



Published in final edited form as:

Clin Child Fam Psychol Rev. 2010 June ; 13(2): 199–211. doi:10.1007/s10567-010-0068-x.

CBCL Behavior Problems of Post-Institutionalized International Adoptees

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Abstract

With the increase in international adoptions during the last decade, many researchers have investigated the developmental outcomes of these adoptees, including their extreme behaviors. Collectively, these results have not always appeared consistent across studies, perhaps because studies have used children reared in institutions or not, the institutional environments vary in severity, children spend different lengths of time in the institution and are assessed at different ages, and studies use different outcome measures. In an attempt to discern more order in the literature, this review focuses on 18 studies, each of which used the Child Behavior Checklist, and their outcomes are viewed with respect to these parameters. Results suggest that the major factor contributing to extreme behaviors is age at adoption, with those adopted after 6/18 months having more behavior problems, especially Internalizing, Externalizing, and Attention problems. Generally, samples of post-institutional children have more problems than samples of mixed or non-institutional internationally adopted children, and some problems are more likely to be manifest in adolescence, suggesting the effects of deficient early experiences are not simply the persistence of learned behavior but more general dispositions that become more noticeable or severe during adolescence. Findings are discussed in terms of early deficient social–emotional caregiver–child interactions that characterize most institutional environments as a possible major cause of later difficulties in post-institutionalized children.

Keywords

Internationally adopted children; Post-institutional children; CBCL behavior problems; Effects of early experience; Age at adoption; Age at assessment

In recent years, international adoption has become increasingly frequent. Since 1990, there has been a threefold increase, and in 2008 there were 17,400 international adoptions in the United States (Office of Children’s Issues, United States Department of State 2008). Of internationally adopted children, ~85% have previously spent time in an institution, such as hospitals, orphanages, and baby homes (Gunnar et al. 2007). Early institutional care varies in its degree of behavioral, physical, social, and emotional deprivation (MacLean 2003), and this post-institutionalized (PI) population provides a unique opportunity to study the effects of early deprivation in children who are subsequently adopted into advantaged homes.

While the majority of PI children are within the normal range of behaviors, both the popular press (Rozek 2005) and research studies (e.g., Gunnar 2001; MacLean 2003) reveal higher than expected rates of behavior problems, some quite severe, in a minority of the PI population, suggesting a probabilistic rather than deterministic influence of early deprivation (Gunnar et al. 2007). Attachment theory (e.g., Ainsworth et al. 1978; Bowlby 1982), for example, suggests that PI children should have problems. Because most institutions have very high child/caregiver ratios, many changing caregivers, and perfunctory care (Rosas and McCall 2010), children have few opportunities to engage in warm, caring, sensitive, and responsive caregiver–child interactions (Chisholm 1998) and to form attachment relationships, which deficiencies can lead to later attachment and other problems (The St. Petersburg-USA Orphanage Research Team 2008).

The literature on the outcomes for PI children, however, is not very consistent (e.g., Gunnar 2001; MacLean 2003), perhaps because of this probabilistic association plus various other suspected parameters (e.g., length of institutional exposure, severity and nature of institutional conditions, and age at assessment) and specific outcome measures that vary between studies. For example, a recent meta-analysis of behavior problems (measured by the CBCL and related measures) in internationally adopted children discovered only very small differences between international adoptees and non-adopted, parent-reared children (Juffer and van IJzendoorn 2005).

The meta-analytic approach used by Juffer and van IJzendoorn (2005) has many benefits, such as using effect size as the outcome measure to quantitatively compare findings across different scales and parameters. However, this approach may also have the limitation of grouping studies with different methodological qualities and unique parameters. Coding variables for a meta-analysis inevitably requires certain choices to be made that can influence the outcomes. For example, Juffer and van IJzendoorn (2005) coded a study's sample as having pre-adoption adversity if more than half the sample experienced deprivation. The PI status of samples was not considered when reporting results for international adoptees vs. controls, and when they examined this parameter more closely, the distinction was not made between studies with entirely PI samples and those with mixed PI samples. Similarly, if a study covered a range of ages at adoption, the study was coded to designate the highest age at adoption represented (<12, 12–24, >24 months), which may have contributed to the reported lack of age-at-adoption effects. Because of these circumstances, the current review uses a qualitative approach, attempts to be sensitive to possible parameters and distinctions between studies and samples, and focuses on studies employing a single assessment tool (CBCL) in an effort to reduce the inconsistency in results that might be associated with different measurement tools.

The principal questions addressed are whether (1) PI children have higher levels or rates of behavior problems than non-institutionalized parent-reared children, (2) higher levels or rates occur consistently across studies for some but not other broadband scales and subscales, and (3) the results are more consistent when certain parameters are explored (e.g., age at adoption). Specifically, this review focuses on the 18 studies that have used the most commonly employed assessment of general behavioral problems in the PI literature, the Child Behavior Checklist (CBCL/6–18; Achenbach and Rescorla 2001). This strategy has the benefit of being better able to compare findings across studies, but it suffers from all the limitations inherent in the CBCL itself, such as scores that are influenced by the rater (i.e., parent), item intelligibility, and subscale titles that may not be appropriate for a particular child's profile (Doll 1998).

