Adopted Children's Behavioral Adjustment Over Time: Pre-Adoption Experiences and Adoptive Parenting

Chloë Finet^{a,b,*}, Harriet J. Vermeer^b, Femmie Juffer^b, Patricia Bijttebier^c, & Guy Bosmans^a

^a Parenting and Special Education Research Unit, KU Leuven, Leopold Vanderkelenstraat 32
– bus 3765, 3000 Leuven, Belgium

^b Centre for Child and Family Studies, Leiden University, Pieter de la Court Building, Postbus
9555, 2333AK, Leiden, the Netherlands

^c School Psychology and Child and Adolescent Development, KU Leuven, Tiensestraat 102 –
bus 3717, 3000 Leuven, Belgium

* Corresponding author. E-mail: chloe.finet@kuleuven.be, TEL: 0032 16 37 32 71

E-mail:

chloe.finet@kuleuven.be

vermeer@fsw.leidenuniv.nl

juffer@fsw.leidenuniv.nl

patricia.bijttebier@kuleuven.be

guy.bosmans@kuleuven.be

Abstract

We tested whether adoptive parenting played a role in the association between pre-adoption experiences and children's adaptive (responsiveness) and maladaptive (internalizing and externalizing behavioral problems, attention and sleep problems) behavioral adjustment over time. Ten-year-old girls, adopted at 13 months from institutional care ($n = 50$) or foster care ($n = 42$) in China to the Netherlands, participated 2 months (Time 1, $N = 92$), 6 months (Time 2, $N = 92$), and 9 years after adoption (Time 3, $N = 87$). At Times 1 and 2, the adoptees showed significantly fewer behavioral problems in many areas than non-adopted youth, with medium to large effect sizes. At Time 3, the adoptees showed similar rates of behavioral problems as non-adopted youth, with the exception of somewhat elevated levels of internalizing problems. Pre-adoption experiences were not associated with their behavioral adjustment. Furthermore, adoptive parenting did not moderate the association between pre-adoption experiences and behavioral adjustment over time. Nevertheless, the finding that the adoptees generally did not show above-average levels of behavioral problems illustrates that adoption had a positive impact on their development.

Keywords. International adoption, institutional care, foster care, behavioral problems, parenting

One of the first research questions that has been pursued in the adoption literature aimed to clarify whether adopted children are at increased risk for psychological difficulties, such as behavioral problems, compared to non-adopted children raised by their biological parents (Palacios & Brodzinsky, 2010). The numerous studies that have addressed this question yielded somewhat inconsistent results, suggesting large variability in adopted children's adjustment. Whereas many studies have found that adopted children and adolescents have somewhat elevated rates of behavioral problems compared to non-adopted youth (for meta-analyses, see Askeland et al., 2017; Juffer & Van IJzendoorn, 2005), other studies have shown that adoptees are equally well adjusted (e.g., Rojewski, Shapiro, & Shapiro, 2000), or even better adjusted than non-adopted children (e.g., Tan & Marfo, 2006). Improving our understanding about why some adoptees are better adjusted than others is essential for the development of prevention programs or interventions aimed at further enhancing adopted children's resilience. Therefore, the research focus shifted from merely comparing adopted and non-adopted youth to studying factors that might explain within-group differences among adopted children and adolescents (Barroso, Barbosa-Ducharne, Coelho, Costa, & Silva, 2017; Palacios & Brodzinsky, 2010).

One candidate factor is variability in early adverse experiences. Research findings indicate that even though adverse pre-adoption experiences can have long-lasting effects on later adjustment, these effects are not deterministic (Barroso et al., 2017; Sroufe, Coffino, & Carlson, 2010). This suggests that the effects of early adversity can be mitigated by other factors (Masten, 2001), such as positive parenting in the adoptive family. Although evidence is gradually emerging that parenting is related to adopted adolescents' behavioral adjustment (e.g., Van der Voort et al., 2014; Van der Voort, Linting, Juffer, Bakermans-kranenburg, & Van IJzendoorn, 2013), few studies have studied whether parenting buffers the potential negative impact of adverse pre-adoption experiences. Therefore, in the current longitudinal

study we investigated whether parenting moderated the association between pre-adoption experiences and behavioral adjustment over time in a sample of internationally adopted children from China. We not only focused on maladaptive adjustment but also on adaptive behavioral adjustment. We used two indicators to measure children's pre-adoption experiences, namely type of pre-adoption care and extent of early deprivation.

Pre-Adoption Experiences: Type of Pre-Adoption Care and Early Deprivation

Although all adopted children have experienced early adversities such as separation from or loss of their birth parents, there is considerable heterogeneity in levels of early adversities, and this heterogeneity should be taken into account when studying adoptees' development (Kriebel & Wentzel, 2011). Heterogeneity, for example, relates to the type of pre-adoption care children have received (e.g. institutional care or foster care) and to the extent of early depriving experiences (such as sub-nutrition and neglect) they have been exposed to. Several theoretical explanations have been put forward about how early adverse experiences may impact behavioral adjustment.

With regard to type of pre-adoption care, from an attachment theoretical perspective it can be predicted that children who were raised in institutional care prior to adoption have an increased risk for behavioral problems, because they did not have the opportunity to build long-term relationships with a sensitive caregiver (Van IJzendoorn et al., 2011). Empirical evidence on the effects of type of pre-adoption care, however, is somewhat inconclusive. Some studies have shown that pre-adoption institutionalization is linked with an overall increase in behavioral problems (for a review, see MacLean, 2003). Other studies, however, reported that pre-adoption institutional care is only associated with an increase of a limited number of specific symptoms, such as inattention/overactivity (e.g., Gunnar & van Dulmen, 2007; Kumsta et al., 2015). Still other studies did not find any associations between pre-

adoption institutional care and behavioral problems (Finet, Vermeer, Juffer, & Bosmans, 2018).

