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Bidirectional Effects of Parenting and Child Behavior in Internationally-Adopting Families

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Abstract

Adoption marks a radical transition in caregiving for thousands of children adopted internationally from institutional care; however, very little is known about the quality of this parenting compared to other populations or the transactional effects of parent and child characteristics in post-adoption families during the transition to family care. The current study examined parental sensitivity/responsiveness and structure/limit-setting in a group of 68 children adopted internationally from institutions (41 girls, 27 boys; *M* age = 26.13 months, *SD*=4.99) and their parents over the first year following adoption and compared them to a sample of non-adoptive families (26 girls, 26 boys; *M* age = 27.65 months, *SD*=5.71). Results indicated no mean-level differences in parenting quality on either dimension between adoptive and non-adoptive parents. For post-institutionalized youth, higher quality parental structure and limit-setting soon after adoption predicted reduced child regulation difficulties eight months later; however, initial child regulation did not predict later parenting. There were no cross-lagged relations for parental sensitivity/responsiveness. Higher quality preadoptive care for children was associated with higher scores on both sensitivity/responsiveness and structure and limit-setting among adoptive parents. Less growth stunting, indicative of less preadoptive adversity, was associated with parents' use of more effective structure and limit-setting behaviors. Policies should promote better preadoptive care abroad, such as lower caregiver-child ratios, as well as early adoption. At least in families exhibiting generally high sensitivity/responsiveness, interventions should target parental structure and limit-setting to have the greatest effect on child behavioral regulation in the immediate years post-adoption.

Keywords

parenting; adoption; adversity; self-regulation; bidirectional effects

For thousands of children adopted internationally from institutions, adoption marks a radical shift in caregiving. These children spend the first years of their lives in conditions of

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institutional neglect and are then adopted into well-resourced homes by committed parents (Hellerstedt et al., 2008). Numerous studies have documented the deleterious effects of institutional care and the rapid recovery of many areas of functioning following adoption (see Lawler & Gunnar, 2012 for a review). While it is clear that the adoptive parents offer care that is far better than the care received in the institutions, little research has measured the quality of this parenting compared to parenting of birth children among families of similar educations and incomes to these internationally adopting families. Further, despite this improvement in caregiving, there is still variation in the quality of post-adoption care children receive and little is known about which post-adoption factors contribute to recovery (Garvin, Tarullo, Van Ryzin, & Gunnar, 2012). Moreover, little is known about the bidirectional effects of parent and child characteristics in post-adoption families during this transitional phase that may facilitate changes in children's behavior. The current study aims to address these gaps by examining a group of 68 post-institutionalized (PI) children adopted internationally into the United States and their parents over the first year after adoption and comparing them to a sample of non-adoptive youth.

Parenting

Extensive research in normative populations has demonstrated the robust influence of parenting on child outcomes. The two dimensions of parenting most frequently studied are sensitivity/responsiveness and structure and limit setting (Locke & Prinz, 2002). Sensitivity/responsiveness refers to the parent's ability to respond effectively to the child's cues in a way that supports the child, encourages emotional development, and promotes the child's confidence that their needs will be met. It includes both emotional expressions of nurturance and acceptance as well as instrumental acts demonstrating attention and involvement. A sensitive parent responds appropriately to the child's signals, validates their emotional experience, and encourages developmentally appropriate autonomy. Furthermore, this type of parenting is associated with positive parent-child relationships, secure attachment, and healthy emotional development (Sroufe, Egeland, Carlson, & Collins, 2005). Lack of sensitivity/responsiveness indicated by low warmth or heightened intrusiveness is associated with the development of internalizing disorders (Bayer, Sanson, & Hemphill, 2006). On the other hand, structure/limit-setting refers to the aspects of parenting that produce predictable experiences and expectations for the child as well as structure the child's behavior within the bounds that are appropriate to his or her developmental level and capacities. This type of parenting includes the methods parents use to discourage inappropriate behavior and gain compliance from children. A caregiver who excels in parental structure/limit setting provides expectable experiences for their child, effectively sets limits and follows through on them, and shapes the child's environment to promote compliance and success. Effective parental structure/limit-setting is predictive of child compliance and later academic achievement, while ineffective structure/limit-setting is associated with disruptive behavior and conduct problems (e.g. Stormshak, Bierman, McMahon & Lengua, 2000). Similar effects of parenting are found when controlling for genetic influences by examining families with twins or children adopted at or shortly after birth (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

Very few studies have directly examined the quality of parenting provided by internationally adopting parents compared with other families. One longitudinal study examined maternal sensitivity in adoptive and non-adoptive parents in the Netherlands (Juffer & Rosenboom, 1997; Stams, Juffer, Rispens, & Hoksbergen, 2000). Children were adopted very young (on average at 11 weeks old), and maternal sensitivity was measured at 6 months, 12 months, and 7 years of age. The researchers found no differences between adoptive mothers' parenting in infancy, compared with previously published normative samples, but found that adoptive mothers demonstrated less sensitivity/responsiveness than a group of non-adoptive mothers when adopted children and matched comparison children were 7 years old. A later study examined emotional availability in parents of children adopted from institutions compared with parents of children adopted early from foster care and parents of non-adopted children (Garvin et al., 2012). They found that when observed on average six months after adoption, when children were 18 months old, parents of PI children were more intrusive and provided poorer structure than socioeconomically similar non-adopting parents. They found no differences between the parents of children adopted out of foster care and other groups. Other studies, however, have found that adoptive parents demonstrate more parental investment than non-adoptive parents (e.g. Hamilton, Cheng, & Powell, 2007). The current study will compare parenting quality between internationally adopting and non-adoptive families, examining both parental sensitivity/responsiveness and structure/limit-setting.