The CBCL for ages 6–18 consists of 113 questions about common behavior problems that parents and sometimes teachers complete about a child by answering 0 (not at all), 1

(sometimes), or 2 (all the time). The current review focuses on the Broadband Internalizing and Externalizing scales, as well as the Thought, Attention, and Social Problems subscales. Standardized scores were established using a USA sample of non-PI parent-reared children, which consisted of 2,368 four- to eighteen-year-old children without disabilities stratified with respect to SES, ethnicity, region, and urban/suburban/rural residence. The CBCL/6–18 has high test–retest reliability ($r = .89$) and inter-parent reliability ($r = .65$ to $.75$; Achenbach 1991). Construct validity is demonstrated by correlations with the Conners (1973) Parent Questionnaire ($r = .59$ to $.86$) and the Quay and Peterson (1983) Revised Behavior Problem Checklist ($r = .59$ to $.88$; Achenbach 1991).

The CBCL for ages 1½–5 (CBCL/1½–5; Achenbach and Rescorla 2001) has a similar format but only 100 questions and slightly different subscales. The Internalizing and Externalizing scores have a large amount of overlapping items; however, this version does not include the separate Thought, Attention, and Social Problems sub-scales. Some earlier studies used an older version of the CBCL, which included similar Internalizing and Externalizing scales, but did not include the other subscales. Thus, studies that used the older CBCL or the version for 1½- to 5-year-olds are included in comparisons only for the Internalizing and Externalizing scales.

CBCL behavior problems can be examined in three different ways: One is to compare the *mean scores* of PI children with non-PI parent-reared children. This approach assumes that CBCL scores constitute an interval scale of behavior problems and differences between scores at any location on the scale are equally meaningful. Another approach is to assess the *rate of clinical and borderline scores*, specifically scores that are more extreme than 85% of the parent-reared population, which will be called “extreme behaviors or scores.” This strategy assumes a dichotomous scale of problems (or extreme behavior) vs. no problems. Finally, whichever of the first two approaches are taken, researchers can examine the *profile of subscale scores* to note whether extreme scores tend to be more frequent across studies for some and not other subscales.

In search of more consistency in results, a few parameters are considered in this review to the extent this literature allows. The most prominent parameter is time in the institution, often indexed by age at adoption (Gunnar et al. 2007; Hoksbergen et al. 2004; Marcovitch et al. 1997; Merz and McCall 2010). A second parameter is whether the child had been institutionalized or in some type of family care before adoption (Groza 1999; Groza and Ryan 2002; Gunnar et al. 2007). Third, behavior problems may be more frequent when assessed at certain ages (Groza et al. 2004; Groza and Ryan 2002; Merz and McCall 2010; Verhulst 2000; Verhulst and Versluis-Den Bieman 1995; Verhulst et al. 1990b). Fourth, the severity of orphanage conditions may be a relevant factor (Merz and McCall 2010), which can only be crudely examined between some studies.

Different comparison groups partly control for different possible extraneous factors. For example, comparisons to non-adopted, parent-reared norms indicate whether adopted children, most of whom were institutionalized prior to adoption in this review, differ from non-adopted, non-PI children but do not control for potential prenatal conditions or subject selection bias in the PI population. Biological children of adoptive parents control for adoptive family environment, but such children often benefit from more advantageous genetic and early environmental conditions than standardization samples. Non-institutionalized international adoptees partly control for being an international adoptee, but non-institutionalized children are generally adopted earlier in infancy than PI children, and their early experiences are usually unknown and may be more or less detrimental to their development than institutionalization (e.g., abuse, frequent placements). Furthermore, many studies examine one comparison while not controlling for other parameters. For example,

some studies include some PI and some non-PI adopted children but do not distinguish between them in analyses. Thus, each comparison has advantages and limitations, and one can try to look across studies and parameters for possible common trends.

Comparisons Between Internationally Adopted and Non-PI, Parent-Reared Children

Although parameters examined below will qualify the results reported here, this comparison is worth examining because it has tended to be the primary aim of most studies. Twelve studies evaluated PI and non-PI internationally adopted and non-adopted children using the CBCL (see Table 1). Most of the studies used samples composed entirely of PI children; however, others either acknowledged using children with different backgrounds (i.e., institution, foster care, or home) but did not differentiate between these environments in the analyses (Cederblad et al. 1999), used only children who experienced foster care (Kim et al. 1999), or did not specify the early environment (Stams et al. 2000; Verhulst et al. 1990a). Results of these studies must be interpreted with caution because the early experiences of these children are likely qualitatively different to an unknown extent than those using PI children only.

Collectively, the adoptees came from many different, often low-resource countries and were adopted into various high-resource countries. Controls included representative samples of children born in the adoptive country, the CBCL norm group, and biological children of the adoptive parents. Age at adoption typically ranged from 7 weeks to more than 2 years, but one study included children adopted from birth-73 months; age at assessment ranged from 2.5 to 27 years. Ten studies compared means between groups, while two studies looked at rates of extreme scores.

Internalizing

Three studies found that adopted children had higher reported mean Internalizing problems than non-adopted children (Table 1). The PI children in two of these studies (Ames 1997; Fisher et al. 1997) were only 2–3 years old at assessment, younger than any of the other samples. This stimulates the hypothesis that Internalizing problems may be more likely among PI children shortly after adoption. Passivity and conformity are promoted in many institutions, and such behaviors (e.g., compliant, reserved, and less emotional lability) may be interpreted as “a good baby” to adoptive parents and be reflected on some CBCL Internalizing items. The other study of unknown early experience (Stams et al. 2000) found a difference only in male children.