With regard to the effects of pre-adoption deprivation, research findings are also mixed. Whereas most adoption studies report the detrimental effects of early deprivation on behavioral adjustment (Juffer & Van IJzendoorn, 2005; Kriebel & Wentzel, 2011; Tan, 2011), some studies do not find evidence for a link between early deprivation and later behavioral adjustment (e.g., Gleitman & Savaya, 2011), or only find small effects (Finet et al., 2018). These mixed findings indicate that there exists variability in the association between pre-adoption experiences and behavioral adjustment, suggesting that not all adoptees are equally affected by early adversities. According to developmental psychopathology models (e.g., risk and resilience models) protective factors can moderate the negative effects of pre-adoption experiences, and hence explain variability in child outcomes (Masten, 2001). One possible protective factor that may buffer the effects of adverse pre-adoption experiences on behavioral adjustment is adoptive parenting (del Pozo de Bolger, Dunstan, & Kaltner, 2016; Juffer et al., 2011).

Adoptive Parenting

It has been proposed that parenting impacts children's behavioral adjustment (Ainsworth, Blehar, Waters, & Wall, 1978; De Wolff & Van IJzendoorn, 1997). Parenting studies in non-adopted children indeed reveal small but consistent associations between various dimensions of parenting behaviors – such as parental support, psychological control, and behavioral control - and indicators of maladaptive (e.g., Bell & Belsky, 2008; Belsky, Fearon, & Bell, 2007; Pinquart, 2017) and adaptive behavioral adjustment (e.g., Bornstein, Hendricks, Haynes, & Painter, 2007). Moreover, it has been found that parenting cognitions such as parental self-efficacy (i.e., parents' belief in their ability to parent their children

successfully) are also related to children's behavioral adjustment, either directly or indirectly via parenting behavior (for a review, see Jones & Prinz, 2005).

Unfortunately, parenting research in adopted youth is relatively scarce (Juffer et al., 2011) and most studies focus on parenting behavior, not on parental efficacy. Although some adoption studies failed to find associations between parenting behavior and behavioral adjustment (e.g., Castle, Beckett, Rutter, & Sonuga-Barke, 2008), most studies revealed that positive parenting behaviors or parent-child relationships, have a positive impact on adoptees' behavioral adjustment (e.g., Groza & Ryan, 2002; Kriebel & Wentzel, 2011; Le Mare & Audet, 2014). In particular sensitive parenting (which is an expression of the parental warmth/support dimension and refers to noticing a child's signals, correctly interpreting these signals, and timely and adequately responding; Ainsworth et al., 1978) has been found to promote adoptees' development (e.g., Stams, Juffer, & Van IJzendoorn, 2002; Van der Voort et al., 2014, 2013).

Interplay between Children's Pre-Adoption Experiences and Adoptive Parenting

It is reasonable to assume that adoptive parenting may act as a protective factor in the association between pre-adoption experiences and later behavioral adjustment. In line with theories of risk and resilience (Masten, 2001), it can be expected that adverse pre-adoption experiences negatively affect behavioral adjustment when parenting is compromised, but that these effects are reduced when parents show positive parenting (Garvin, Tarullo, Van Ryzin, & Gunnar, 2012). A few studies have indeed found support for buffering effects of protective factors in the adoptive family, such as a family's capacity to cope with stress and challenges (Ji, Brooks, Barth, & Kim, 2010). Despite this, there is a scarcity of studies that have examined the hypothesized buffering effect of adoptive parenting. In one study, Kriebel and Wentzel (2011) found that warm, involved parenting buffered against the negative effects of cumulative pre-adoption risks on adaptive behavior. Although findings of this study provide

support for an interaction between pre-adoption experiences and parenting, the cross-sectional design of the study limited the possibility to draw firm conclusions about the interaction effect on the long run. Investigating such interactions on the long run is important, especially because research has shown that the negative effects of early adversity on behavioral adjustment may increase over time (Merz & McCall, 2010). Therefore, in the current longitudinal adoption study we aimed to investigate whether pre-adoption experiences and parenting interact with each other in the prediction of change in adoptees' behavioral adjustment over time, from infancy to early adolescence. Hereby, we focused on behavioral aspects of parenting (parental sensitivity), as well as on cognitive aspects of parenting (parental efficacy).

Current Study

In the current study we aimed to gain insight into the role that parental sensitivity and parental efficacy may play in enhancing children's resilience to overcome risks associated with early adversity. In specific, we examined whether parental sensitivity and parental efficacy moderated the association between pre-adoption experiences and behavioral adjustment over time (see Figure 1). This was investigated in a sample of early adolescent 10-year-old girls who were adopted from institutional care or foster care in China and who participated in the longitudinal Chinese adoptees in the Netherlands (CAN) study two months, six months and nine years after adoption. We hypothesized that the effects of pre-adoption experiences (type of pre-adoption care and early deprivation) on change in adaptive behavioral adjustment (responsiveness) and maladaptive behavioral adjustment (internalizing problems, externalizing problems, attention problems, sleep problems) would depend upon the quality of adoptive parenting, with low parental sensitivity and low parental efficacy increasing the risk that pre-adoption adversities are linked with less optimal behavioral adjustment, and with high parental sensitivity and high parental efficacy buffering against

such effects. Besides, we compared the level of behavioral problems of the adoptees with the mean level of behavioral problems of the norm group of non-adopted youth.