The impact of parenting on child outcomes may be different in families adopting institutionalized children internationally than in typical U.S. families. While parenting has been examined in adoptive families, the majority of these studies have examined children adopted at or soon after birth. These studies continue to find positive associations between parenting and child competence (e.g. Stams et al., 2000). Very few studies, however, have examined the role of parenting in facilitating children's recovery from prolonged institutional deprivation. It has been suggested that parents of PI children may need to be even more sensitive than parents of children who have not experienced early deprivation in order to promote more typical development (Ames & Chisholm, 2001; Dozier, 2003). Parenting may have a greater influence on child development in this vulnerable population than in typically developing children. As a group, children adopted from institutions show lasting deficits in numerous areas of functioning including socioemotional development and executive functioning (Esposito & Gunnar, 2014). Children adopted later and from more depriving conditions also tend to show persistently lower IQ, suppressed language competence, lower academic achievement, and greater need for services (Lawler & Gunnar, 2012). Despite rapid catch up in many areas following adoption, recovery is incomplete for many children, leading to significant variability in outcomes for PI children. Very little is known about the contribution of post-adoption parenting to the level of recovery.

One early longitudinal study of PI children failed to find any evidence that variation in positive or negative parenting behavior influenced child outcomes (Croft, O'Connor, Keavene, Groothues, & Rutter, 2001). However, a more recent study examined parents' emotional availability, a facet of sensitivity/responsiveness, as a predictor of socioemotional development in children adopted internationally from both foster and institutional care (Garvin et al., 2012). They found that parent emotional availability soon after adoption predicted children's emotion understanding 18 months post-adoption. Emotional availability

also moderated the relationship between poor initiation of joint attention and later disinhibited social engagement, wherein children with poor joint attention who received higher quality parenting were less likely than those experiencing lower quality parenting to demonstrate disinhibited social behaviors one year later. These results suggest that parenting quality may moderate recovery from early institutional deprivation. Other studies have found positive associations between parent-child relationship quality in adoptive families and child outcomes, but methodological limitations limit their conclusions.

Further studies have examined parent and family factors, rather than parenting quality itself. Rutter and colleagues (2010) found no relation between family factors typically associated with poorer outcomes for children (e.g. family stress, parental relationships, socioeconomic status) and the presence of deprivation-specific, pervasive problems among PI Romanian children. However, Chisholm (1998) reported that three years post-adoption, lower socioeconomic status, but not parent education, predicted insecure attachment relationships among children who were 8 months or older when adopted from Romanian institutions. Research with typically developing children shows significant negative effects of parent factors such as depression (Goodman et al., 2011) on child outcomes. Additional research is needed to examine the influence of parenting and parental characteristics on recovery following adoption. Furthermore, research is needed to determine which aspects of parenting contribute to children's behavioral adjustment following adoption.

This is particularly important for designing interventions targeted at this population. Empirical support varies among available programs including many commercially available resources marketed to adopting families in the absence of empirical findings (e.g. Cogan, 2008). There are also dangerous treatments purported to improve the parent-child relationship in adoptive families that have caused child injury, trauma, and death (e.g. holding therapy; Chaffin et al., 2006). Three empirically supported interventions for caregivers of children experiencing early life stress exist; the Multidimensional Treatment Foster Care (MTFC; Fisher & Chamberlain, 2000), Attachment and Biobehavioral Catch-up (ABC; Dozier, Lindhiem, Lewis, Bick, Bernard, & Peloso, 2009), and Video-Feedback Intervention to Promote Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2008) programs. Interestingly, while all three interventions have been shown to be effective, they differ in their primary focus. MTFC focuses primarily on structure/limit-setting while the ABC intervention focuses more on sensitivity, predictability, and contingent responsiveness (Dozier, Lindhiem, & Ackerman, 2005; Fisher, Kim, & Pears, 2009). Notably, though, as originally formulated, ABC was targeted toward infants while MTFC was targeted toward preschool-aged children which may account for their different emphases (Fisher, Gunnar, Dozier, Bruce, & Pears, 2006). Interestingly, VIPP-SD targets both sensitivity and discipline, with the focus on discipline being added after its initial inception and testing as VIPP (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2014).

It is particularly important to tease apart the effects of parenting on specific child outcomes to determine how best to intervene. The current study will examine the impact of two dimensions of parenting quality: parental sensitivity/responsiveness and parental structure/

limit-setting on child behavioral regulation longitudinally over the first year following adoption.

Child effects

In addition to effects of parenting on children, research has begun to shift toward examining the effects of child factors on parenting behaviors and the transactional effects between the two. For example, in typically developing populations, there is a growing consensus that parenting and child characteristics interact with one another and contribute to future adjustment (e.g., Lengua & Kovacs, 2005). It may be expected that child effects on parenting would be larger among PI children due to children's more extreme developmental histories. Studies have shown that despite some variation, institutional care has limitations making it less optimal than family care (Dozier et al., 2014). In many institutions, infants and children are often cared for in groups with high child-to-caregiver ratios. An infant may experience over 20 caregivers in a given week, as caregivers are generally not assigned to particular infants and rotate in shifts. In many cases, caregiving tends to be mechanical and routinized to promote efficiency, often at the detriment of sensitivity/responsiveness to the infant's signals (The St. Petersburg–USA Orphanage Research Team, 2005). Such histories may make PI children more difficult to parent or may evoke certain parental characteristics and behaviors. Pre-adoption factors including longer duration of institutionalization, lower quality of institutional care, and growth stunting are associated with child behavior problems and could potentially evoke harsher or more ineffective parenting (Hawk & McCall, 2010; Juffer & van IJzendoorn, 2005).