Seven studies found no differences between adopted and non-adopted children on the Internalizing scale (Table 1). These children came from and were adopted to a mix of different countries; the studies used all-PI, mixed, and unknown samples; and the results were found for both mean scores and rates of extreme scores. Age at assessment for most studies was over 8, perhaps indicating that children older at assessment and with longer periods of time to adjust to their adoptive environment did not have Internalizing problems.

Two studies found that non-adopted children had higher scores than adopted children. However, one of these studies used children who were all in foster care (no institutions) prior to placement and compared 5-year-old adoptees with 11-year-old siblings (Kim et al. 1999), an unusual age-at-assessment confound. The other study compared Chinese PI adopted girls with non-Chinese, non-adopted USA standardization norms, so differences in ethnicity between the groups may explain the unusual result (Tan and Marfo 2006). For example, a study comparing Chinese adoptees to USA norms using the Parent Rating Scale of the Behavior Assessment Scale for Children found that the Chinese adoptees fell well

within the normal range of non-adopted USA children on all scales (Rojewski et al. 2000), and non-adopted Chinese girls in urban settings had *lower* CBCL scores on all but the Somatic Complaints subscale than non-adopted non-Chinese girls (Weine et al. 1995). Thus, it is likely that Chinese female children tend to score lower and to display fewer behavior problems than non-Chinese children. Because of their unusual confounds, the Tan and Marfo (2006) and Kim et al. (1999) studies will be omitted in further comparisons.

Externalizing

Seven studies found higher reported Externalizing scores in internationally adopted and PI than in non-adopted children. These studies included all but two of the studies using PI samples and the studies with unknown samples. Children were from a mix of different countries adopted into the Netherlands, Canada, and USA (Table 1). The children were 4.5 years or older at assessment, provoking the hypothesis that Externalizing effects at least tend to occur in children older than 5 years.

However, three studies found no effect of international adoption on Externalizing. These studies included the Australian and Swedish studies, neither of which found differences on any scale (Cederblad et al. 1999; Goldney et al. 1996). Fisher et al. (1997) assessed very young PI children who showed Internalizing but not Externalizing problems. No study found results in the opposite direction.

Other Subscales

Six of the eight studies that examined the three other subscales reported that PI and unknown background adoptees scored higher on the Attention Problems subscale than non-adoptees (see Table 1). These studies looked at children from a mix of birth countries who were adopted into the Netherlands, Canada, and USA at birth to 73 months and were assessed at 4.5–15 years. Only one study, which looked at mixed PI status children, found no differences on the Attention Problems scale (Cederblad et al. 1999).

Three studies found higher reported mean Thought Problem scores in PI than non-adopted children (Table 1). All these studies looked at 1990s Romanian children, who had the most severe institutional conditions, adopted into Canada, USA, or the Netherlands; the other studies of Romanian adoptees did not analyze this subscale. Age at adoption ranged from less than 8–34 months, and age at assessment ranged from 4.5 to 8 years. Five studies found no differences between adopted and non-adopted children, and these studies examined children from and adopted to a mix of different countries at assessment ages between 6 and 27 years. However, these samples included non-PI children and some PI children from institutions that were not as globally depriving as the 1990s Romanian institutions.

Three studies found higher mean reported Social Problem scores for adopted than non-adopted children (Table 1), two of which were Romanian PI adoptees (Groza 1999; Hoksbergen et al. 2004), and the other (Stams et al. 2000) involved children from a mix of countries with unknown early environments. The children in these samples were between 5.7 and 8 years at assessment. However, four studies did not find significant differences, and these studies covered a range of parameters. No study found results in the opposite direction for any of these subscales.

Conclusions

Over the 12 studies, the broadband scales showed a tendency for younger internationally adopted children to have more Internalizing problems than non-adopted children, whereas older internationally adopted children had more Externalizing problems than non-adopted children. Thought Problems may be related to very severe early environments (e.g.,

Romanian institutions in 1990s); however, Attention Problems are higher regardless of severity of early environment. CBCL Social Problems appear not to be associated with international adoption. Furthermore, PI children have more consistently higher scores than mixed/non-PI samples on all subscales.

Possible Parameters of CBCL Problems

Age at Adoption

Age at adoption is often a surrogate for time in an institution because most but not all children in these countries come to an institution in the first few months of life and remain until adopted (or other placement). Thus, time in an institution and age at adoption are typically highly correlated; and because many parents do not get accurate information about, or cannot accurately remember, the amount of time the child was institutionalized, age at adoption may be more accurately reported. Further, few studies had sufficiently large *N*s and wide distributions of ages at adoption, so they often dichotomized this variable or used a correlational approach. Unfortunately, the dichotomy was made as young as 6 months (Marcovitch et al. 1997) and as old as 24 months (Hoksbergen et al. 2004; Gunnar et al. 2007). Also, for children assessed at a young age, age at adoption tends to be negatively correlated with time in the adoptive home and age at assessment. Finally, age at adoption also tends to be confounded with the specific ages of children while in residence in the institution. Thus, time in the institution is difficult to isolate from several other circumstances.

Studying this parameter is important, however, for two main reasons: First, because all children are adopted, it focuses interpretation of any adverse outcomes on the children's early experience (institutionalization) rather than on adoption per se. Second, because children are from the same institutions and children who enter institutions do so very early and for similar reasons, age at adoption analyses can more directly point to detrimental effects of the institution because children from similar genetic and experiential backgrounds and perinatal histories differ mainly on amount of exposure to the institution.