Method

Participants and Procedure

The CAN study comprised 92 girls from China, born between 2004 and 2007, who were adopted by Dutch parents at a mean age of 13.03 months ($SD = 1.35$, range = 10.84-16.53). The families were recruited through all three Dutch adoption organizations mediating adoption from China to the Netherlands (see Authors, 2010; 2012). These adoption organizations sent information packages to all Dutch families who adopted a girl aged between 11 and 16 months old at adoption. In total, 198 families were contacted of which 152 families responded. Of these families, 100 families agreed to participate in the first two time points of the study, but eight families dropped out at the start of the study due to personal circumstances. As such, 92 families participated in the first two time points, two (Time 1) and six months after adoption (Time 2; see Authors 2010, 2012). After Time 2, we sent a birthday card to all families at the adopted child's birthday every year. To inform these 92 families about the third time point of the study that took place nine years after adoption (Time 3), we sent them a newsletter and information folder and called them to ask whether they agreed to take part at Time 3. Eighty-seven families (5.4% dropouts after Time 2) participated at Time 3. Four of the five families who did not participate at Time 3 agreed to complete the online background information questionnaire ($n = 91$) and three families agreed to complete the questionnaire on behavioral problems ($n = 90$). The major reason for non-participation at Time 3 was time constraints. At each time point the families were visited at home and they visited the university. The girls participated in these visits together with their primary caregiver (90 mothers and 2 fathers at Time 1 and Time 2; 81 mothers, 3 fathers, and 3 girls who participated with their mother at one of the visits and with their father at the other visit at

Time 3), here referred to as mother. The girls were on average 15.24 ($SD = 1.35$) and 15.66 ($SD = 1.42$) months old at the first home and university visits, 19.33 ($SD = 1.40$) and 19.85 ($SD = 1.48$) months old at the Time 2 visits, and 119.72 ($SD = 5.23$) and 122.07 ($SD = 5.57$) months old at the Time 3 visits.

Ninety girls were adopted by two-parent families and two girls were adopted by single mothers. Of the 91 parents who completed the background questionnaire at Time 3, four parents had divorced and one of the single mothers was living together with her new partner. The other girls were living with their adoptive mother and father. Mean education at Time 3 of the primary and secondary caregiver on a scale from 1 (primary school) to 5 (university) was 3.92 ($SD = 0.93$) and 4.10 ($SD = 0.88$) respectively. Furthermore, 24 families were single-child families and 67 families had more than one child. In infancy (Time 1 and Time 2) parents gave their informed consent for participation in the CAN study and at Time 3 both the parents and the girls gave their informed consent. The Ethics Review Board of the Faculty of Social Sciences of Leiden University approved the follow-up study at 10 years (ECPW-2014/067).

Measures

Pre-adoption experiences: type of pre-adoption care and early deprivation. At Time 1 parents reported whether their child had lived in an institution or in a foster family in China before adoption. Based on this information children were classified in the post-institutionalized or the post-foster group (see Authors, 2010; 2012). The post-institutionalized children ($n = 50$) had mainly experienced institutional care before adoption ($M = 12.44$ months, $SD = 1.36$) and a maximum of one month of other forms of care such as foster care ($M = 0.65$ months, $SD = 0.59$). The post-foster group consisted of children who had exclusively received foster care prior to adoption ($n = 16$) or a combination of foster and institutional care ($n = 26$). The post-foster children ($n = 42$) had on average lived 9.32 months

($SD = 3.55$, range 1.44-14.85) in foster care and 3.65 months ($SD = 3.86$, range 0-14) in institutional care.

In addition, at Time 1 parents reported on a four-point response scale (no, somewhat, a lot, unknown) whether and to what extent their daughter had experienced (1) sub-nutrition, (2) other physical neglect, (3) socio-emotional neglect, and (4) maltreatment (physical or sexual). For the current analyses the response scales were dichotomized (i.e., a score of 0 was assigned if parents indicated that their child had not experienced the adversity or if parents answered unknown, and a score of 1 was assigned if parents reported that their child had experienced the adversity somewhat or a lot) and summed to get an indication of early deprivation. Scores could range between 0 and 4, with higher scores indicating more deprivation. Because a score of 0 was also assigned if parents did not know whether their child had experienced the adversity, the variable can be considered a conservative estimate of early deprivation. The internal consistency (Cronbach's alpha) of early deprivation was .63.

Parental sensitivity: supportive presence and lack of intrusiveness. At each time point, mother and child engaged in a problem-solving task and these videotaped interactions were subsequently coded for maternal supportive presence and intrusiveness with the Erickson scales (Egeland, Erickson, Clemenhausen-Moon, Hiester, & Korfmacher, 1990; Erickson, Sroufe, & Egeland, 1985). We used supportive presence and intrusiveness as indicators of parental sensitivity, with higher levels of supportive presence and lower levels of intrusiveness indicative of higher levels of sensitivity. Supportive presence refers to the extent to which mother expresses emotional support and positive regard to her child and shows her child that she has confidence in her child's competence. Intrusiveness refers to the degree to which mother interferes with her child's autonomy and exploration, and to which she exerts her own expectations on her child. Both scales were rated on a seven-point scale ranging from 1 (*very low*) to 7 (*very high*). At Time 1 and 2 supportive presence and intrusiveness were

assessed at the university while mother and child engaged in two problem-solving tasks of 4 min each. At Time 3, supportive presence and intrusiveness were observed at home during a 10 min tangram puzzle solving task. The more verbal nature of mother-child interactions at this age, compared to the more frequent physical mother-child interactions in infancy, was taken into account in the coding of supportive presence and intrusiveness at Time 3 (convergent with Stams et al., 2002). Time 1, Time 2 and Time 3 assessments of the same family were coded by different coders. At Time 1 and Time 2 the intraclass interrater reliability (intraclass correlations) with the expert coder (FJ) was $>.70$ for supportive presence and intrusiveness. At Time 3 the intraclass correlation of the single rater with the expert coder (FJ) was .92 for supportive presence, and .96 for intrusiveness ($n = 15$).

Parental efficacy. Parents filled out the Parental Efficacy Questionnaire (Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 1999) at the three time points. This questionnaire consists of 22 items measuring how competent parents feel in rearing their child, particularly under stressful circumstances (e.g., “I can understand my daughter’s feelings when she is sad, even if I’m angry.”). At Time 3, the questionnaire was adjusted by omitting two items that were not considered developmentally appropriate. Parents rated the items on a 5-point scale ranging from -2 (*no self-efficacy*) to 2 (*very high self-efficacy*). Total parental efficacy was computed by summing the scores on all items (possible scores range from -44 to 44 at Time 1 and 2 and from -40 to 40 at Time 3). The internal consistency of parental efficacy at the three time points was .79 (Time 1), .80 (Time 2) and .88 (Time 3).