In one study examining bidirectional effects in internationally adopting families, researchers found that initially following adoption, children who were adopted later and were more delayed had parents who displayed less supportive parenting during a laboratory problem-solving task. Over time, as the children's functioning improved, parenting improved as well, suggesting that improvements in children influenced parental behavior rather than vice versa (Croft et al., 2001). Consistent with this work, child characteristics likely influence adoptive parenting in two ways. First, pre-adoptive factors may influence the quality of initial parenting children receive soon after adoption. Second, over time, changes in child characteristics may impact changes in parenting. Croft and colleagues (2001) solely examined the effects of cognitive abilities as a child factor, and measured parenting during a teaching task as part of a dyadic parent-child relationship measure rather than including independent measures of parenting behavior. Thus, it remains unknown how other aspects of child behavior or preadoptive history would impact parenting and which aspects of parenting are most susceptible to influence of child characteristics. Behavioral regulation is an important aspect of child functioning to examine in PI youth. Self-regulation tends to be the area in which PI children display the most lasting, and sometimes profound deficits (e.g. Rutter et al., 2010). Child self-regulation may play an important role in the adaptation to the new family environment. In a typically developing population, a bidirectional association was found between self-regulation and reported parenting behavior over several years (Eisenberg, 1999). The current study utilizes an observational measure of child behavioral regulation to explore its transactional effects with parenting in internationally adopting families.

Present Study Goals

Given the dearth in this literature, the aims of the present study were three-fold. First, we sought to examine whether there are mean-level differences in the quality of parenting and child behavioral difficulties among a group of PI children and a group of same-aged non-adopted peers. Specifically, we examined two types of parenting: 1) sensitivity/responsiveness and 2) structure/limit-setting during this period. Given the mixed results of prior studies, this aim was exploratory. Second, we sought to examine the influence of preadoptive adversity on parenting and child behavioral regulation among the PI group to assess the aspects of preadoptive adversity that may influence parent and child behavior during this transition. We hypothesized that child preadoptive characteristics would impact the initial level of parenting they received. Third, we examined the bidirectional effects between parenting and child behavior longitudinally following adoption. Furthermore, we examined whether the transactional relations between parents and children differed among PI and non-adopted children allowing for examining whether parenting and child characteristics facilitate changes in children's behavior during the transition to family care. This allowed for disentangling whether relations within adopted families were unique to the transition to the family separate from normative developmental relations in families with toddlers. We predicted that child and parenting factors would be more influential in the adopting families. Finally, in a supplemental, exploratory analysis, we examined whether parental characteristics including parent gender, whether the parent stayed at home, parental depression, and parenting distress, influenced the associations (see supplemental materials for details).

Method

This study was approved by the University Institutional Review Board, informed consent was obtained from all parents, and each family received compensation for their participation.

Participants

The present study included PI and non-adopted (NA) same-aged youth taking part in a longitudinal study examining the impact of early life adversity. Children ranged in age from 18 to 36 months and PI children were within 3 months of adoption at the first assessment. Children were excluded from the longitudinal study for congenital disorders (2 PI) and fetal alcohol exposure (6 PI). Children were screened using the FAS Facial Photographic Analysis Software (Astley & Clarren, 2000). NA youth were also excluded for atypical developmental experiences (1 maltreatment, 1 autism, 1 childhood cancer). This resulted in 68 PI (41 girls, 27 boys) and 52 NA (26 girls, 26 boys) youth in the present investigation. See Table 1 for sample demographics.

There were three inclusion criteria for PI youth participation: 1) children were adopted out of international institutional care settings, 2) children were 18 to 36 months at at adoption, and 3) families were able to attend the first laboratory session within 3 months of entry into the United States. Families were identified as having recently adopted internationally and were recruited through an adoption medical clinic (a specialty medical clinic focused on pre- and post-adoption services such as travel consultations, immunizations, and developmental

assessments) and adoption agencies between August 2008-December 2011. On average PI children spent 17.86 months (*SD* = 7.49) of their preadoptive lives in an institution (*M* = 75% preadoptive life in institution, *SD* = 29%) and were adopted from a wide range of world regions. Fifteen (22%) of the PI children were considered special needs cases based on parent report of disabilities.

The present study included NA children in order to examine whether there were differences in group means of child and parenting behaviors as well as differences in the transactional relations between parenting and child behavior for families from comparable education and income groups. This comparison group was selected to determine if bidirectional processes were specific to the transition to an adoptive family. There were two inclusion criteria for NA youth: 1) children were 18 to 36 months at recruitment, and 2) children were reared in their families of origin. NA children were recruited through the department's participant pool which is maintained though letters sent to all families of live births, and were age and sex matched to PI children. The education and income of families on this list tend to be high and roughly comparable to families who adopt internationally.

The majority of primary caregivers were female and many families reported having a stay-at-home caregiver at T1. The median family income range was $75,001–100,000 in both groups (range $25,000 to >$200,000). The median parental education level was a Bachelor's degree. There were no differences among groups in regard family income, primary caregiver sex, parent education, and rate of stay-at-home parents (see participant characteristics in Table 1). The majority of families participated at both time points; 95% of families participating in T1 returned at T2 (64 PI, 50 NA; PI T2 *M* age = 32.72 months, *SD* = 5.10; NA T2 *M* age = 34.68 months, *SD* = 5.80). There were no differences between families with complete and partial data

Procedure

Families participated in two laboratory sessions soon after adoption for the PI youth to capture parenting and child behavior during the transition to family care. The first session occurred within the first 3 months after arrival in the United States (*M* time since arrival = 1.70 months, *SD* = .77). T2 occurred approximately 8 months later (*M* time since T1 = 8.39 months, *SD* = .56). Laboratory sessions were approximately 2 hours during which parents and children completed a variety of tasks including a disinhibited social engagement task, a modified strange situation, parent-child free and structured play tasks and clean-up, saliva collection, LabTAB vignettes, physical growth measurements, autonomic nervous system collection, and a snack break. Collectively, the series of tasks provided numerous challenges and placed demands on children's ability to flexibly transition between different tasks and rooms.