Six studies investigated age at adoption in PI children. Although they addressed this parameter, Cederblad et al. (1999) did not differentiate between children who spent time in an institution and those who were in foster care; therefore, this study was not included. In contrast, all other studies included PI samples. These five remaining studies examined children from Romania, Russia, and a mixture of other countries who were adopted into Canada, the Netherlands, and USA. Age at adoption cutoffs ranged from 6 to 24 months, and age at assessment ranged from 3 to 18 years.

Internalizing—Three studies found that later adopted PI children had higher reported means and rates of extreme behaviors on the Internalizing broadband scale than earlier adopted children (Table 2). They examined children from a mix of countries and used cutoffs of 18 and 24 months. Two studies found no difference between earlier and later adoptees using a 6-month cutoff (Marcovitch et al. 1997) and a linear comparison of many age-at-adoption groups (Groza 1999).

Externalizing—Three studies found that later PI adoptees had higher reported mean scores and rates of extreme behaviors on the Externalizing broadband scale (Table 2). The earlier and later adoption cut-offs ranged from 18 to 24 months, and age at assessment ranged from 4 to 18 years. The same two studies as above found no relation.

Other Subscales—Three of the four studies that addressed these subscales found that later adoptees had higher reported mean scores on the Thought Problems subscale than

earlier adoptees, but one study found no relation. Conversely, all four studies found that late PI adoptees had higher reported mean scores and rates of extreme behaviors on the Attention Problems scale and the Social Problems scale.

Age at Adoption Conclusions—Across the five studies, children who spent more time in an institution (as measured by age at adoption) tended to be reported to exhibit more Attention Problems and Social Problems. The evidence was mixed, but the majority of studies also found a relation for Thought, Internalizing, and Externalizing Problems. One study that examined the later adoptees' scores compared to the CBCL standardization sample found that the later adoptees were reported not only to score higher than earlier adoptees but also to score higher than the standardization sample (Merz and McCall 2010).

These studies suggest that exposure to an unfavorable environment, in this case an institution, in the first 2 years of life is associated with poorer CBCL outcomes, and this is especially true if the age at adoption was after 6–18 months. However, the length of exposure and the particular ages of exposure to this environment cannot be teased apart. Because all of these studies were of PI children, the unfavorable environment common to institutionalization, namely lack of warm, sensitive, responsive caregiver–child interactions with a few consistent care-givers, as opposed to adoption per se, represents a possible contributor.

Post-Institutional vs. Non-Institutional International Adoptees

Three studies compared PI and non-institutionalized children adopted into the USA. Presumably, such a PI vs. non-PI comparison would reveal the effects of institutionalization apart from international adoption. However, non-institutionalized children may have lived in hospitals (which can be more deficient behaviorally than institutions) or with their parents, family members, or a foster family before adoption, and typically nothing is known about the character and quality of these alternatives. In some countries, such children may include those voluntarily and involuntarily removed from neglectful, abusing, or other problem families. Two studies involved children from globally depriving Romanian institutions (Groza 1999; Groza and Ryan 2002), while the other examined children from a mix of birth countries with various levels of institutional deprivation (Gunnar et al. 2007).

Because of the small number of studies, drawing conclusions is difficult; however, some general trends did appear. The Romanian PI children tend to be reported as higher than non-institutionalized adoptees on the same scales that show rather consistent evidence that internationally adopted children display more problems than non-adopted children. A major exception is Externalizing, for which internationally adopted children are higher than non-adopted children, but non-PI adoptees are no different than PI adoptees. This result comes from both PI and non-PI adoptees having higher than expected Externalizing scores, which may be explained by the unknown, possibly harmful, early environments of non-PI adoptees. The most consistent results were for Attention and Social Problems, for which all studies found higher reported scores for PI children.

This evidence, although sparse, appears to support the hypothesis that the institutional experience per se is detrimental to future outcomes, especially when the institution is severely depriving. However, the evidence is not as consistent or as compelling as might have been expected, perhaps because age at adoption is not considered in the PI vs. non-PI comparisons and because the nature of both institutions and family environments cannot be specified. It is possible that some of these family environments could be as unfavorable as an institution; thus, non-significant results between these groups are not clearly interpretable, and there are not enough studies to draw stronger conclusions.

Age at Assessment

In the reviews above, some behavior problems seem to be manifest only if the children are assessed at younger or older ages, but these are between-study comparisons that may have extraneous confounds. Therefore, in this section, studies in which problems were directly related to age at assessment within cross-sectional and longitudinal samples are reviewed.

Age at assessment is an important parameter to consider because behavior problems change over time in the non-PI population (Bongers et al. 2003). Thus, it is important to determine whether PI children follow similar trajectories of behavior problems as non-PI children. Also, if institutional effects are composed only of learned behaviors, then behavior problems would be expected to be highest immediately post-adoption and decrease to levels similar to the non-PI population as children get older. Conversely, if institutional experience results in pervasive cognitive or behavioral deficits, then behavior problems would be expected either to remain at stably high levels or to increase with age. Three possible correlates of age at assessment are also important to consider: age at adoption, especially when children are assessed at relatively young ages, time in the adoptive home and the child's experience in the home, and more experience with peer relationships.