Problem behavior. At Time 1 and 2 parents completed the Child Behavioral Checklist for ages 1^{1/2}-5 (CBCL 1^{1/2}-5; Achenbach & Rescorla, 2000; Koot, Van Den Oord, Verhulst, & Boomsma, 1997), and at Time 3 the CBCL for ages 6-18 (CBCL 6-18; Achenbach & Rescorla, 2001; Verhulst, Van Der Ende, & Koot, 1996). The CBCL consists of different items on child behavioral problems (CBCL 1^{1/2}-5: 100 items; CBCL 6-18: 113

items) that have to be rated on a three-point scale ranging from 0 (*not true*) to 2 (*very true or often true*). In the current analyses, the broadband scales internalizing problems (CBCL 1^{1/2}-5: sum of the narrowband scales emotionally reactive, anxious/depressed, somatic complaints and withdrawn; CBCL 6-18: sum of anxious/depressed, withdrawn/depressed and somatic complaints) and externalizing problems (CBCL 1^{1/2}-5: sum of attention problems and aggressive behavior; CBCL 6-18: sum of rule-breaking behavior and aggressive behavior) were used. In addition, the narrowband scales attention problems (i.e., problems with regulating one's attention) and sleep problems (i.e., irregular sleeping patterns including for example difficulties falling asleep) were included, because research has shown that attention problems are specifically associated with institutional deprivation (Rutter, Kreppner, & O'Connor, 2001), and that sleep problems are a common risk factor among Chinese adoptees (e.g., Tan, 2010). Because the CBCL 6-18 does not contain a sleep problem scale, we constructed a sleep problem scale by summing four items (trouble sleeping, nightmares, sleep less, and sleep talks/walks) that closely resemble the six sleep problems items of the CBCL 1^{1/2}-5. The internal consistencies of the scales at each time point were .73 (Time 1), .71 (Time 2), and .86 (Time 3) for internalizing problems, .85 (Time 1), .89 (Time 2), and .88 (Time 3) for externalizing problems, .50 (Time 1), .64 (Time 2), and .77 (Time 3) for attention problems, and .74 (Time 1), .75 (Time 2), .67 (Time 3) for sleep problems.

We transformed the raw scale scores to standardized T scores reflecting the child's standing relative to children of the same age. In contrast to raw scale scores, T scores enable comparisons between different versions of the CBCL (Verhulst et al., 1996). We used T scores in the analyses, with the exception of the analyses for sleep problems because no T scores for Time 3 sleep problems could be determined as the CBCL 6-18 does not contain a sleep problem scale.

Child responsiveness. Child responsiveness (i.e., a child's eagerness and willingness to engage with his parents and a child's pleasure in interacting with the parent) was used as indicator of adaptive behavioral adjustment. At each time point child responsiveness was observed during video-recorded mother-child interactions and coded with the Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 2000) on a seven-point scale ranging from 1 (*clearly nonoptimal in responsiveness*) to 7 (*optimal responsive*). At Time 1 and Time 2 child responsiveness was observed at home during 8 min of free play and at Time 3 it was observed at the university during 10 min of free play. Different coders assessed child responsiveness at each time point, and different coders assessed mother and child scales. The intraclass interrater reliability of child responsiveness with the expert coder (FJ) was .77 at Time 1, .79 at Time 2 (see Authors, 2012), and .81 and .86 for the two coders at Time 3 ($n = 19$).

Data-analysis

Prior to the main analyses, three principal component analyses were performed to create a longitudinal compound score for each parenting variable. Based on Kaiser's criterion of retaining factors with eigenvalues greater than one, one factor was extracted in each principal component analysis. The supportive presence factor ($M = 0$, $SD = 1$, range from -2.27 to 2.12), which reflects the common variance between the supportive presence scores at the three time points, had an eigenvalue of 1.64 and explained 54.72% of total variance in the three supportive presence scores. The loadings of the three supportive presence scores on this factor were .75 (Time 1), .74 (Time 2), and .73 (Time 3). The intrusiveness factor ($M = 0$, $SD = 1$, range from -2.91 to 2.51) had an eigenvalue of 1.61 and explained 53.81% of total variance in the three intrusiveness scores. The loadings of the intrusiveness scores on this factor were .83 (Time 1), .74 (Time 2), and .62 (Time 3). The parental efficacy factor ($M = 0$, $SD = 1$, range from -2.51 to 2.34) had an eigenvalue of 1.79 and explained 59.52% of the total

variance in the three parental efficacy scores. The loadings of the parental efficacy presence on this factor were .82 (Time 1), .81 (Time 2) and .68 (Time 3). These parenting factor scores were computed after imputation of missing values with expectation maximization (see below). Next, mean behavioral problems of the adopted girls were compared with average scores of the norm group of non-adopted children using one-sample t-tests.

To answer the research question concerning the interaction between pre-adoption experiences and adoptive parenting in the prediction of change in behavioral adjustment over time (Figure 1), repeated measures analyses of (co)variance with time as within-subject factor were performed. For each indicator of adaptive and maladaptive behavioral adjustment, except for sleep problems, six repeated measures analyses were performed to investigate the interaction between each of the two pre-adoption variables and each of the three parenting variables. In total 24 repeated measures analyses were performed in which all main effects and all possible interactions were included. We only report the results of the three-way interactions (time x pre-adoption experiences x parenting) because these interactions indicate whether pre-adoption experiences interact with parenting in the prediction of change in behavioral adjustment.¹ If the assumption of sphericity was violated, the degrees of freedom were corrected using the Greenhouse-Geisser correction.

