

The Effects of Early  
Social-Emotional and  
Relationship Experience  
on the Development of  
Young Orphanage Children

The St. Petersburg–USA  
Orphanage Research Team

WITH COMMENTARY BY

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## **XII. SCIENTIFIC AND PRACTICAL CONCLUSIONS AND IMPLICATIONS**

The theoretical premise of this project was that early experience with positive social, emotional, and relationship experiences with relatively fewer, consistent adults who interact with children in a warm, caring, sensitive, and responsive manner is crucial to the early personal–social, emotional, communication, cognitive, motor, and physical development of young children. One of the most extreme circumstances in which such early experience tends to be lacking consists of young children living in substandard orphanages. Such children may have many and changing caregivers who behave in unemotional, cold, or harsh ways with the children; direct children rather than respond to child-directed initiations; and provide unresponsive and insensitive routine care. Children residing in orphanages during the first few years of life tend to be substantially delayed in physical and behavioral development, and while they improve rapidly in most respects upon being adopted into advantaged families, they display higher rates of persistent extreme behaviors and problems than parent-reared children in the adoptive country (Gunnar, 2001; Juffer & van IJzendoorn, 2005; MacLean, 2003). Most orphanages in the literature are deficient in nearly every respect—medical care, nutrition, sanitation, equipment, toys, abuse, and neglect. So what role does the lack of social–emotional–relationship experience play apart from the other deficient aspects of these orphanages in producing the delayed development of children while in residence and perhaps the higher rates of extreme behaviors that persist after adoption into advantaged families?

The current study took advantage of orphanages (called Baby Homes [BHs]) in St. Petersburg, Russian Federation, that were acceptable with respect to medical care, nutrition, sanitation, safety, toys, equipment, and the lack of abuse, but were deficient primarily with respect to the social–emotional–relationship experience provided to young children in ways similar to many other orphanages in the literature. In this context, two interventions were implemented, both of which were designed to promote

positive social–emotional–relationships and warm, sensitive, responsive caregiver–child interactions. First, training and supervision were provided in basic child development, attachment, and mental health that emphasized responsive child-directed, warm, sensitive interactions with children during routine caregiving chores and at other times. Second, structural changes created an environment in which caregiver–child relationships were more likely to be developed, because group size was reduced; Primary Caregivers were designated, one of whom was present every day during most of the children’s waking hours; groups were integrated by age and disability status of children; periodic graduations to new sets of caregivers and peers were discontinued; and family hour was implemented in the morning and afternoon in which visitors were excluded and caregivers were to play with the children. One BH, received both training and structural changes (T+SC), another received training only (TO), and a third had no intervention (NoI) and conducted business as usual. Assessments documented that the interventions were successfully implemented, caregivers changed their behavior with the children on the wards, and both typically developing and children with disabilities in T+SC more than in TO and NoI improved their interactions with their caregivers and their physical and behavioral development (i.e., personal–social, emotional, fine and gross motor, adaptive, communication, and cognition).

## MAJOR RESULTS

Each chapter above reports results in detail and contains some discussion and interpretation. The more general findings are summarized below, accompanied by interpretations.

### *Implementation of the Interventions*

The interventions were implemented successfully as planned. Specifically:

*Training increased the amount of information caregivers knew about early childhood development and sensitive, responsive caregiving.* Caregiver scores on two equivalent and counter-balanced forms of a 40-item multiple-choice test over training content increased from 20.65 to 26.70 from pre- to posttest, an increase of 29%. The pre–post effect size (partial  $\eta^2$ ) was .66. Replacement caregivers showed similar increases with fewer hours of training. The relatively poor initial scores (about 50% correct) and substantial increase in scores reflect the initial need for training in early childhood development, mental health, and caregiving techniques. In addition to providing new information, the training also may have contributed to improving caregiv-

er-child relationships, but structural circumstances that promoted a “more family-like environment” were additionally needed to actually change the institutional behavioral culture.

*Structural changes reduced the number of caregivers per child and increased the average number of consecutive days Primary Caregivers worked.* In T+SC, Primary Caregivers increased the average number of consecutive days they worked from approximately 1.2 to 3.5; the average number of caregivers per child per month was reduced from approximately 9–12 to 6; the average number of children per caregiver per month dropped from approximately 10–11 to 6; and for children who remained in residence 19+ months, the cumulative number of different caregivers they experienced was reduced from approximately 60–100 to 30+. Group sizes were cut from 10–14 to 5–7, but child-staff ratios during waking hours were reduced only moderately from approximately 4+:1 to 3:1, and integration by age and disability status was successfully implemented. While extra funds were needed to implement structural changes, especially the new staff employment regimen, all structural change components could be maintained after the project ended on the original government budget for the BH without additional resources.

### *Caregiver Behavior on the Wards*

Caregiver behavior on the wards improved as intended.

*HOME Inventory scores for T+SC caregivers improved dramatically, both Total Score and most subscales, more than in TO, which in turn increased slightly more than NoI.* Increases in Total Score and subscales for T+SC had percent variance (partial  $\eta^2$ ) effect sizes of .41 and .66, respectively, more than twice the effect for TO. Structural changes provided a “more family-like environment” that permitted and encouraged caregivers to develop better social-emotional-relationships with children and implement the behaviors emphasized in training.

*Scores on a special Sociability Index composed of items from the HOME pertaining to caregiver-child social interactions similarly improved for T+SC more than TO more than NoI.* This indicated that the social behavior of caregivers in particular increased, a primary focus of the interventions, and it is also possible that training on other topics increased caregivers’ self-confidence that in turn supported more typical adult-child social interactions.