Given these qualifications, four studies related age at assessment to behavior problems in cross-sectional designs, and two studies used longitudinal samples (Table 3). One cross-sectional study compared a 10 to 11-year-old group with a 12 to 15-year-old group (Verhulst et al. 1990b), a more restricted age range than the other studies. The longitudinal studies compared two test ages: age at the first test ranged from 10 to 15 years (Verhulst 2000) and age at the second test ranged from 14 to 18 years (Verhulst 2000). These studies investigated children from a mix of countries, Romania, India, and Russia who were adopted into the Netherlands, USA, and Norway. Age at adoption varied widely within studies, and two involved all PI children, while four included samples with mixed or unknown PI status.

Internalizing—Five studies found that children older at assessment had higher reported rates of extreme behaviors on the Internalizing scale (Table 3). These studies assessed mixed and unknown PI status children from a mix of countries adopted into the Netherlands and USA. Age at adoption ranged broadly within the studies, and children were assessed from early adolescence to later teen years in three studies (Verhulst et al. 1990b; Verhulst and Versluis-Den Bieman 1995; Verhulst 2000). One study found no relation with age (Groza et al. 2004). This study examined PI children from India adopted into Norway. No study found an opposite effect.

Externalizing—Three studies found that older unknown and mixed PI status children were reported to display more Externalizing problems than younger children (Table 4). These studies examined children from Romania and a mix of countries adopted into the USA and the Netherlands, and they had a wide range of ages at adoption and assessment. However, three other studies found no association with age, and no study found results in the opposite direction.

Other Subscales—Three of the five studies that assessed these subscales found that older children had higher reported rates of Attention and Thought Problems than younger children, but two studies found no relation (Table 3). Both sets assessed children from different countries and had a wide range of ages at adoption and at assessment. One study found an increase in Social Problems; four showed no differences. No study found results in the opposite direction on any of these subscales.

Age at Assessment Conclusion—In general, older PI children were consistently more likely to be reported to display higher scores than younger PI children on Internalizing problems. Mixed results were found for Externalizing, Attention, and Thought Problems. Children from “good” and socially emotionally depriving institutions were reported to have fewer age at assessment relations than children with mixed PI status from possibly more severe early environments, especially for Externalizing. Even when no differences were found, behavior problems may have been just as marked later in life and did not lessen with more time in an adoptive home. The behavior problems were generally either constant or increased in severity.

Discussion

Parents of international adoptees reported their children had more behavioral problems than parent-reared, non-institutionalized children. These findings were most consistent on Internalizing (with children assessed at a younger age), Externalizing (with children assessed at an older age), Attention, and Thought Problems (Table 4). These results are similar to those reported by Juffer and Van IJzendoorn (2005), who found that international adoptees presented more Total, Externalizing, and Internalizing problems than parent-reared controls. Furthermore, the results were more consistent when PI status was considered in the current review.

Institutional Experience

The higher reported means and rates of extreme behaviors in international adoptees vs. non-adoptees appear to be related to the institutional experience. First, although only three studies examined this, direct comparisons between PI and non-PI internationally adopted children showed that PI children displayed more problem behaviors than non-PI internationally adopted children on the same scales that PI children showed more problem behaviors than non-adopted children, except for Externalizing (Table 4). The discrepancy on Externalizing scales was due to both PI and non-PI children receiving high scores on those scales and surpassing non-PI, non-adopted standardization means. A possible explanation for this is that the nature of the non-PI early environments, of which almost nothing is known, may not be much better or even worse than an institution. Sometimes infants remain in a hospital for weeks before placement, and sometimes their care is restricted to biological necessities, with even less attention than in institutions. Whereas some children are given up for economic reasons or by teenage mothers, others are relinquished or removed because of neglect, abuse, and parental substance use and mental health issues. Some of these early environments may result in negative behavioral outcomes and would dilute PI vs. non-PI differences. Further, some of their negative attributes (e.g., neglect) may be similar to characteristics of institutions.

Second, a major underlying moderator may be the severity of the early environment, whether institutional or family. Since nothing is reported about non-PI family environments, speculations can only be made between studies of children adopted from institutions presumably differing in severity of conditions: (1) 1990s Romanian institutions, often regarded as the most depriving on many dimensions; (2) institutions of unknown or diverse character; and (3) the St. Petersburg (Russian Federation) institutions which were deficient primarily in the lack of warm, sensitive, and responsive caregiver–child interactions, a characteristic of nearly all institutions. In PI vs. non-PI comparisons, Romanian PI children scored higher on Thought Problems than non-PI children, while adoptees from diverse institutional backgrounds did not differ from non-PI children on this scale (Table 4).

Only one study directly compares institutional severity (Merz and McCall 2010) by age at adoption, using an 18-month cutoff. For later adopted children, higher rates of borderline

and clinical behavior were found for almost all severity levels for Internalizing, Externalizing, Attention, Social, and Thought Problems; however, rates were higher for Romanian adoptees than the other groups. In the earlier adopted group, children from Romania were reported to have higher rates of extreme scores for Externalizing, Attention, Social, and Thought Problems than the other groups. The pattern of which scales showed extreme behaviors, however, was similar for children from all three types of institutions, perhaps reflecting that deficient social-emotional relations, which characterize essentially all institutions, are the primary environmental contributor to later behavior problems.