For sleep problems it was not possible to perform repeated measures analyses, because no T scores for sleep problems at Time 3 could be determined. Instead, six moderation analyses were conducted with the macro PROCESS (Hayes, 2013) to assess whether parenting moderated the association between pre-adoption experiences and sleep problems at Time 3, controlling for the main effects of sleep problems at Time 1 and 2. Only results of the interaction between pre-adoption experiences x parenting are reported.² To control for the

¹ The main effects and two-way interactions are not reported but can be requested from the corresponding author.

² Results of the main effects can be requested from the corresponding author.

number of tests we performed (30), a Bonferroni-corrected significance level of .002 (.05/30) was used in all analyses.

In addition to the main analyses, two sets of supplementary analyses were conducted. In the first set of supplementary analyses the parenting factor scores were replaced with the separate parenting scores at Time 1, Time 2, and Time 3. Separate analyses for each time point were performed (Time 1 parenting: repeated measures analysis with behavioral adjustment at the three time points as outcome; Time 2 parenting: repeated measures analyses with behavioral adjustment at the second and third time point as outcome; Time 3: moderation analysis with behavioral adjustment at Time 3 as outcome). These analyses allow to determine whether similar results are found when the non-shared variance in the parenting scores at each time point is not partialled out. In the second set of supplementary analyses, we assessed whether the results of the main analyses hold after controlling for some family and child background variables that have been found to be related to adopted children's development. More specifically, we controlled for age at adoption (Julian, 2013), age at study (Juffer & Van IJzendoorn, 2005), education of both caregivers (Tieman, van der Ende, & Verhulst, 2005) and medical problems of the child (Welsh & Viana, 2012).

In total, there was 2.2% of data missing on all independent variables, outcome variables and background variables. Based on Little's MCAR test it was assumed that the data were missing completely at random, $\chi^2(559) = 541.52, p = .694$. Missing data on the continuous variables were imputed using expectation maximization.³ In order to retain as much information as possible, all narrowband CBCL syndrome scales were used in the expectation maximization procedure. The broadband internalizing and externalizing scale were calculated after the expectation maximization.

³ Results of the analyses were similar when missing data were excluded instead of imputed using expectation maximization.

Results

Preliminary Analyses

Table 1 shows the descriptive statistics of all model variables for the post-institutionalized children, the post-foster children and the total sample. The post-institutionalized adoptees scored significantly higher on medical problems and on early deprivation than the post-foster adoptees. In addition, there were three significant differences between the two groups on the parenting variables. Parents of the post-institutionalized children scored significantly lower on supportive presence at Time 1, significantly higher on parental efficacy at Time 2, and significantly lower on intrusiveness at Time 3 than parents of the post-foster children. The post-institutionalized and the post-foster children did not differ significantly from each other on adaptive and maladaptive behavioral adjustment at the three time points. In Table 2 the correlations between pre-adoption experiences, adoptive parenting, and behavioral adjustment are presented.⁴

Comparison with the Norm

Mean behavioral problem scores of the children in our sample were compared with mean scores of the norm group of 1.5-5 year old children (Achenbach & Rescorla, 2000) at Time 1 and 2, and of 6-11 year old girls at Time 3 (Achenbach & Rescorla, 2001). At Time 1, the children in our sample had significantly fewer internalizing problems, $t(91) = -6.34$, $p < .001$, $d = -0.66$, and fewer externalizing problems than the norm group, $t(91) = -4.79$, $p < .001$, $d = -0.50$. Furthermore, they displayed similar rates of attention problems, $t(91) = 1.15$, $p = .252$, $d = 0.12$, and sleep problems, $t(91) = .50$, $p = .622$, $d = 0.05$. Similar findings were found for the post-institutionalized and the post-foster children separately. At Time 2, the

⁴ The concurrent and longitudinal correlations between type of pre-adoption care, early deprivation and the parenting measures, and among the indices of behavioral adjustment can be requested from the corresponding author.

adoptees had fewer internalizing problems, $t(91) = -10.66, p < .001, d = -1.11$, fewer externalizing problems, $t(91) = -4.92, p < .001, d = -0.51$, and fewer sleep problems, $t(91) = -2.99, p = .004, d = -0.31$, but they did not differ from the norm group regarding attention problems, $t(91) = -1.26, p = .213, d = -0.21$. Results did not differ when separate analyses for the post-institutionalized and the post-foster children were performed, with one exception. Only the post-institutionalized children had fewer sleep problems than the norm group, $t(49) = -2.80, p = .007, d = -0.40$, whereas the post-foster children did not differ from the norm group, $t(41) = -1.33, p = .190, d = -0.21$. At Time 3, the adoptees had significantly more internalizing problems, $t(91) = 3.68, p < .001, d = 0.38$, but they showed similar rates of externalizing problems, $t(91) = .98, p = .331, d = 0.10$, and attention problems, $t(91) = 1.95, p = .054, d = 0.20$ as the norm group. Results did not differ for the post-institutionalized and the post-foster children separately.

Time X Pre-Adoption Experiences X Parenting Interactions

Using the Bonferonni-corrected significance level of .002, the repeated measures analyses revealed that there were no significant three-way interactions between time x type of pre-adoption care x parenting; nor between time x early deprivation x parenting in the prediction of responsiveness, internalizing problems, externalizing problems and attention problems (see Table 3). Moreover, the results indicated that the effect sizes of the interactions were negligible to small (partial eta squared ranging from .000 to .046). Furthermore, the moderation analysis for Time 3 sleep problems revealed that the two-way interactions between type of pre-adoption care and supportive presence, $B = 0.28, t(86) = 0.76, p = .448, \eta^2_p = .007$, or intrusiveness, $B = -0.26, t(86) = -0.75, p = .456, \eta^2_p = .006$, or parental efficacy, $B = 0.19, t(86) = 0.53, p = .596, \eta^2_p = .003$, were not significantly associated with Time 3 sleep problems, controlling for Time 1 and Time 2 sleep problems. In the same way, the interactions between early deprivation and parenting (supportive presence: $B = 0.10, t(86) =$

0.62, $p = .534$, $\eta^2_p = .005$, intrusiveness: $B = -0.08$, $t(86) = -0.41$, $p = .686$, $\eta^2_p = .002$, parental efficacy: $B = 0.11$, $t(86) = 0.45$, $p = .652$, $\eta^2_p = .002$) were not significantly associated with Time 3 sleep problems, controlling for Time 1 and Time 2 sleep problems. Effect sizes of the interactions between pre-adoption experiences and parenting in the prediction of sleep problems were negligible to small (partial eta squared ranging from .002 to .005). Finally, in the two sets of supplementary analyses also no significant interactions between pre-adoption experiences and parenting in the prediction of the outcome measures were found.