Measures

Parenting Quality—Parenting quality was measured using an observational coding scheme during a portion of the laboratory session that included the following series of tasks: 1) a free play task: parents were invited to play with their children normally as they would at home and were given access to a bin full of toys, 2) a structured play task: parents were

given Play-Doh materials and instructions to complete a certain scene with their child (e.g., birthday party scene), 3) two clean-up tasks: following each play task, parents were asked to clean up the toys with their child, and 4) one saliva sample collection. Each play task lasted 8 minutes followed by a 2 minute clean-up. The saliva collection lasted approximately 5 minutes with the experimenter introducing the collection method to both the parent and the child. Saliva was collected from the child with assistance from both the experimenter and the parent; children's cortisol was not included in the present investigation. This portion of the session was videotaped and later coded by one of five trained coders for sensitivity/responsiveness and parental structure/limit-setting ability using an observational coding scheme (Erickson, Sroufe, & Egeland, 1985; Matas, Arend, & Sroufe, 1978). Both aspects of parenting were coded by the same coder and rated on a 7-point Likert style scale utilizing widely used scales with demonstrated predictive and discriminate validity (e.g., Quint & Egeland, 1995). Higher scores on the scale indicated higher quality parenting. The sensitivity/responsiveness scale included parental involvement, emotional support, and availability as a secure-base. A parent who scored high on this scale would skillfully provide support throughout the session and would set up the situation from the beginning as one in which she is confident of the child's efforts. She would appear genuinely interested in and attentive to the needs of the child, and would be not only emotionally supportive but would contingently respond to signals from the child. The structure/limit-setting scale measured the parent's ability to structure the environment for the child's success and reflects how adequately the parent attempted to establish her expectations for the child's behavior and enforce this agenda adequately. A parent who scored high on this scale established a structure for the session in which her goals would be accomplished, responded consistently and authoritatively to compliance problems, and maintained adequate leadership and discipline to be in charge of events. This scale was coded independent of the child's compliance. Reliability was calculated on approximately 20% of sessions in the larger longitudinal study (19% of T1 data and 21% of T2 data in the present sample) and yielded adequate reliability (sensitivity: T1 ICC=.77, T2 ICC=.81; structure/limit-setting: T1 ICC=.82, T2 ICC=.83).

Child Regulation Difficulties—Trained raters assessed the degree to which children exhibited behavioral regulation difficulties throughout the laboratory session. Specifically, raters assessed the degree to which children exhibited difficulties transitioning between different tasks including children's behavioral signs of distress or resistance to stopping, switching, and engaging in new tasks. Ratings were coded on a 5-point Likert scale with higher scores reflecting extreme difficulties and lower scores reflecting ease and seamless transitioning to new tasks. Scores were recorded by experimenters after the conclusion of the laboratory session. A portion of the sessions were rated by two trained coders. In the present sample, 33% of T1 and 26% of T2 sessions were coded by two raters. Following independent coding by each rater, raters conferenced any disagreements and independent scores were recorded following discussions of discrepant scores. Any remaining differences in scores were averaged to create a final rating. Inter-rater reliability was adequate at both sessions (T1 ICC=.74, T2 ICC=.85).

Preadoptive Adversity—Among the PI youth subset, preadoptive adversity was assessed using three unique indicators. Children's chronological age at adoption, growth stunting at adoption, and quality of preadoptive care were examined as indices of preadoptive history.

Growth Stunting: Children's medical records from their initial health exam after arrival in the United States were collected. Height-for-age at adoption was calculated using the World Health Organization's standards (W.H.O., 2011). Standardized (z-scores) height-for-age scores were used as a measure of growth stunting. Analyses utilize continuous height-for-age scores; percentage of growth-stunted children are reported here to provide additional contextual information regarding the characteristics of this particular sample. Standardized scores < 2 are considered growth stunted. In this sample, 26.9% of PI youth were growth stunted at adoption.

Quality of Preadoptive Care: Parents completed interviews regarding their child's preadoptive experiences and quality of care received in the institution from which the child was adopted (n=66, 2 refusals). Parents described the quality of social care at the institution and the interviewer probed for caregiver-child ratio and descriptions of the type of interactions between caregivers and children (e.g., social interaction, affection, playfulness, etc.). Quality of care was assessed on a 5-point Likert scale with higher scores reflecting *needs well met* and lower scores reflecting *needs poorly met*. All interviews were conducted by a retired adoption social worker. Reliability was assessed from 10 interview scenarios coded by a separate trained social worker (kappas >.80). The interviewer determined whether there was sufficient information to code the quality of care and the majority of parents provided sufficient information for coding (n=50). Of the families with care ratings, the majority reported receiving a thorough viewing of the institution and its practices (n=37; 12 reported a brief tour of the institution, and 1 reported only viewing the waiting room). Families without care ratings were less likely to have reported seeing the institution (3 of 16). See supplemental materials for a description of caregiver characteristics.

Results

Descriptive Statistics

Means and standard deviations are provided in Table 2. Correlations among study variables are found in supplemental Table S1. We also examined the concurrent associations between parenting quality measures and child regulation difficulties. T1 behavioral regulation difficulties were not significantly associated concurrently with parental sensitivity (PI r= −.10, p=.41; NA r= −.13, p=.37) or structure/limit-setting (PI r= −.10, p=.41; NA r= −.09, p=.51). At T2, behavioral regulation difficulties were significantly correlated concurrently with parental sensitivity and structure/limit-setting for PI children (r= −.27, p=.03; r= −.28, p=.03, respectively) but not among NA children (r= .20, p=.16; r= −.11, p=.47, respectively).