Third, longer time in an institution and older age at adoption were related to higher reported means and rates for Attention and Social Problems, with mixed results for all other scales (Table 4). The mixed results may have been found because of the small number of studies that examined this parameter in strictly PI samples using the CBCL; however, studies using other scales support an age at adoption effect (Colvert et al. 2008; Rutter et al. 2001, 2007). The trend of greater behavior problems at later ages at adoption may suggest a “dose-response effect” in which longer exposure to the institution relates to higher and more frequent occurrences of these problems, and studies that do not examine this parameter can provide ambiguous or inconsistent results. But this “dose-response” relation may not be uniform over all ages of exposure. For example, the data may suggest that institutional deprivation during the first 6 months of life is not sufficient, or possibly relevant, to produce problem behaviors, but deprivation lasting until 6 to ~24 months of age is associated with problem behaviors, and exposure longer than this does not necessarily increase problem behaviors. One study of Romanian children (Groza 1999) found a continued increase in behavior problems with longer time in an institution, but other studies of Romanian and Russian children (Kreppner et al. 2007; Merz and McCall 2010) do not. This relatively mixed evidence, along with their use of the highest age at adoption in a study as that study’s age at adoption ranking and their not taking into account PI vs. non-PI status, may explain Juffer and Van IJzendoorn’s (2005) meta-analytic findings of no differences based on age at adoption.

These results are consistent with two hypotheses: First, there could be a critical or sensitive period between ~6/12 and 18/24 months. A critical/sensitive period specifies an age range in which a certain experience is necessary or advantageous for typical development to proceed. Presumably, institutionalization between 6/12 and 18/24 months of life is associated with later behavioral problems in some children.

Second, the results are also consistent with a “limited cumulative deficit hypothesis,” which suggests that a certain length of deficient experience is sufficient to produce later problems regardless of the specific ages of exposure (at least within a certain age period) and after a certain length of exposure, more does not increase the likelihood or level of the undesirable outcome. Thus, for example, 6/12–18 months exposure to an institution in the first 2–3 years of life may be associated with later behavior problems.

It would be difficult to determine which hypothesis is correct because to differentiate between the two hypotheses would require fairly large numbers of children who enter the institution at different ages and stay for various amounts of time, which does not tend to occur naturally and could not be conducted experimentally. For either hypothesis, the outcome occurs with higher probability. That is, not all children adopted earlier are free of problems, nor do all children adopted later have problems. Nevertheless, exposure to an institution or similarly depriving environment for some unknown minimum duration during the first 2 years of life is associated with higher CBCL problem scores.

Age at Assessment

Studies that directly compare age at assessment consistently find higher reported extreme scores on Internalizing problems at older ages at assessment, with mixed results for Externalizing, Thought, and Attention Problems. Between-study comparisons, however, show younger children with higher scores on Internalizing. The tendency for younger (1½ to 5-year-old) children to exhibit Internalizing behaviors (which ages were not included in the within-study comparisons) may represent a continuation of behavior learned in the institution. Institutions encourage group conformity (e.g., teach children to stay quietly in bed even if they are awake). Further, the institutional environment is highly scheduled and relatively constant, so adoptees may withdraw in the face of new circumstances. Parents may perceive such a child as being “good,” but these behaviors are relatively unusual in parent-reared children and thus are reflected in higher Internalizing scores, which are subsequently reduced as the child adapts to family life. In contrast, Internalizing in older adolescents may be more related to their other extreme behaviors and psychopathologies that are more frequent or extreme at these ages. Thus, both younger (<5 years) and older (>12 years) children may be reported to display higher levels of Internalizing behaviors.

High Externalizing behaviors are more prominent at older ages of assessment, which may be more characteristic of older children in general (Bongers et al. 2003). However, studies that utilize rates of extreme behaviors and/or *T* scores control for the increase in behaviors in the standardization sample. These studies show increases in problem behaviors above and beyond the expected increases. PI children’s lack of experience in conducting social relations and inability to regulate their own behavior may be revealed in inappropriate, uncontrolled behavior. Thus, one might speculate that some newly adopted young children may display Internalizing behaviors that represent a continuation of behaviors learned in institutions; as they get older and face the challenges of adolescence, some children act out with Externalizing behaviors because they are less able to regulate and control themselves; as they enter later adolescence, some children continue to act out in Externalizing behaviors, while others retreat from society with Internalizing behaviors.

The fact that many behavior problems are more frequent or appear more pronounced in adolescence suggests the hypothesis that the effects of institutionalization or similarly depriving environments early in children’s lives (i.e., at least 6–18 months of exposure in the first 2 years) may be rather profound and basic. If children simply learned behaviors that were adaptive in the institution but subsequently were not adaptive in advantaged home environments, one would expect higher rates of problem behaviors at young ages that perhaps diminish over time as children learn more acceptable behavior patterns. However, because behavior problems increase with age, and later problems span so many domains, these early deficient environments are apparently associated with more pervasive and enduring characteristics in a substantial minority of children that become manifest in more noticeable or severe ways in adolescence, perhaps because of the developmental demands and challenges of this age period. This scenario is consistent with attachment theory, which suggests that problematic caregiver–child relationships beyond a sensitive period (e.g., 6–18 months) are associated with later problem behaviors (Bowlby 1982; Greenberg et al. 1993).