Discussion

The main aim of the current study was to investigate whether parenting buffered against the negative effects of adverse pre-adoption experiences on adopted children's behavioral adjustment. In specific, we examined whether parental sensitivity (supportive presence and intrusiveness) and parental efficacy moderated the association between pre-adoption experiences (type of pre-adoption care and early deprivation) and children's adaptive (responsiveness) and maladaptive behavioral adjustment (internalizing, externalizing, attention and sleep problems) over time. This was tested in a sample of 92 adopted Chinese girls who participated in the CAN study two months, six months and nine years after adoption, at the age of 10 years. Using a Bonferroni corrected significance level, results revealed that none of the interactions between pre-adoption experiences and parenting were significant. Moreover, even without Bonferroni correction almost none of the interaction effects reached significance, and the interaction effects all had small or negligible effect sizes. Thus, contrary to our expectations, we cannot conclude that parenting buffered the association between adverse pre-adoption experiences and the development of adaptive and maladaptive behavioral adjustment over time. This finding is not in line with the study of Kriebel and Wentzel (2011) who found a significant interaction between cumulative pre-adoption risks and warm, involved parenting in the prediction of adaptive behavioral adjustment. However,

contrary to their cross-sectional study, the current study included time as factor in the analyses to investigate change in behavioral adjustment over time. These tests were more conservative as longitudinal interaction effects are more difficult to reveal. Moreover, the generally low levels of behavioral problems at Times 1 and 2 and the average levels of behavioral problems at Time 3 indicate that the children in this study, on average, did not show large increases in behavioral problems (except in internalizing problems) over time. This may have reduced the likelihood to find evidence for significant interaction effects in the prediction of change in behavioral adjustment over time. In addition, the specific characteristics of the current sample may explain the divergent findings between the current study and the study of Kriebel and Wentzel (2011). More specifically, in the current sample only internationally adopted children from China were included whereas Kriebel and Wentzel included a combination of internationally adopted children from different countries and domestically adopted children. Because there exist between-country differences in the quality of pre-adoption care and in the extent of deprivation, our sample might have been more homogeneous with respect to pre-adoption deprivation than that of Kriebel and Wentzel. Moreover, it has been reported that the pre-adoption living conditions in China are less depriving than the pre-adoption conditions in many other countries (Johnson, 2004). In addition, Chinese children may have experienced less prenatal adversities than children adopted from other countries, because they were adopted for other reasons (birth-planning policies) than children adopted from other countries (e.g., maternal alcohol abuse in Eastern Europe; Miller, 2005). These unique characteristics of the current sample may have resulted in restriction of range in pre-adoption experiences, making it more difficult to find evidence for significant effects of pre-adoption experiences and, thus, to find evidence for the hypothesized buffering role of parenting in the association between pre-adoption experiences and behavioral adjustment. The correlational analyses indeed revealed nearly no significant associations between pre-adoption experiences and

behavioral adjustment, and there were also almost no significant correlations between parenting and behavioral adjustment. This lack of direct effects already suggested that it was unlikely to find evidence for the hypothesized interaction effects between pre-adoption experiences and parenting.

Besides, there might be other possible explanations why we did not find evidence for interactions between pre-adoption experiences and parenting. First, we focused on three single parenting variables (supportive presence and lack of intrusiveness as indicators of parental sensitivity, and parental efficacy) which were included in separate analyses. Although evidence on the associations between these parenting variables and behavioral adjustment exists, the effect sizes of these associations are generally small (Pinquart, 2017). It is not unlikely that a combination of multiple parenting variables (e.g., a combination of parental sensitivity with other parenting dimensions such as behavioral and psychological control) might have explained more variance in the outcome measures (Pinquart, 2017). A second possible explanation is that we did not take into account that the children could have differed in their susceptibility to the parenting effects depending on personal characteristics, such as temperament (e.g., Klein Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, 2006) or genetic constellation (e.g., Windhorst et al., 2015). As a consequence, possible buffering effects of parenting might have been masked because they were averaged across less and more susceptible children. Still another possible explanation is that variation in the parenting variables in our sample might have been too small to yield significant effects. Because adoptive parents - due to adoption procedures - often have a high SES and generally are highly motivated parents, it is argued that restriction of range in parenting quality might make it difficult to find any effects of adoptive parenting (e.g., Katzev, LeJeune, & Johnson, 2016). Finally, the relatively long time interval between the Time 2 and Time 3 assessments may also have made it more difficult to detect significant effects of pre-adoption

care, parenting, or of their interaction. Moreover, without doubt, several other factors that were not included in the current study - such as other environmental factors (e.g., recent stressful events; Tan, Camras, Deng, Zhang, & Lu, 2012) and child-level factors (e.g., ethnic or adoptive identity; Grotevant & McDermott, 2014) might have influenced the adopted children's behavioral adjustment. So for future studies it may be interesting to adopt a more comprehensive approach in examining possible correlates of adopted children's adjustment.