One-way between-subjects ANOVAs were conducted to examine group differences in study variables between PI and NA youth (see Table 2). There were no significant group differences in child age or the children's regulation difficulties at either time point. To further probe the behavior regulation difficulties variables, we divided the children into those scoring no observed difficulty and those with any observed difficulty (*little* to *great*

difficulty). There were no differences in the proportion of PI and NA children displaying behavioral regulation difficulties at T1 ($\chi^2(1)=.23$, $p=.63$; no difficulties: PI $n=31$, NA $n=26$; any: PI $n=37$, NA $n=26$) or T2 ($\chi^2(1)=.20$, $p=.66$; no difficulties: PI $n=36$, NA $n=28$; any: PI $n=29$, NA $n=19$).

Parenting Quality

Differences in parenting quality and caregiver characteristics were examined using one-way between-subjects ANOVAs (see Table 2). There were no significant group differences in parental sensitivity/responsiveness or parental structure/limit-setting at either session suggesting that there were no mean-level differences in parenting quality among adoptive and non-adoptive parents. There were also no differences in caregivers' depressive symptoms or parental distress.

Preadoptive History as Predictors of Parenting and Child Regulation

Indices of preadoptive adversity were examined as unique predictors of T1 parenting and child regulation difficulties in the PI youth sample. Predictors included age at adoption, growth stunting, and preadoptive care quality. Child sex and age at T1 were also included as covariates. Regression analyses were conducted in MPLUS (v7; Muthen & Muthen, 1998–2012) and missing data was estimated using full-information maximum likelihood estimation. The model provided good fit for the data ($\chi^2(4)=1.99$, *ns*; RMSEA=.00, CFI=1.00) and collectively accounted for a modest amount of the variance in T1 behaviors (children's regulation difficulties $R^2=.21$, parental sensitivity/responsiveness $R^2=.14$, parental structure/limit-setting $R^2=.16$). Adoption at older ages and lower quality preadoptive care were associated with greater T1 child regulation difficulties (B=.37, SE=.14, β=1.99, $p=.01$; B=−.26, SE=.11, β= −.33, $p=.02$, respectively). Additionally, children who were older at the T1 assessment had fewer concurrent regulation difficulties (B=−.32, SE=.13, β=−1.74, $p=.01$). Child sex and growth stunting were not significantly associated with T1 child regulation difficulties (B=.05, SE=.22, β=.03, $p=.83$; B=.07, SE=.01, β=.09, $p=.48$, respectively). Higher quality preadoptive care was associated with higher rates of both sensitivity/responsiveness and structure/limit-setting among adoptive parents at T1 (B=.29, SE=.12, β=.33, $p=.02$; B=.26, SE=.12, β=.31, $p=.02$, respectively). Growth stunting was also associated with structure/limit-setting (B=.20, SE=.10, β=.22, $p=.05$), but not sensitivity/responsiveness (B=.10, SE=.10, β=.11, $p=.31$), such that less growth stunting, indicative of less preadoptive adversity, was associated with parents' use of more effective structure/limit-setting behaviors. Child sex, age at adoption, and age at T1 assessment were not associated with sensitivity/responsiveness (B=.07, SE=.23, β=.04, $p=.76$; B=.18, SE=.13, β=.87, $p=.23$; B=−.18, SE=.14, β=−.89, $p=.22$, respectively) or structure/limit-setting (B=−.14, SE=.25, β=−.07, $p=.57$; B=−.06, SE=.16, β=−.29, $p=.72$; B=.08, SE=.16, β=.41, $p=.62$; respectively).

Bidirectional Effects of Parenting and Child Regulation

Multi-group cross-lagged longitudinal panel models were fit in MPLUS to examine group differences in bidirectional effects between parenting and child regulation difficulties at the transition to family care for PI youth. A χ^2 difference test was used to compare nested models in which path estimates were constrained to be equal and free to vary between PI and

NA youth. Separate models were fit examining bidirectional relations between child regulation difficulties and each of the parenting scales. Full-information maximum likelihood estimation was used to estimate data for participants with partial data. Error variances were allowed to correlate within time. All analyses utilized bootstrapping (10000 bootstrap draws) to estimate standard errors. Child sex (time-invariant) and child age (time-varying) were included as covariates.

Parental structure/limit-setting—The constrained multi-group model ($\chi^2(25)=37.15$, *ns*) fit the data significantly worse than the model with group-specific path estimates ($\chi^2(13)=15.62$, *ns*; Δdf=12, χ^2 difference= 21.53, $p<.05$) suggesting differences in the relations between parenting and child regulation difficulties among PI and NA youth. Thus, parameter estimates are reported separately for each group. The model provided adequate fit to the data (RMSEA=.06, CFI=.93). See Figure 1 for cross-lagged and stability coefficients among groups.

Relations among PI youth: For PI youth, greater use of parental structure/limit-setting behaviors at T1 predicted reduced child regulation difficulties at T2 (B=−.22, SE=.10, β=−.28, *p*=.03). Parental structure/limit-setting behaviors were also highly stable for parents of PI children (B=.48, SE=.11, β=.48, *p*=.00). Child regulation difficulties at T1 did not predict later parenting (B=−.19, SE=.12, β=−.17, *p*=.13) or child regulation difficulties (B=.19, SE=.12, β=.22, *p*=.12). Child age at T2 was significantly associated with parenting at T2 (B=−.05, SE=.02, β=−.28, *p*=.03) such that parents provided less structure/limit-setting for older children. Child sex and all other child age associations were not significantly related to parenting and child regulation difficulties for PI youth.

Relations among NA youth: There were no significant pathways among NA families (see Figure 1 for estimates). Child age was a significant covariate of parenting (B=.05, SE=.02, β=.30, *p*=.01) and child regulation difficulties (B=−.05, SE=.02, β=−.33, *p*=.02) at T1 for NA youth such that more structured parenting and fewer difficulties were related to older ages. Additionally, child sex was associated with T2 child regulation difficulties (B=.40, SE=.19, β=.29, *p*=.04) such that boys had more difficulties.