*HOME scores for T+SC remained high over approximately 4 years.* The improvements in T+SC on caregiver behavior were sustained, perhaps because the improved development of the children rewarded and maintained the increased social behavior of the caregivers (e.g., Taneja et al., 2002) and supervisors encouraged it. Also, as administrators and staff grew comfortable with structural changes, caring for children of different ages and

disabilities, and working more as a team, the new “culture” of T+SC was shared by all staff who supported each other in providing more positive caregiving, which then became the standard for care in that BH. The fact that new caregivers, who received much less training, scored the same on the HOME in their first year on the job as the original caregivers who received much more extensive training, is consistent with this interpretation.

*Average Total HOME scores for T+SC exceeded average rates for U.S. home and group home providers.* While U.S. home care is not an especially enviable standard of quality, this result conveys that the caregiving environment of T+SC became generally comparable to or better than typical nonresidential home care in the United States, which has approximately the same number of children per group (i.e., 6) as in the T+SC BH.

*T+SC caregivers personally adjusted well to the structural changes.* Although caregivers initially were concerned that structural changes would produce more work and stress, just the opposite was eventually the case. Two to three years after the intervention had been implemented, T+SC caregivers reported greater reductions in job stress, anxiety, mild depression, inflexibility, work overload, difficulties working with children with disabilities, and traditional attitudes toward raising children (i.e., caregiver-directed interactions with children) than caregivers in TO and NoI. These adjustments likely derived in part from most elements of structural changes. Smaller groups and fewer children combined with age integration eliminated rushed caregiving procedures for 10–14 children (feeding, changing, toileting, etc.) and created a more relaxed, comfortable, and socially rewarding environment in which caregivers had more time for each of fewer children and could develop relationships with them. Knowledge of and experience with children with disabilities reduced the stigma and uncertainty about caring for them, so that caregivers in T+SC, each of whom cared for one or two children with disabilities, felt more comfortable with them than caregivers in TO and NoI, most of whom did not care for any child with a disability.

### *Children’s Development*

#### *General Themes*

As a result of the interventions, children improved developmentally in nearly every measured domain with minor exceptions and inconsistencies noted in previous chapters. Several general themes characterized the results for children across domains.

*T+SC children generally improved more substantially than TO children, who in turn improved more than NoI children.* This result parallels the amount of change in caregiver HOME behavior produced by the interventions and

highlights the need to provide structural changes that support the social-emotional-relationship aims of the training, especially smaller groups of children and fewer and more consistent caregivers who can then provide more individualized, sensitive, and responsive attention to children.

While we expected T+SC caregivers and children to improve substantially and more than TO, we also expected TO to do better with typically developing children than they actually did relative to NoI. While TO caregivers improved in HOME scores from an initial deficit, they did not end up much better than NoI, and TO children similarly showed some improvement but were often more similar to NoI than to T+SC children. There are several possible explanations for TO's relatively modest improvements. First, structural changes may be necessary to implementing the training; motivating staff to interact with children in warm, sensitive, and responsive ways; developing relationships with children whom Primary Caregivers would see 5 days a week rather than only 7–8 days a month; and creating a more family-like rather than institutional culture within the BH. Second, the literature in a variety of domains suggests that training alone is indeed relatively ineffective, especially if it is not accompanied by supervision and coaching (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Kelley, 1999). While TO caregivers were supervised, perhaps supervisors were not as motivated without structural changes and neither supervisors nor staff implemented much of the training. Third, and more idiosyncratic and less generalizable, the staff of TO had a very high opinion of their work, they thought they knew most of what they needed (although neither their pretest nor posttest scores on training content were higher than T+SC), and they lacked a commitment to improve. This derived from having a veteran and respected director who readily praised her staff to them and to others; the Special Teachers who would become supervisors were substantially more experienced and highly regarded as being the “best” in the city; and physically the BH was the newest, most spacious, and most well appointed facility in the region which political and administrative figures regarded as a sign of “quality.” As a result, staff, especially the Special Teachers and other professionals, believed their caregiving was already high quality and they did not feel the need to change.

*T+SC children tended to improve more on many measures the longer they were in the intervention.* Presumably, the caregivers in T+SC behaved in developmentally appropriate ways, changing their interactions with children to match their increasing skills. When caregivers saw how these children could improve developmentally, they raised their expectations for the children and encouraged more advanced social and mental activities and achievements. Children were also older after 9+ than 4–9 months of exposure. Covarying age at initial assessment meant that the interventions had their effects regardless of children's ages. Nevertheless, the intervention could

have had somewhat greater effects and standardized infant tests might be more sensitive to those effects (McCall, 1979) on somewhat older infants and toddlers.

*Both typically developing and children with disabilities benefited substantially from the interventions. While children with disabilities had fewer statistically significant results because of low N, effect sizes frequently were larger than for typically developing children.* This result is consistent with the literature on the benefits of early intervention and integration for children with disabilities (e.g., Buysee & Bailey, 1993; Chandler et al., 1992; Kaczmarek & Groark, 2007; McEvoy et al., 1992; Odom & Brown, 1993; Shonkoff & Phillips, 2000).