Nonetheless, despite the lack of significant interactions between pre-adoption experiences and parenting in the prediction of change in behavioral adjustment, the children who participated in the CAN study were generally well adjusted. Findings indicated that the children showed significantly fewer behavioral problems in many areas compared to the norm group of non-adopted children at Times 1 and 2, and that they did not differ from the norm - except for the somewhat elevated rates for internalizing problems - at Time 3. This is a remarkable finding given the suboptimal pre-adoption conditions and separations from caregivers that the children have experienced. Moreover, their adjustment was not influenced by the type of care (institutional care or foster care) that they received prior to adoption, nor by the extent of early deprivation to which they had been exposed. These findings concerning the favorable behavioral adjustment of the Chinese adopted children (especially at Times 1 and 2) contradict to some extent meta-analytic evidence showing that adopted children display somewhat higher levels of behavioral problems than non-adopted children (Juffer & Van IJzendoorn, 2005). This might be explained by the fact that in this meta-analysis almost no studies on Chinese adoptees were included. As noted above, Chinese adoptees may have experienced less prenatal and pre-adoption deprivation than adoptees from other countries, and these between-country differences in prenatal and pre-adoption experiences might explain why the findings of our study differed from the results of the meta-analysis (Juffer & Van IJzendoorn, 2005). In line with this explanation, previous studies on internationally adopted

Chinese children also showed that Chinese adoptees exhibited similar or better behavioral adjustment than a norm group of non-adopted children (e.g., Finet et al., 2018; Rojewski et al., 2000; Tan & Marfo, 2006).

Nonetheless, it is important to note that there was an exception to this pattern of results. Compared to the norm group of non-adopted children, the children in the CAN study displayed above-average levels of internalizing problems at age 10 (Time 3), which was not yet the case at the two previous time points (where they showed below-average levels of behavior problems). Although this finding contradicts previous studies with children adopted from China (but see Cohen & Farnia, 2011), this finding is in line with adoption studies on internationally adopted children from other countries showing that middle childhood and (early) adolescence is a particularly vulnerable period for the development of emotional problems in adopted children (Juffer & Van IJzendoorn, 2005). For future research it might be interesting to examine which factors may explain this increase in adopted children's level of emotional problems in early adolescence. One factor that may be involved are developmental changes in children's understanding of the meaning of adoption due to increased cognitive maturation as children grow older (Brodzinsky, 1987).

Limitations

Several limitations should be kept in mind when interpreting the results of our study. A first limitation concerns the possibility that our sample was affected by selection bias. Given that we did not have any information on families who did not want to participate in the study, we could not test whether these families differed on important characteristics from families who did participate in the study. Consequently, we cannot exclude the possibility that families whose children showed better adjustment were more willing to participate, which might explain the favorable behavioral adjustment of the children. In addition, selection bias may have led to restriction of range in behavioral adjustment of the children, making it more

difficult to detect significant effects of pre-adoption experiences and parenting. However, the current study shares this risk for selection bias with previous adoption studies, so it seems unlikely that this explains the divergence between the results of the current and previous studies. Second, it should be recognized that our study had a relatively small sample, which reduces the power to detect significant interaction effects. However, the fact that the effect sizes of the interactions were small or negligible suggests that it is unlikely that the non-significant results were due to power issues. Besides, another problem associated with the relatively small sample size is that we could not test our hypothesis using more sophisticated statistical techniques, such as multilevel analyses (Wang & Wang, 2012). Because multilevel analyses can handle time-varying predictors, an advantage of this technique would have been that the parenting scores at the three different time points could have been included, instead of using the longitudinal compound parenting scores. Despite this, we consider it a strength of our study that drop-out over the course of the longitudinal study was low and hence the initial sample size was not substantially reduced. At the third time point, still 94.6% of the families were participating, which makes it unlikely that our findings were compromised by attrition. A second limitation is that information on the children's pre-adoption experiences was reported by the parents. One problem with parent-report of pre-adoption experiences is that this information may be relatively unreliable because adoptive parents often receive only limited, sometimes incorrect background information about their child (Juffer et al., 2011). Unreliable information about children's pre-adoption experiences may obscure potential effects of pre-adoption experiences and consequently make it more difficult to detect potential (buffering) effects of adoptive parenting. Nevertheless, our study extends previous adoption studies in which no information about pre-adoption experiences at all was available, or in which only age at adoption was used as indicator of pre-adoption adversity. Another limitation is that the post-foster group consisted of both children who had exclusively

experienced pre-adoption foster care and children who had experienced a combination of mainly pre-adoption foster care and to some extent pre-adoption institutional care. These two groups were combined because only 16 children were in the exclusively foster care group, and because it is a typical phenomenon that children who are living in pre-adoption foster care have resided in institutional care before they are referred to foster care (Johnson, 2004). Besides that, it is important to mention that a large scale cross-sectional study on Chinese adopted children, in which the exclusively foster group and the combination group were treated as separate groups, also revealed no significant associations between type of pre-adoption care and behavioral adjustment (Finet et al., 2018). Next, it could be considered as a limitation of our study that we did not include a comparison group of non-adopted children who share comparable environments (e.g., classmates, siblings), but instead used a norm group of non-adopted children as comparison group. The non-adopted norm group is not necessarily the most appropriate comparison group, because norm scores do not take into account particular factors, like SES, on which adopted children differ from non-adopted children (e.g., Warren, 1992). At the same time, however, the meta-analysis on adopted children's behavioral adjustment (Juffer & Van IJzendoorn, 2005) revealed that there were no differences between studies in which a non-adopted norm group was used as comparison group and studies in which other non-adopted comparison groups with comparable environments (e.g., classmates, or non-adopted siblings) were used. So it seems unlikely that our conclusions would have differed substantially if we would have used a different comparison group of non-adopted children. Finally, although we consider it a strength that our sample was rather homogeneous with respect to country of origin (China), gender (only girls), and age at adoption (range 11-16 months) this limits the generalizability of our findings. Thus there is need for further research in which these research questions are examined in other groups of adopted children.