Parental Sensitivity—The constrained multi-group model ($\chi^2(25)=40.54$, $p<.05$) did not fit the data significantly different than the model with group-specific path estimates ($\chi^2(13)=20.60$, *ns*; Δdf=12, χ^2 difference= 19.94, *ns*) suggesting no structural differences in the relations between parenting and child regulation difficulties among PI and NA youth. The constrained model was retained and provided suboptimal fit to the data (RMSEA=.10, CFI=.71). Due to suboptimal fit indices results for the parental sensitivity model are reported but should be interpreted with caution. There were no cross-lagged relations (T1 parental sensitivity/responsiveness→T2 child regulation difficulties B=−.09, SE=.08, β= −.12, *p*=.22; T1 child regulation difficulties →T2 parental sensitivity/responsiveness B=−.05, SE=.14, β= −.04, *p*=.71) nor stability in child regulation difficulties (B=.06, SE=.09, β= .07, *p*=.55). However, parental sensitivity/responsiveness was highly stable from T1 to T2 (B=.60, SE=.11, β=.54, *p*=.00). There were no significant covariates.

Discussion

The current study aimed to elucidate bidirectional relations between parenting and child characteristics during the transition to an adoptive home. Our first goal was to examine the quality of parenting received by PI children compared with typically developing families. We found no mean level differences in either sensitivity/responsiveness or structure/limit-setting between parents of PI children and parents of typically developing non-adoptive children. This is in contrast to some past research which has found that PI children received poorer quality parenting than their typically developing peers (Gavin et al., 2012; Stams et al., 2000). Differing results may stem from the comparison group used as well as the characteristics of the adopted children and their families studied. Both groups of parents in the current study showed generally high quality parenting (sample means were greater than 5 on a 7 point scale); however, this was also true in the Garvin et al (2012) study. Internationally adopting parents tend to be well-resourced, highly educated and highly motivated to be parents. These characteristics may buffer against some of the challenges associated with parenting a PI child. Thus, the generally high quality parenting likely contributes to the rapid recovery seen following adoption.

Our second goal was to examine the effect of children's preadoptive factors on the initial quality of parenting they received. Higher quality preadoptive care was associated with higher rates of sensitivity/responsiveness and more effective structure/limit-setting among adoptive parents. Additionally, less growth stunting, indicative of less preadoptive adversity, was associated with parents' use of more effective structure/limit-setting behaviors. Children adopted out of higher quality care settings and with fewer physical effects of deprivation may be easier to parent and might evoke more sensitive and effective initial parenting. It is yet unclear what child factors might mediate this effect, as behavioral regulation did not predict later parenting. It may be general developmental quotient (as found in Croft et al., 2001) or another child factor such as soothability that may account for this effect. We also found that children adopted at older ages and from lower quality preadoptive care demonstrated greater child regulation, consistent with prior literature (e.g. Hawk & McCall, 2010).

Our final goal was to examine the bidirectional effects of parenting and child behavioral-regulation over the first year following adoption. This first year is a period of rapid adaptation and recovery that may set the stage for the parent-child relationship for years to come. We found that more effective parental structure/limit-setting soon after adoption led to fewer child regulation difficulties eight months later in internationally adopting families suggesting that parenting behaviors that serve to set consistent expectations facilitate improvements in children's regulation and specifically the ability to effectively transition between tasks and activities. Conversely, parental structure/limit-setting at T1 was not associated with changes in child regulatory competence from T1 to T2 among the NA children. This may be because, unlike the PI children, by T1 parental structure/limit-setting, which was quite stable in both groups, may already have had time to impact the trajectory of the NA child's development. However, child behavioral difficulties did not exhibit significant stability in either non-adopted or PI children.

While structure/limit-setting exhibited an effect on later child behavior for PI children, variation in parental sensitivity/responsiveness did not have any associations with child behavioral regulation in either adopting or non-adopting parents (although suboptimal model fit indicates these results should be interpreted with caution and limit making firm conclusions regarding parenting across the two dimensions). These results were somewhat surprising as we expected to see more transactional processes between child factors and parenting. It's possible that the child effect took place quite early (i.e., the effect of children's preadoptive factors on T1 parenting behaviors) and did not continue to impact parenting change post adoption, or that the lag between parenting and child behavior may be longer than the 8 month interval we measured in the current study. Nonetheless, it was important to distinguish the effects of the two dimensions of parenting on child outcomes. These results would indicate that parental structure/limit-setting may be more influential in affecting change in children's behavioral regulation during the laboratory assessment than was parental sensitivity in this population. There are, of course, other dimensions of child functioning that might be more closely related to parental sensitivity and responsivity among young children of this age. In addition, a broader assessment of child regulatory behavior beyond their ability to cooperate and shift tasks during the laboratory assessment might have revealed the influence of parental sensitivity/responsivity. Furthermore, it is important to note that participants in this sample were, on average, quite high in sensitivity and responsivity. In a population that showed a broader range of these parenting skills, effects of sensitivity/responsivity on behavioral regulation may likely emerge. These questions should be explored in future studies.

Notably, despite concern that children with more behavior regulatory problems negatively impact the parent and the quality of care they can provide over time, we found no evidence of this in the present analysis. This may be because these children were generally reasonably well functioning, at least relative to young children of their age. In other work with these children we found that by a year post adoption most of them had IQ scores within the normal range (Hostinar, Stellern, Schaefer, Carlson, & Gunnar, 2012). By 9–10 months post adoption all but 5% had formed discriminating attachment relationships and 70% appeared securely attached (Carlson, Hostinar, Mliner, & Gunnar, 2014). By kindergarten, however, they exhibit more symptoms of ADHD and externalizing disorders and in the immediate years following adoption their diurnal cortisol rhythm is blunted, especially for those who received poor quality social care preadoption (Koss, Mliner, Donzella, & Gunnar, 2016).