*For children with disabilities, the interventions did not tend to produce effects unless children were exposed to 9+ months of the interventions.* This presumably indicates that children with disabilities required a more prolonged exposure to reveal intervention effects, they needed to be somewhat older, and/or their caregivers required a longer period of time to learn to deal with these children's limitations. For example, children with disabilities are not readily accepted and integrated into St. Petersburg society, and the BH administration and staff did not expect that they could improve much developmentally. Thus, it may have taken longer for caregivers to alter their attitudes and beliefs, become confident and comfortable with such children, complement their training with experience that showed them that such children can improve, and learn how to deal with the specific skills and limitations of each child.

### *Specific Results*

Several results were more specific to particular domains of development.

*The interventions improved children's physical growth and functioning.* T+SC and TO children, both typically developing and with disabilities, increased in height, weight, and chest circumference; typically developing T+SC and TO children progressively displayed fewer functional limitations; and these benefits tended to be greater the longer the children were in the intervention, especially for T+SC children. These improvements resulted from an intervention that promoted social-emotional development and relationships; no changes were made in diet, medical care, exercise regimen, or sanitation. However, no significant improvements were observed for head circumference, which is less malleable in the second year of life (D. Johnson, personal communication, October 18, 2007) and improves less than height and weight after adoption (Rutter et al., 2007; van IJzendoorn et al., 2007).

*Battelle Total DQs rose substantially for T+SC children.* Typically developing T+SC children increased from an average of 57 to 92 = 45 DQ points, and



children with disabilities rose from 23 to 42 = 19 DQ points on average, with 27% of children with disabilities increasing more than 30 DQ points and 14% increasing more than 40 DQ points. These are among the longest gains in terms of DQ points in the literature. Partial  $\eta^2$  effect sizes for developmental change ranged from .29 to .45 for typically developing and .44–.73 for children with disabilities. Children with disabilities who did not increase were likely to have cerebral palsy plus microcephaly or hydrocephaly.

*Consistent with the focus of the interventions, behavioral development improved most clearly for the Personal–Social subscale of the Battelle.* But the interventions also produced improvements in the Motor, Communication, and Cognition subscales.

*The longer typically developing children were in the T+SC intervention, the higher their Battelle scores; longer exposures to T+SC prevented declines in Battelle scores in children with disabilities.* Improvements in Battelle scores occurred after initial age and initial BDI scores were covaried in cross-sectional samples, thus removing individual and BH initial differences and substantiating that the T+SC intervention was effective regardless of the children's starting age and DQ (see above for possible confounds).

*In caregiver–child free play sessions, typically developing T+SC and TO children displayed a higher quality of play, alertness, and self-regulation than NoI, and T+SC children showed more positive affect, social initiative, and communication than TO and NoI.* These improvements were greater the longer the children experienced the interventions. T+SC children with disabilities also displayed higher levels of these behaviors than NoI. Both T+SC and TO may have improved in quality of play, alertness, and self-regulation as a result of increased caregiver stimulation, but only T+SC improved in positive affect, social initiative, and communication perhaps as a result of better relationships with caregivers.

*Following the interventions, T+SC caregivers in the free play assessment displayed more positive social–emotional engagement, responsiveness, and child-directed behaviors than caregivers in TO and NoI.* The rates of these caregiver behaviors increased and remained high over the project period for T+SC caregivers, but declined (engagement) or were consistently low (responsiveness, child-directed) for caregivers in TO and NoI. Presumably, TO and NoI caregivers initially displayed in these assessments the behavior they thought the project emphasized, then progressively reverted to the low-affect disengaged behavior that was typical before this project. In contrast, T+SC caregivers were rewarded by socially engaging children and maintained positive interactions.

*T+SC caregiver–child dyads displayed more mutual, positive, reciprocal engagement than TO, and TO more than NoI.* These differences, which were a primary aim of the interventions, were greater after longer exposures to the interventions.

*In a free play–separation–reunion assessment, T+SC children's emotional behavior suggested that more of them had a better relationship with their caregivers than*

*children in the other groups.* T+SC children displayed more positive emotions, a greater number of emotions, and more activity during free play and reunions (when their caregivers were present) but not during separations, and they showed more negative emotions when their caregiver left and returned. Group differences were greater after 9+ months of exposure to the interventions. Generally, this pattern of emotional behavior is in the direction of behavior that would be expected of children with better relationships with their caregivers. T+SC children with disabilities had higher levels of positive and negative emotional tone and number of different emotions after 9 months of exposure, but they were not consistently significantly higher than the other groups.

*T+SC caregivers accompanying children in the free play and reunion episodes increased in positive emotional tone, negative emotional tone, and the number of different emotions after the interventions, approximately in parallel with changes in the emotional behavior of the children.* The TO and NoI caregivers declined in positive emotions after the interventions were implemented, reverting to their typically low affect style.

*The attachment of T+SC children 11.5–18 months of age was substantially more likely to be categorized as Insecure-Resistant (C) and Securely-Attached (B) and substantially less likely to be considered Disorganized/Disoriented (D) than TO and NoI children.* This reflects the greater likelihood that T+SC children developed some positive relationships with their caregivers. The increase in C categorizations is consistent with children who live in an environment in which there were still 6+ caregivers per month and approximately 25+ different caregivers serving children who remained in the BH for up to 18 months, plus caregivers, specialized staff, and visitors coming and going from the ward constantly.

*T+SC children displayed substantially more proximity seeking and contact maintaining and less avoidance behaviors with their caregivers than did children in the other groups.* These changes are consistent with their higher rates of C and B attachment categories.

