS CHILDREN**

1. How friendly is your child with new children?
2. Has your child ever been shy or acted warily around new children?
3. What does your child do when she/he meets new children?
4. How willing would your child be to go home with a child he/she had just met?

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