There are several implications of these results for policy and intervention. First, as many studies have shown before, children adopted earlier and from better quality institutions have fewer behavioral problems than those adopted later and from more depriving conditions. Our results demonstrated that parents are able to respond to children with less adverse preadoptive histories in ways that score higher on scales of parenting quality. Policy makers should do everything in their power to improve the quality of institutional care and ensure that children are adopted or fostered from such settings as soon as possible into permanent homes. Second, adoption agencies should ensure that families are well-informed about the challenges they may face in adopting a child who has experienced early adversity, and should help parents prepare to meet their child's needs. Finally, interventions targeted at internationally adopting families aiming to improve child behavioral regulation should focus

on strengthening the parents' structure/limit-setting skills which appear to have the greatest impact. Many evidence-based parent training interventions target parental structure/limit-setting and may be beneficial to employ within this population (e.g. Schuhmann, Foote, Eyberg, Boggs & Algina, 1998). Additionally, interventions designed specifically for adoptive/foster parents that teach caregivers to "gently challenge" children may prove beneficial as well (e.g. Dozier, 2003). Following the successful 2005 trial of the VIPP intervention, a nationwide and state subsidized adoption aftercare service with video feedback was started in The Netherlands (Juffer et al., 2014). Our results provide further evidence in support of other countries adopting such programs.

This study had several limitations. First, our measure of child behavioral regulation was a relatively simple observational measure rather than a more comprehensive and complex coding scheme . This had the logistical advantage of allowing experimenters to code the child's behavior in real time and also provided an ecologically valid picture of the child's regulation on a task frequently encountered in their everyday lives (e.g., transitioning from one activity to another). The disadvantage of this method, however, was that many children scored highly on this measure and thus it may not have challenged them sufficiently. It also provided only a snap shot of child behavior on the day of the session rather than a parent-report measure, which could have reflected a more general sense of the child's behavioral regulation across many different days and in different settings. Parent-report was not used in the current study due to the confounding issues its use would create when examining relations between parenting and child behavior. Furthermore, conclusions made regarding to the type of parenting that facilitates better functioning among PI children is limited to behavioral regulation during transitions. Parental sensitivity/responsiveness may be an important factor for aiding recovery of other domains of emotion and behavioral functioning, such as internalizing problems.

Second, though our parenting coding scale has been well-validated and often used, it still is only able to capture a brief repertoire of behaviors during a limited time period. As parents knew they were being observed and videotaped, they likely attempted to demonstrate their best parenting skills, which may have restricted the variability in the parenting coding measure. Nonetheless, significant variation in parenting was observable and related to child outcomes. A further limitation is that the measures of parenting and of child behavioral regulation used in the current study were partially based on the same observations, thus, associations may be inflated. This source of error was minimized as much as possible by independent coding of observations.

Given our sample size, we may be underestimating relations between variables that may be require greater power to detect effects. However, as reported in the results section, none of the non-significant findings approached trend level, giving us more confidence in the null results.

Finally, as objective data were unavailable on the institutions from which children were adopted, one of our measures of preadoptive adversity was coded from parents' descriptions of the institutions. We cannot be certain that parents provided reliable information. It is possible that parents who were more optimistic and positive described the care of the

institutions more positively than parents who were negative (and perhaps congruently less sensitive), rather than parenting being driven by the individual differences in early social experiences for the child. This is unlikely, however, as the extent of growth stunting at adoption was also associated with initial levels of parenting and represents an objective measure of deprivation.

Despite these limitations, the present study provides valuable information regarding the bidirectional effects between child and parenting factors during the transition to an adoptive home. Preadoptive factors indexing the extent of exposure to adversity influenced initial parenting and parenting, specifically effective structure/limit-setting, resulted in improvements in the child's behavioral regulation skills during the first year in family care. Interventions for parents adopting internationally should focus on preparing caregivers for the challenges they may face parenting PI children as well as on educating parents on effective structure/limit-setting skills to help bolster children's recovery.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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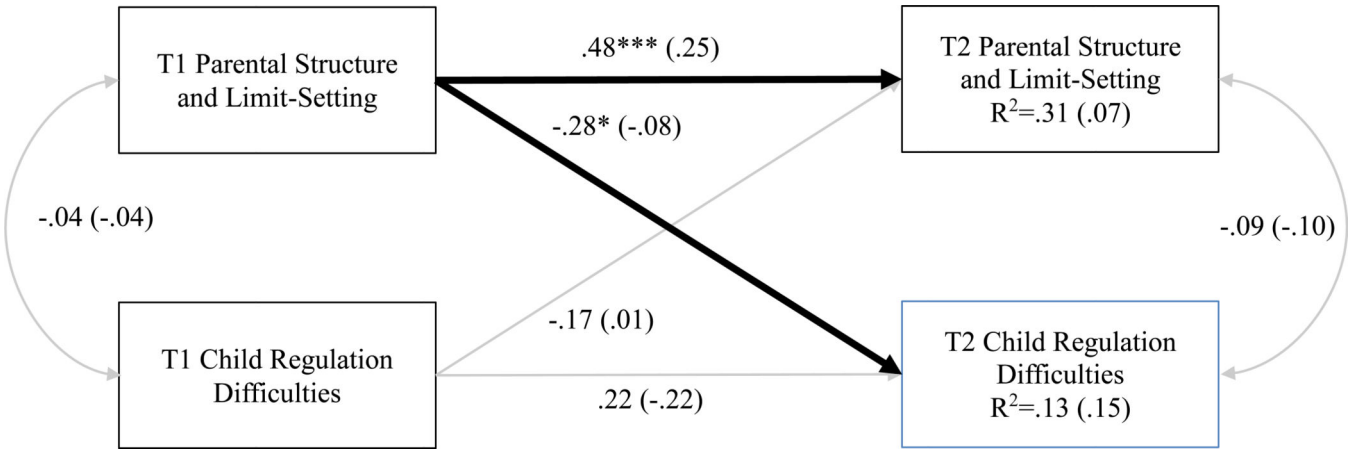

Figure 1.