### *Changes in the Institutional Culture*

The empirical data summarized above document a variety of changes in the orphanage environment and the behavior of caregivers and children in the T+SC BH, but these data barely touch on the comprehensive qualitative transformation from an institution-like to family-like environment that occurred in T+SC. Members of the research team made periodic visits to the wards during the 5-year project period and for 2 years before and afterwards, and kept notes on their observations, which are briefly summarized in this section.

### *Wards and Caregivers*

While T+SC wards formerly were quiet or had children crying, now they are noisy, filled with talking and excitement. Whereas children once were confined to large playpens or their cribs, now they are actively engaged with toys, their caregivers, and each other on the floor and elsewhere in their rooms. Caregivers pay individualized attention to children, frequently letting the children lead and responding to their overtures. Caregivers sit with children at mealtimes and engage them in conversation, whereas formerly they stood apart and simply watched and maintained order. The caregivers seem relaxed and to enjoy being with the children (they talk, smile, laugh and hug children); before they were dutiful, business-like, and perfunctory.

### *Children*

Whereas T+SC children once were somber and stoic, now they are alive, constructively engaged, display a variety of emotions including smiling and laughing, and are much more cooperative and interactive with each other and their caregivers. They talk, even describe their experiences and feelings, and stereotypic self-stimulation behaviors, which were once common, have essentially disappeared. They seek out their caregivers for comfort when hurt or upset, whereas this rarely happened before. When strangers enter the room, children no longer stare at them as an object or run up to hug them in indiscriminate friendliness. Instead, toddlers are wary, they back away, and they grab the legs of their caregivers for comfort. Older children, after a few minutes of adjustment, may cautiously introduce themselves to the stranger and ask appropriate questions, whereas before they would greet the stranger with indiscriminate friendliness or point at them yelling, “Diadia” or “Teotia” (i.e., “man” “woman”). In every way, children in T+SC behave much more similarly to parent-reared children.

## IMPLICATIONS

This study has several scientific and practical implications.

### *Scientific Implications*

The results contribute to a few general conclusions.

This study, more than most in the literature, demonstrates that social-emotional-relationship neglect, a common element of many orphanages, is potentially a major contributor to children’s delayed development and that im-

proving this aspect of orphanage care can foster improved physical and behavioral development in children in most domains. Previously, the evidence for this often-voiced hypothesis has been largely circumstantial, because most orphanage environments in the literature have been deficient in many respects, not just social-emotional-relationship neglect, or the environment was not measured.

### *What Is the Role of Orphanage Experience?*

For example, some scholars (J. McCall, 1999) point out a variety of potential confounds that characterize children who are given up to orphanages that may explain some or all of the delayed development observed in children in residence and perhaps the higher frequencies of persisting extreme behavior in such children after adoption. For example, children whose parents relinquish custody of their children to orphanages may come from a different gene pool and such children may have high rates of difficult perinatal circumstances, both of which may predispose them toward delayed development and persistent behavioral problems.

Generally, data on parents and perinatal histories of children are not mentioned or known in the studies in the literature. However, perinatal circumstances were available in the current project (St. Petersburg–USA Orphanage Research Team, 2005). While a higher than expected percentage of children residing in these orphanages had low- or very-low-birth weight, poor Apgar scores, and assisted ventilation, they constituted a minority of this orphanage population. Moreover, the exceedingly delayed physical and behavioral development of all children in these and other orphanages in the literature seems much more pervasive than the relatively fewer children who are likely to have poor genes and difficult birth circumstances. Similarly, the majority of children adopted from institutions into advantaged families catch up developmentally in many areas very quickly and achieve typical developmental levels in the long term (Gunnar, 2001; Gunnar, Van Dulmen, the International Adoption Project Team, 2007; Juffer & van IJzendoorn, 2005; MacLean, 2003; Rutter et al., 2007; van IJzendoorn & Juffer, 2006). So it seems unlikely that most delayed development in institutionalized children reflects a selected population.

Further, the adoption literature is rather consistent in demonstrating that children from globally deficient orphanages who are adopted before 6 months (Croft et al., 2007; Gunnar, 2001; MacLean, 2003; Rutter et al., 2007) and in some cases 12 months of age (Merz, 2007; Merz & McCall, 2008) are physically and behaviorally comparable to parent-reared children in the adopting culture. It is unlikely that selective adoption explains this phenomenon because information on parental genetics is typically not available to adoption agencies for most children, and many potentially adverse characteristics of children cannot be easily detected in infants

6–12 months or younger. Further, in some studies, especially those of children from globally deficient Romanian orphanages in the early 1990s, very little selective adoption occurred (Rutter et al., 2007). Many parents desired children for personal and humanitarian reasons when these children were discovered in dismal orphanages, and substantial numbers of children were adopted in short periods of time with little information about the children's background. Consequently, selective adoption seems insufficient to explain the observation that children adopted before 6–12 months do not show the persistent extreme or problem behaviors that characterize children exposed longer to orphanages.

The adoption literature also suggests a selective dose–response effect in which increased rates of some but not all extreme and problem behaviors occur the longer the child resides in the orphanage (Gunnar, 2001; MacLean, 2003). In this case, selective adoption should work against the hypothesis, because certain problem behaviors become more detectable among older children and parents may avoid adopting them.