Important Aspects of the Institution

While institutions vary, one common theme is the lack of social–emotional interactions with caregivers, which may be related to delayed development in most domains (Rosas and McCall 2010; The St. Petersburg-USA Orphanage Research Team 2005) and later behavior problems (Merz and McCall 2010). Conversely, one study found that those children identified as favorites of caregivers, who may have received more and better social–emotional interactions, had higher developmental ratings than those who had not been

favorites (Ames 1997). Further, an intervention that improved the social–emotional quality of institutional wards and caregiver–child interactions produced improved physical, mental, social, and emotional development in resident children (The St. Petersburg-USA Orphanage Research Team 2008). Components of a social–emotionally deficient institution include many and changing care-givers who are not sensitive or responsive to children’s overtures and needs, which limits the opportunity to experience consistent response-contingent social feedback and to form attachment relationships, both of which may contribute to later behavior problems (Gunnar et al. 2007).

Limitations

All these studies share some common limitations. First, they are descriptive studies that cannot demonstrate causation. Second, both children and their parents represent selected samples, so sampling biases, such as genetics, prenatal and birth conditions, pre-institutional experience, and a number of other factors, characterize the children; and adoptive parents tend to be highly advantaged and committed to their children. However, Rutter et al. (2007) minimized selection bias in their sample and still found later behavior problems on their behavior scale. Age at adoption comparisons also minimize the role of these confounds. Third, the CBCL is a parent-report instrument, and the extent to which parents selectively respond to questionnaires or perceive their children positively or negatively is not known, and there are no items to detect social desirability or lying. However, in at least one study, parents and teachers seem to identify similar problems (Roy et al. 2000). Furthermore, the CBCL includes some items which may be difficult for a parent to understand or for parents to interpret in the same way, and the subscale names may not be accurate for a particular child who may endorse a small number of items on a scale that do not specifically address the overall theme of the scale (e.g., ‘stares’, ‘sulks’, and ‘underactive’ combined are not necessarily ‘withdrawn behavior’; Doll 1998).

Nevertheless, across these 18 studies, it is clear that PI international adoptees exhibit more behavior problems than non-PI children and this is associated with increased time in an institution and age at assessment. Studies using measures other than the CBCL are generally consistent with these conclusions (Colvert et al. 2008; Kadlec and Cermak 2002; Miller et al. 2009; Rutter et al. 2001).

Future Directions

Given the strong relation between age at adoption and later behavior problems, more research needs to examine the specific underlying causes of this association. PI children develop a broad range of problem behaviors, including not only the Internalizing, Externalizing, Attention, and Social Problems seen in this review, but also cognitive impairments (Rutter et al. 2007), quasi-autistic symptoms (Rutter et al. 2007), attachment problems (Chisholm 1998; Rutter et al. 2007), and neuropsychological (e.g., executive functioning) impairments (Pollak et al. 2010). Future research should work to identify the specific deficits that may influence all of these outcomes. These deficits may include certain cognitive impairments, emotional control difficulties, or changes in neural pathways or brain structure. Furthermore, a stronger emphasis should be placed on distinguishing between the “high-risk” children who later develop problem behaviors and those that do not. There may be certain genetic factors or aspects of the adoptive home that lead to resilience.

A better understanding of the differences between institutions in different countries is also warranted. Much is known about Romanian and Russian institutions, but relatively little is known about the institutions in various other countries. Future research should examine whether children from different countries experience qualitatively different early environments and whether they face unique problems. A better appreciation of these

different environments may lead to a better understanding of the mixed results seen in studies examining children adopted from various countries.

Another important direction for future research is the establishment of interventions for these children post-adoption. Interventions designed to help young adoptees develop better emotion regulation may buffer against the development of later behavior problems. Interventions for foster children have begun to show promising results (Dozier et al. 2002), suggesting that similar interventions for PI children may also be effective. Before successful interventions can be established, however, researchers need to discover exactly which cognitive or behavioral problems are the most detrimental, how they can be changed, and which children are at the highest risk to develop them.

Acknowledgments

This paper is supported in part by a NIMH grant R25MH5431813 awarded to Gretchen Haas and NICHHD grants R01HD39017 and R01HD50212 awarded to McCall and Christina J. Groark. The authors thank Christina J. Groark, Megan Julian, Emily Merz, and Johana Rosas for their helpful comments on earlier drafts of this paper.

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Table 1

Differences between internationally adopted and non-adopted children on CBCL scales