Cross-lagged panel model examining bidirectional relations between parental structure and limit-setting and child regulation during the transition of family care following adoption from overseas institutional care. Figure depicts standardized estimates for PI youth (NA parameter estimates provided in parentheses). Child sex and age as covariates are omitted from figure (see text for covariate effects).

Table 1

Sample demographics for PI and NA youth.

		PI	NA
Total	*N*	68	52
Child sex	*N* Female	41 (60%)	26 (50%)
T1 age	*M* (*SD*) months [Range]	26.31 (4.99) [18.97–36.66]	27.65 (5.71) [18.64–36.92]
T2 age	*M* (*SD*) months [Range]	32.72 (5.10) [24.69–44.25]	34.68 (5.80) [25.58–44.05]
Child Race			
Asian	*N*	28 (41%)	2 (4%)
Black/African	*N*	23 (34%)	--
White/Caucasian	*N*	10 (15%)	46 (88%)
American Indian/ Alaska Native	*N*	3 (4%)	--
Multiracial	*N*	2 (3%)	4 (8%)
Other/Unknown	*N*	2 (3%)	--
Child Ethnicity			
Latino/Hispanic	*N*	4 (6%)	2 (4%)
Region of Origin			
Southeast Asia	*N*	23 (34%)	--
Africa	*N*	22 (32%)	--
Russia/Eastern Europe	*N*	17 (25%)	--
Latin America/Caribbean	*N*	6 (9%)	--
United States	*N*	--	52 (100%)
Household Income	Median range [Range]	$75–100k (22%) [$35–50k - >$200k]	$75–100k (29%) [$25–35k - >$200k]
Marital Status	*N* Married	57 (85%)	51 (98%)
Primary Caregiver	*N* Female	64 (94%)	51 (98%)
T1 Stay-at-Home Caregiver	*N*	45 (67%)	27 (48%)
T2 Stay-at-Home Caregiver	*N*	22 (35%)	28 (54%)
T1 Primary Caregiver Work Hours[a]	*M* (*SD*) hours/week [Range]	26.80 (15.87) [4–50]	23.10 (14.49) [0–45]
T2 Primary Caregiver Work Hours[a]	*M* (*SD*) hours/week [Range]	32.28 (12.72) [4–55]	26.86 (14.67) [7–47]
Primary Caregiver Education	Median [Range]	Bachelor's (40%) [High School/GED – Professional/Doctorate]	Bachelor's degree (60%) [High School/GED – Professional/Doctorate]
Secondary Caregiver Education	Median [Range]	Bachelor's (42%) [Less than High School – Professional/Doctorate]	Bachelor's degree (40%) [Less than High School – Professional/Doctorate]
Age at Adoption	*M* (*SD*) months [Range]	24.61 (4.98) [16.70–36.13]	--
Institutional Care Duration	*M* (*SD*) months [Range]	17.86 (7.49) [4–34]	--
% of Preadoptive Life in an Institution	*M* (*SD*) % [Range]	76% (29%) [14–100%]	--
T1 Time since Arrival	*M* (*SD*) months [Range]	1.70 (.77) [.33–3.88]	--

[a]Mean number of primary caregiver work hours reported reflect outside the home work hours and exclude stay-at-home caregivers.

Table 2

Descriptive Statistics by Group

	PI			NA					
	***M* (*SD*)**	**Range**	***N***	***M* (*SD*)**	**Range**	***N***	***df***	***F***	***p***
T1 Sensitivity/Responsiveness	5.56 (.99)	3 – 7	66	5.69 (.94)	3 – 7	51	1, 115	.48	.49
T2 Sensitivity/Responsiveness	5.65 (1.10)	2 –7	62	5.59 (1.11)	1 –7	50	1, 110	.07	.79
T1 Structure and Limit-Setting	5.53 (1.00)	3 –7	66	5.54 (.96)	3 –7	51	1, 115	.01	.93
T2 Structure and Limit-Setting	5.53 (1.00)	3 – 7	62	5.93 (.90)	4 –7	50	1, 110	.29	.59
T1 Child Regulation Difficulties	1.81 (.92)	1 –5	68	1.69 (.90)	1 –5	52	1, 118	.48	.49
T2 Child Regulation Difficulties	1.63 (.79)	1 –3	64	1.50 (.70)	1 –4	50	1, 112	.78	.38
T1 Child Age	26.31 (4.99)	18.97 – 36.66	68	27.65 (5.71)	18.64 – 36.92	52	1, 118	1.89	.17
T2 Child Age	32.72 (5.10)	24.69 – 44.25	64	34.68 (5.71)	25.58 – 44.05	50	1, 112	3.69	.06
T1 Parental Depressive Symptoms	7.16 (5.70)	0 – 27	61	6.52 (7.10)	0 – 45	50	1, 109	.28	.60
T2 Parental Depressive Symptoms	6.75 (5.75)	0 – 29	57	6.29 (5.34)	0 – 23	48	1, 103	.18	.67
T1 Parental Distress	23.19 (7.17)	12 – 42	59	22.78 (7.42)	10 – 46	50	1, 107	.08	.77
T2 Parental Distress	22.56 (6.73)	12 –40	59	21.54 (6.57)	12 −39	48	1, 105	.62	.43
Age at Adoption	24.61 (4.98)	16.70 – 36.13	68	--	--	--	--	--	--
Growth Stunting	-1.19 (1.12)	-4.21 - .76	67	--	--	--	--	--	--
Quality of Social Care	3.56 (1.16)	1 –5	51	--	--	--	--	--	--