The evidence reviewed above is mostly circumstantial, whereas the results of the current study contribute more directly to the conclusion that the behavioral environment of the orphanage is likely to be a crucial contributor to delayed development of children residing there and perhaps to long-term extreme and problem behavior after adoption. First, the interventions improved the development of both typically developing and children with several fairly severe disabilities, indicating that the nature of the orphanage environment can influence children who have no obvious limiting circumstances as well as those who do. Moreover, the intervention effect occurred after covarying the children's birth weight, Functional Ability Index, and age at initial assessment, which set of covariates was found to represent well all the perinatal variables that were uniquely available in this study. Thus, the interventions, which primarily improved the children's social–emotional-relationship experience, produced marked improvements on children's development over and above the children's ages, birth circumstances, and disability levels that otherwise might be the basis of the potential confounds of poor gene pool, damaging birth circumstances, and selective adoptions.

### *What Is It About the Orphanage Environment That Delays Development?*

This project points more directly than previous studies to the lack of social–emotional-relationship experience of young children and the absence of physical, employment, and procedural structures to support it as the crucial corroding deficiencies that contribute to the delayed development of orphanage children (St. Petersburg–USA Orphanage Research Team, 2005). First, the orphanages in this study were acceptable with respect to medical care, nutrition, safety, sanitation, toys, equipment, and the absence of abuse;

they were deficient primarily in providing very limited social–emotional–relationship experiences to young children. Nevertheless, in the absence of the interventions, children were severely delayed physically and behaviorally relative to parent-reared Russian Federation and U.S. standards (St. Petersburg–USA Orphanage Research Team, 2005) and similar to children in Tizard’s study of children also reared in a relatively good orphanage but with minimal social–emotional–relationship experiences for children (e.g., Tizard & Hodges, 1978; Tizard & Rees, 1974; Tizard & Tizard, 1971). Second, the interventions focused on the caregiver–child social–emotional–relationship and warm, sensitive, responsive caregiving, and children’s development improved substantially in every major measured domain with no corresponding changes in medical care, nutrition, safety, sanitation, and abuse. Thus, it appears that the social–emotional–relationship environment is at least *a*—if not *the*—key contributor to improving children’s development in the orphanage.

Longer term, a preliminary examination of reports by highly advantaged U.S. parents who adopted from these same orphanages *before* these interventions (Merz, 2007; Merz & McCall, 2007, 2008) show a pattern of extreme and problem behavior on the Child Behavior Checklist similar in profile (but not always in extent) to children from globally deficient orphanages (Groze & Ileana, 1996; Gunnar, 2001; MacLean, 2003) and those from unselected institutions throughout the world (Gunnar et al., 2007). This finding parallels that of Tizard and colleagues (Tizard & Hodges, 1978; Tizard & Rees, 1974) who followed a small sample of children adopted from orphanages similar to the current BHs. This suggests that early social–emotional–relationship deficiencies are associated with persistent extreme and problem behavior. A study currently beginning will investigate whether children exposed to the T+SC intervention in this study who are placed into families in St. Petersburg and the United States will have lower rates of such extreme and problem behaviors than their TO and NoI peers.

#### *What Is It About the Intervention That Promoted Development?*

Although the intervention had many facets, it is important to speculate in the context of the literature about which components were likely to be crucial in producing the improvements in children’s development.

*The social nature of the intervention.* Evolutionary evidence suggests that the more complex social relationships (e.g., pairwise bonding) among primates is associated with evolutionary selection favoring larger brains (i.e., neocortex) in certain primates, especially humans (Dunbar & Shultz, 2007; Silk, 2007). If “ontogeny recapitulates phylogeny,” then pair bonding, including infant–adult, may be a crucial element of early human experience. Further, Schore (1996) argued that the human infants’ affective experiences with a primary caregiver during the first and second years of life influence

the pattern of activity of subcortically produced trophic bioamines, peptides, and steroids that regulate the growth and organization of the developing neocortex with lasting positive or negative consequences. In particular, stress, inconsistency, and poor affect-regulating experiences with a primary caregiver can lead to disorganized orbitofrontal organizations related to insecure attachments and higher and less regulated cortisol activity (Halligan, Herbert, Goodyer, & Murray, 2004), which has, in turn, predicted increased behavioral and emotional problems in children (Essex, Klein, Cho, & Kalin, 2002).

*Moment-to-moment caregiver-child interactions.* The interventions consisted of encouraging caregivers to interact in a warm, sensitive, and responsive manner, which was supported by certain structural changes that promoted relationships; caregivers were not taught specific behavioral activities, routines, or programs. Thus, a behavioral attitude and style of interaction was encouraged (e.g., caring, contingent responsiveness, and child-directed activities) that caregivers would translate into specific interactions with children in ways that would fit their own and the children's dispositions and the circumstances of the moment.

*Contingent responsiveness in child-directed interactions (Gunnar, 2001).* Early exposures to response-contingent interactions appear crucial for a variety of developmental accomplishments. For example, visual-motor development in kittens seems to require response-contingent interactions with the environment (Held & Hein, 1963); human infants require several weeks of crawling experience before they avoid the visual cliff (Campos, Bertenthal, & Kermoian, 1992); and passive exposure to language does not promote language development without contingent interaction with another speaker (e.g., Sachs & Johnson, 1976; Snow et al., 1976). Promoting child-directed interactions and caregiver responsiveness was a major reversal of the heavily caregiver-directed style pervasive in the BHs.