	Verhulst et al. (1990a)	Goldney et al. (1996)	Ames (1997)	Fisher et al. (1997)	Groza (1999)	Cederblad et al. (1999)	Kim et al. (1999)	Stams et al. (2000)	Holsbergen et al. (2004)	Audet et al. (2006)	Tan and Marfo (2006)	Merz and McCall (2010)
Birth country	Mix	Indonesia	Romania	Romania	Romania	Mix	Korea	Mix	Romania	Romania	China	Russia
Adoptive country	Netherlands	Australia	Canada	Canada	USA	Sweden	USA	Netherlands	Netherlands	Canada	Mix	USA
Adopted <i>n</i>	1,036 M, 1,112 F	23 M, 11 F	20 M, 26 F	16 M, 18 F	109	89 M, 122 F	4 M, 14 F	73 M, 86 F	44 M, 36 F	17 M, 15 F	695 F	125
PI status of adoptees	Unknown	All PI	All PI	All PI	All PI	Mix	No PI	Unknown	All PI	All PI	All PI	All PI
Non-adopted comparison	Parent-reared	Parent-reared	Parent-reared	Parent-reared	Norm group	Parent-reared	Non-adopted siblings	Norm group	Norm group	Parent-reared	Norm group	Norm group
Non-adopted <i>n</i>	455 M, 476 F	233	20 M, 26 F	20 M, 26 F	1,241	529	5 M, 4 F	1,241	579 M, 593 F	42	700	438
Age at adoption	0–73 months	<i>M</i> :17 months	>8 months	18.5 months	18 months	70% < 12 months	<i>M</i> :12 months	7–15 weeks	<i>M</i> = 34 months	>8 months	PS:14.2 months, SA:18.5 months	<i>M</i> : 16.1 months
Age at assessment	10–11 years; 12–15 years	15 years	2–3 years; 4.5–9 years	2.5 years	5.7 years	13–27 years	11(NA); 5(A) years	7 years	8 years	T1:2; T2:4.5; T3:10.5 years	PS:43.7 months SA:89.8 months	6–18 years
CBCL measure	Rate	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Rate
Internalizing	NS	NS	Younger A > NA	A > NA	NS	NS	NA > A	Males: A > NA	NS	NS	PS:NA > A	NS
Externalizing	Older males: A > NA	NS	Older A > NA	NS	Females: A > NA	NS	NS	A > NA	A > NA	T2:A > NA; T3:A > NA	PS:NA > A; SA:NA > A	A > NA
Thought problems	NS	NS	Older A > NA	–	A > NA	NS	–	NS	A > NA	–	–	NS
Attention problems	Older males: A > NA	–	Older A > NA	–	A > NA	NS	–	A > NA	A > NA	–	–	A > NA
Social problems	NS	–	NS	–	Females: A > NA	NS	–	A > NA	A > NA	–	–	NS

Note. *M* male, *F* female, *mix* some PI, foster, and family, *unknown* authors did not report on pre-adoption environments, *A* adopted (international), *NA* non-adopted, *P5* preschool age group, *SA* school age group, *NS* not significant, – scores were not reported

Table 2

CBCL scores as a function of age at adoption

	Marcovitch et al. (1997)	Hokshbergen et al. (2004)	Gunnar et al. (2007)	Groza (1999)	Merz and McCall (2010)
Birth country	Romania	Romanian	Mix	Romania	Russia
Adoptive country	Canada	Netherlands	USA	USA	USA
Adopted <i>n</i>	Late:19 Early:37	Late:55 Early:25	Late:410 Early:1,527	228 M, 247 F	Late: 95, Early: 247
Age at adoption	Late >6 months Early <=6 months	Late >24 months Early <24 months	Late >24 months Early <24 months	1, 6, 12, 24, 24+ months	Late >18 months Early <18 months
Age at assessment	3-5 years	M:8 years	4-18 years	M:5.7 years	6-18 years
Measure	Mean	Mean	Rate	Mean	Rate
Results					
Internalizing	NS	Late > Early	Late > Early	NS	Late > Early
Externalizing	NS	Late > Early	Late > Early	NS	Late > Early
Thought problems	-	Late > Early	Late > Early	Late > Early	NS
Attention problems	-	Late > Early	Late > Early	Late > Early	Late > Early
Social problems	-	Late > Early	Late > Early	Late > Early	Late > Early

Table 3

Differences in CBCL scores based on age at assessment

	Cross-sectional comparisons			Longitudinal comparisons		
	Verhulst et al. (1990b)	Groza and Ryan (2002)	Groza et al. (2004)	Merz and McCall (2010)	Verhulst and Versluis-Den Bieman (1995)	Verhulst (2000)
Birth country	Mix	Romania	India	Russia	Mix	Mix
Adoptive country	Netherlands	USA	Norway	USA	Netherlands	Netherlands
Adopted <i>n</i>	10–11 years: 278 M, 318 F 15 years: 758 M, 794 F	108 M, 122 F	59 M, 132 F	125	T1: 1,036 M, 1,112 F T2: 734 M, 804 F	1,538
PI status	Unknown	Mixed	All PI	All PI	Unknown	Unknown
Age at adoption	0–125 months	<i>M</i> : 21 months	<i>M</i> : 18 months	<i>M</i> : 10.1 months	0–125 months	0–125 months
Age at assessment	10–11; 12–15	<i>M</i> : 6 years	<i>M</i> : 9.8 years	6–18 years	T1: 11–14 years T2: 14–17 years	T1: 10–15 years; T2: 14–18 years
Measure	Rate	Mean	Rate	<i>T</i> scores	Rate	Rate
Results						
Internalizing	Older > Younger	Older > Younger	NS	Older > Younger	Older > Younger	Older > Younger
Externalizing	NS	Older > Younger	NS	NS	Older > Younger	Older > Younger
Thought problems	–	NS	NS	Older > Younger	Older > Younger	Older > Younger
Attention problems	–	NS	NS	Older > Younger	Older > Younger	Older > Younger
Social problems	–	NS	NS	Older > Younger	NS	NS

Table 4

Pattern of higher CBCL levels as a function of four parameters

	Adopted vs. non-adopted	Age at adoption	Institution vs. no institution	Age at assessment
Internalizing	Adopted (<7 years)	Mixed	Mixed	Older
Externalizing	Adopted (>5 years)	Mixed	NS	Mixed
Thought problems	Adopted (Romanian)	Mixed	Institution (Romanian)	Mixed
Attention problems	Adopted	Later	Institution	Mixed
Social problems	Mixed	Later	Institution	NS

Note: Table lists group having higher mean or rate of extreme CBCL scores, *Adopted* internationally adopted, *Mixed* mixed evidence from studies, *NS* no effect