In broad strokes, the behavioral style of T+SC caregivers is similar to the "responsive parenting" that experimental, quasi-experimental, and naturalistic studies have found to relate to improved development in a variety of domains in parent-reared children (see Chapter I). For example, Landry et al. (2006) argued that responsive parenting is a cluster concept composed of at least four elements: (1) *contingent responding* in which adults respond promptly, contingently and appropriately to an infant's behavior; (2) *emotional-affective support* that includes warmth, smiling, the absence of harsh voices and physical intrusiveness; (3) support for *infant foci of attention*, in which caregivers encourage joint engagement and reciprocity in interactions with the child and maintain the infant's attention and cognitive capacities rather than redirecting the infant; and (4) *language input* that supports developmental needs, which may include caregivers imitating infant's vocalizations, responding to infant's and toddler's speech, and

eventually carrying on meaningful conversation. These themes characterized the positive social-emotional interactions and relationships implemented in this project. Also, promoting caregiver responsiveness and caregiver-child relationships necessarily involves interactions that also stimulate language and mental development. So it is not surprising that the literature on responsive parenting as well as the results of this study show developmental benefits in children's cognition and communication as well as social-emotional development.

*Consistent sensitive caregiving (i.e., detecting and responding appropriately to the infant's cues).* The development of attachment seems to benefit from consistent and sensitive caregiving for the child to build a working model of expectations regarding caregiver behavior and comforting in stressful situations (e.g., DeWolff & van IJzendoorn, 1997). Both the training and the structural changes of reducing the number of different caregivers and assigning Primary Caregivers who were consistently present during the children's waking hours promoted this theme. Who knows how many more children would have benefited if the number of caregivers had been reduced even further than was done in this study.

*Developmental timing.* Attachment theory has long emphasized the period between approximately 8–18 months of age as being most important for the development of primary attachments. Further, the literature on adoption of previously institutionalized children shows that institutionalization that ends by 6 months or in some cases 12 months does not have deleterious longer-term effects on problem behavior, but institutionalization after 6–12 months does and prolonged institutionalization does not increase the rates of problem behaviors (Croft et al., 2007; Gunnar, 2001; MacLean, 2003; Merz & McCall, 2007, 2008; Rutter et al., 2007). This observation is consistent with a sensitive period between 6/12 and perhaps 18/24 months. Although the benefits of the intervention in this project were demonstrated over and above age at first assessment, most of the children experienced the intervention after 6 months but before 18 months, and those exposed to 9+ months of the intervention—who benefited most from it—were more likely to have experienced it during this developmental window.

*Supportive work environment and circumstances (i.e., structural changes).* Structural changes, with its greater consistency of fewer caregivers, promoted sensitive and responsive interactions and especially caregiver-child relationships. While there may have been some idiosyncratic factors that limited improvement in TO, the literature on training in a variety of contexts (Fixsen et al., 2005) including early childhood settings (Kelley, 1999) indicates that training alone is relatively ineffective in changing behaviors. Either systematic supervision (Kelley, 1999), coaching (Fixsen et al., 2005), or work circumstances (Love et al., 1996) that permit or encourage implementation are required. Structural changes removed barriers to developing relationships (e.g., infrequent contact with the same children), which may



have motivated T+SC caregivers to be more sensitive and responsive as well as providing the opportunity to develop relationships.

Could structural changes *without* training have produced the same outcomes? On the one hand, frequent contact with the same few caregivers who remain caregiver-directed, insensitive, unresponsive, and aloof seems to hold limited promise for producing the broad range of positive outcomes observed in T+SC. On the other hand, to the extent structural changes might provide “setting conditions” that “release” caregiving styles and behaviors more typical of parents with their own children, benefits might be produced. For example, Smyke et al. (2002) reduced group size and child:caregiver ratios and increased consistency of caregiver–child contact without formal training in a contemporary Bucharest orphanage and found a reduction in caregiver-reported children’s reactive attachment disorders but a nonsignificant increase in reported language development. However, we suspect training that establishes clear behavioral expectations and standards that supplements appropriate structural circumstances will produce more extensive positive behavioral outcomes in children.

*Each component of structural changes.* Primary Caregivers, reduced group size, ending graduations, assigning substitutes to particular groups, and Family Hour all contributed to providing children with fewer, more consistent caregivers who were more motivated to behave in a warm, sensitive, responsive manner and to develop relationships with the children. Age integration also contributed to children having the same caregivers over their entire residency and caregivers having more time for individual children. Both age and disability integration provided the opportunity for children to learn from each other and likely contributed substantially to the developmental improvements in children with disabilities.

### *Psychosocial Short Stature*

The current study also provides quasi-experimental support for the psychosocial short-stature hypothesis (Blizzard, 1990; Johnson, 2000a, 2000b; Skuse et al., 1996). The social–emotional-relationship interventions alone, without changes in nutrition, medical care, and other aspects of orphanage life, led to increases in height, weight, and chest circumference but not head circumference (see Chapter VIII). Not only does this represent one of the few quasi-experimental validations of this hypothesis (e.g., Kim et al., 2003), but it contributes to the breadth of outcomes that can be influenced by early social–emotional-relationship behavioral experiences alone.

### *Limitations*

Limitations and threats to validity of this study are discussed in Chapter III.

## PRACTICAL IMPLICATIONS

This study demonstrates that orphanages can be changed in ways that benefit caregivers and children, structural changes that remove barriers and promote social–emotional–relationship experiences appear necessary as well as training, and such changes and their benefits may be maintained after implementation without additional interventions or resources. Thus, this study may have implications for changing other residential institutions in St. Petersburg, elsewhere in the Russian Federation, and throughout the world, plus it may add impetus to broadening personnel preparation and nonresidential early childhood care and education practices in the Russian Federation, the United States, and in other countries.

*Implementing Changes in Orphanages*

A major question facing this project was whether such substantial changes could be implemented in a well-established orphanage with a long tradition of operational practices, and, if so, what would it take to implement them successfully, which might constitute a basis for making similar changes in other institutions. In a real sense, this was a case study in planning, designing, and implementing very substantial organizational change.

*Implementing the Interventions*

The data are clear that the training and structural changes were successfully implemented, and caregivers and children improved substantially more under both interventions than training only. Orphanages can be improved. We speculate that several factors contributed to the successful implementation of these interventions, which are similar to those thought to be important for most major interventions in ecological contexts (Fixsen et al., 2005; Groark & McCall, 2008).

*Building a partnership.* As indicated in Chapter II, several years before the project began were spent building a partnership among the St. Petersburg–USA team members. This consisted of (1) the St. Petersburg Team sharing information about BH regulations and procedures and results of studies and ideas on how to improve the life of children in the BHs and (2) the U.S. Team sharing factors from the research literature that improve children’s outcomes in early care settings and knowledge of intervention design and implementation, program evaluation and analysis, and American administrative and financial procedures. This laid the foundation for jointly planning and implementing the project.

*St. Petersburg and U.S. professional involvement.* This project was conducted by a true interdisciplinary international collaboration composed of five Co-Principal Investigators and three collaborators with the assistance of

numerous others. The Team consisted of representatives from two countries and the disciplines of child development, mental health, early childhood special education, early intervention, pediatrics, early childhood care and education, research design, and statistics. The commitment of all Team members provided necessary broad-based, intense leadership and management to the project. Expertise in each area was necessary to plan and implement the project consistent with the history and policies of the BH system.

*Committed, firm director.* The director of the BH implementing structural changes needed to be thoroughly committed to those changes, resolute in implementing them, and intimately involved in the total operation of the BH. Staff resist change of almost any kind, concerns and complaints are common in the early phases, and some staff are unwilling or unable to change appropriately and may need to be reassigned or replaced. For these reasons, we believe the entire BH must be changed simultaneously, not ward by ward, to minimize staff conflicts. Further, if higher administrative and political figures who have controlling influence over a BH are not supportive, a diplomatic but firm director and local team members must persuade them of the project's value. Overcoming these potential obstacles requires committed leadership, an attitude that "we are going to do this so let's determine the best way," and confidence that in the long run the changes will benefit not only the children but the caregivers. Taneja et al. (2002) also reported the benefits of a committed Director who championed the orphanage intervention.

*Involving the staff.* The staff of the BH must be similarly involved, so meetings were held to inform them of the general nature of the changes and to ask them how they could be implemented successfully. The project was also described to them with familiar concepts to which they could readily subscribe, such as, "love these children" and we will do it in a "family-like atmosphere."<sup>13</sup> Further, the director of training observed and worked on the wards with the caregivers before the interventions were started to develop a relationship of trust and to learn the demands of the caregiving job to better relate the training and structural changes to caregivers' job responsibilities, skills, and limitations. This was followed by regular staff meetings and a supervision process that further promoted and maintained staff involvement.

*Team building.* Staff involvement is only the first step in team building—creating an environment in which everyone feels they are playing a role in a collective effort to change the behavioral culture of the BH. Not only did the training include sessions on team building, but all levels of staff were organized into teams that met frequently to collectively implement the project and solve problems.

*Supervision.* Training requires supervision for it to be implemented in routine behavior on the wards, so training sessions were held on how to

supervise and procedures enacted to mentor supervisors in how to encourage positive behavior in the caregiving staff. Supervision was direct but reflective, emphasized successes, and used hands-on demonstrations and trial and error.

*Financial incentives.* Certain financial incentives were provided to motivate staff, including a \$50 bonus for passing the training course and extra salary for extra work (e.g., attending training, accompanying children to assessments, filling out data forms and questionnaires).

#### *Can the Interventions Be Sustained?*

The answer seems to be “yes.” The interventions were deliberately designed so that once implemented, they could be maintained without additional project funds and supported financially on the regular budget of the BH. While staff lamented the termination of financial add-ons when the project ended, their workload also decreased when assessments were no longer being conducted. Further, Primary Caregivers could be maintained on the BH budget by cutting their hours per week by less than 10%. Mainly, the data show caregiver behavior and child development improvements were maintained throughout the project period, and periodic observations of the research Team indicate that the changes are being maintained years after the project terminated. Not only are the caregivers rewarded for their own behavior by the improved behavior of the children, but also orphanage administrators, professionals, and staff from other BHs frequently visit the T+SC BH to observe this unique behavioral style and circumstances.

#### *Can the Interventions Be Replicated Elsewhere?*

While we have documented that a rather specific “program” (i.e., T+SC) that is well articulated can produce substantial improvements in caregivers and children, it is simplistic to assume that this “evidence-based, proven program” can be directly and easily “replicated” in another orphanage in St. Petersburg or other places. “Replicating proven programs” has become the method of choice for policy makers, funders, and practice professionals, and in some quarters it constitutes the definition of “evidence-based programming.” The Team believes this simple strategy and expectation is unrealistic (Fixsen et al., 2005; Groark & McCall, 2005). While the intervention should be the starting model to be replicated, it is short-sighted to think that it simply can be dropped into another orphanage and will be as successful as the original. For example, the process of implementation is rarely described or studied and is typically not part of the “evidence,” but it is as crucial to the outcome as the program or intervention per se (Fixsen et al., 2005). Thus, every replication of the current intervention must begin by considering the elements necessary for successful implementation that are listed

above and present in the literature (Fixsen et al., 2005). If there is no prior history of collaboration among project leaders, no example of how it can work, an uncertain or weak director, unsupportive staff attitudes, no caregiver mentors available, no buy-in by higher administrators and institution professionals, and no commitment to and skill in supervising staff, successful implementation and beneficial outcomes are unlikely until these issues are resolved. Implementation is part of the intervention.

Further, interventions need to fit the situation that exists in each institution and its political, cultural, administrative, psychological, social, and financial environment (Fixsen et al., 2005). For example, each institution must assess its own training needs—caregivers may or may not need to learn (1) how to work with children with disabilities, (2) early childhood education and early intervention principles, (3) team building, (4) how to supervise staff, and so forth. Further, it might be argued that most caregivers already know how to be caring with children in warm, sensitive, responsive ways, so training in child development and responsive caregiving may be subordinate to simply getting them to do what they already know and to change the standards and expectations for caregiver behavior that contribute to the “institutional culture,” which is the primary object of change.

### *Implications for Foster Care*

Foster care is frequently proposed as a preferred alternative to orphanages, and recent studies in Bucharest indicate that fostered children do better in many dimensions of development than do children residing in unimproved orphanages but not always as well as parent-reared children (Julian & McCall, 2008; Nelson, 2006; Nelson et al., 2007; Zeanah et al., 2003). Good-quality foster care may well be a better strategy than orphanages (e.g., Miller, Chan, Comfort, & Tirella, 2005; van IZendoorn, Luijk, & Juffer, 2007); unfortunately, many large-scale foster-care systems are not of good quality, even in the United States, which could afford it (Bishop et al., 2000). Good-quality and effective foster care requires some of the same elements of the current intervention. Foster care typically has small groups (unless foster parents take too many children to maximize the financial benefits) and age integration, and foster parents are uncertain about getting psychologically close to foster children (Heller et al., 2002), which may dampen their propensity to provide warm, affectionate, responsive care; they often express a need for training (Denby et al., 1999); foster parents must have a commitment to the children rather than just doing a job (e.g., Dozier et al., 2001); and they may require mentoring, supervision, and professional support and assistance that are more difficult to deliver to individual homes than wards in an institution. Thus, it seems many of the same elements of early care are needed by foster parents as well as

orphanage caregivers. The current study suggests these elements indeed can contribute to children's development; but how these elements are supported and delivered may be different in these two contexts.

### *Implications for Personnel Preparation and the Operation of Nonresidential Early Childhood Care and Education*

While glib generalizations should be avoided from studies on orphanages in St. Petersburg to nonresidential care and education, the current results provide complementary evidence that may add impetus and indirect support to certain practical issues in personnel preparation and the operation of early childhood facilities.

#### *Personnel Preparation*

Current personnel preparation of early childhood care and education professionals intending to serve typically developing children and especially children with disabilities in the United States, for example, tends to emphasize skill building (e.g., emerging literacy and numeracy, positioning) and to underemphasize social-emotional-relationship building (Rimm-Kaufman et al., 2003), and this imbalance may be growing in the wake of the current emphasis in the United States on preparing children academically for school success. Some scholars (Boyd et al., 2005; National Scientific Council on the Developing Child, 2004a, 2004b) have urged that social-emotional development should be emphasized to a greater extent because it is important in its own right, it may contribute to the findings that quality early care and education experiences can minimize antisocial and later delinquent behavior (Yoshikawa, 1995), and it supports mental, language, and school readiness skills. Although very different, the results of the current study are consistent with this view and support the general idea of preparing early care and education personnel more intensely and comprehensively in social-emotional development and relationship building. Skill building and social-emotional development are not separate or competing components of personnel preparation; the first emphasizes "what" and the second "how" young children are taught and cared for.

#### *Principles of Operating Early Care and Education Services*

The current study suggests that training caregivers alone, even with some degree of supervision, is less effective at improving children's development than if they are also provided an environment that encourages and supports them in implementing what they have been trained to do. The same general principle applies to nonresidential early care and education

(e.g., Love et al., 1996). While most states regulate group size and child:staff ratios in early care and education services, they do not regulate or even directly encourage other components of the structural changes in this project. Moreover, these characteristics are not widely implemented even in otherwise high-quality care environments in the United States (Ritchie & Howes, 2003). For example, preschool age children may not have a primary caregiver or teacher whom they see every day, children typically “graduate” to new caregivers at least each year, and groups tend to be homogeneous with respect to age and disability status. In contrast, until the advent of group care, young children have always been in age integrated situations over the course of human history (Hartup, 1976; Konner, 1975), and the limited research available suggests there are developmental benefits of integration even across narrow age ranges (Bailey, Burchinal et al., 1993; Bailey, McWilliam et al., 1993).

While there are substantial differences in caregivers and children between the orphanages of St. Petersburg and nonresidential care and education in the United States and other countries, the current results at least suggest it is worth trying to increase emphasis on social–emotional–relationship experiences and to improve certain structural aspects of nonresidential early child care.

#### NOTE

13. While we recognized that not all parents “love” their children and not every family atmosphere conforms to the intent of the interventions, these labels provided convenient, simple concepts familiar to most caregivers that communicated and provided a rationale for what the interventions were intended to be like.

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