Conclusion

Results of the CAN study indicated that the adopted children were functioning well when compared to the norm group of non-adopted children, with the exception of the somewhat elevated levels of internalizing problems at the age of 10 years. Contrary to expectations, no evidence was found for a buffering effect of parental sensitivity and parental efficacy in the association between adverse pre-adoption experiences and change in behavioral adjustment over time. Moreover, the children's behavioral adjustment did not seem to be affected by adverse pre-adoption experiences, as children who were adopted from institutional care or children who had experienced relatively high levels of early deprivation were equally well adjusted as children who were adopted from foster care or children who had experienced lower levels of early deprivation. The good behavioral adjustment of the adopted children suggests that placement in an adoptive family supported their ability to thrive despite having experienced pre-adoption adversities.

Figure 1. Conceptual model of the interactions tested between pre-adoption experiences and parenting in the prediction of change in behavioral adjustment over time.

Table 1

Descriptives of model variables (after expectation maximization)

	Type of pre-adoption care					
	Post-institutionalized (<i>N</i> = 50)		Post-foster (<i>N</i> = 42)		Total sample (<i>N</i> = 92)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age at adoption	13.08	1.23	12.96	1.49	13.03	1.35
Age at study	122.16	5.20	121.05	6.23	121.65	5.69
Education caregiver 1	3.86	0.93	4.00	0.94	3.92	0.93
Education caregiver 2	4.06	0.84	4.14	0.93	4.10	0.88
Medical problems	1.27	1.25	0.61 ^b	0.80	0.97	1.11
Early deprivation	0.64	0.98	0.19 ^a	0.55	0.44	0.84
T1 Supportive presence	4.70	1.52	5.54 ^b	1.06	5.09	1.39
T2 Supportive presence	5.01	1.57	4.89	1.48	4.95	1.52
T3 Supportive presence	4.12	1.25	4.14	1.23	4.13	1.24
T1 Intrusiveness	3.02	1.41	2.66	1.25	2.86	1.34
T2 Intrusiveness	2.81	1.50	3.33	1.45	3.05	1.49
T3 Intrusiveness	4.18	1.47	4.77 ^a	1.23	4.45	1.39
T1 Parental efficacy	24.17	5.50	24.03	7.03	24.10	6.21
T2 Parental efficacy	27.24	5.85	24.37 ^a	6.00	25.93	6.06
T3 Parental efficacy	23.86	7.10	23.45	7.83	23.67	7.41
T1 Responsiveness	4.86	0.99	4.67	0.70	4.77	0.87
T2 Responsiveness	5.07	0.90	5.32	0.76	5.18	0.85
T3 Responsiveness	5.09	0.98	5.13	1.26	5.11	1.11
T1 Internalizing problems T score	45.30	8.90	45.88	7.94	45.57	8.43
T1 Externalizing problems T score	45.78	7.55	47.36	8.07	46.50	7.78
T1 Attention problems T score	54.38	5.44	53.67	4.18	54.05	4.89
T1 Sleep problems T score	54.18	6.43	55.31	6.78	54.70	6.58
T2 Internalizing problems T score	41.10	7.95	44.52	8.74	42.66	8.45
T2 Externalizing problems T score	45.08	7.74	46.60	10.18	45.77	8.91
T2 Attention problems T score	52.80	4.44	53.69	4.96	53.21	4.68
T2 Sleep problems T score	52.74	5.54	53.31	5.17	53.00	5.35
T3 Internalizing problems T score	54.06	11.55	54.33	8.75	54.18	10.31
T3 Externalizing problems T score	50.70	10.55	52.71	6.33	51.62	8.89
T3 Attention problems T score	56.06	6.09	56.38	6.14	56.21	6.08
T3 Sleep problems	1.30	1.58	1.50	1.84	1.39	1.70

Note. ^a significant difference between the post-institutionalized and the post-foster children at

$p < .05$. ^b significant difference between the post-institutionalized and the post-foster children

at $p < .01$.

Table 2

Correlations between pre-adoption experiences and postadoption parenting on the one hand and behavioral adjustment on the other hand (after expectation maximization)

	Time 1					Time 2					Time 3				
	Resp	Int	Ext	Att	Sleep	Resp	Int	Ext	Att	Sleep	Resp	Int	Ext	Att	Sleep
Type pre-ado care ^a	-.11	.04	.10	-.07	.12	.15	.20	.09	.10	.10	.02	.01	.11	.03	.06
Early deprivation	.04	-.07	-.21*	-.12	-.04	.06	-.06	-.13	-.19	.06	.03	-.09	.00	-.05	.05
Fact. Supportive pres.	.24*	.10	-.07	.03	.04	.33**	.07	-.08	-.16	.06	.17	.22*	.16	-.04	.13
T1 Supportive pres.	.26*	.09	.01	.06	.12	.31**	.08	-.11	-.03	.05	.04	.13	.04	-.12	.13
T2 Supportive pres.	.26*	.09	-.04	.06	-.07	.27*	.05	-.00	-.09	-.02	.14	.19	.08	-.11	.07
T3 Supportive pres.	.00	.05	-.14	-.06	.02	.16	.03	-.07	-.24*	.11	.18	.15	.24*	.13	.10
Fact. Intrusiveness	-.22*	-.21*	.02	.05	-.19	-.07	-.15	-.10	.04	-.22*	-.03	-.28**	-.19	-.02	-.25*
T1 Intrusiveness	-.21*	-.20	-.13	-.02	-.25*	-.15	-.20	-.12	-.10	-.25*	-.04	-.24*	-.14	.02	-.17
T2 Intrusiveness	-.20	-.09	.10	.05	-.04	.01	-.05	-.07	.09	-.11	-.17	-.21	-.14	.05	-.20
T3 Intrusiveness	-.07	-.20	.08	.11	-.14	-.00	-.08	-.02	.09	-.13	.19	-.16	-.13	-.15	-.18
Fact. Parental efficacy	-.08	-.18	-.15	-.02	-.11	.06	-.21*	-.19	-.10	-.05	-.22*	-.23*	-.19	-.26*	.03
T1 Parental efficacy	-.02	-.25*	-.14	.01	-.11	.05	-.26*	-.23*	-.19	-.12	-.16	-.03	.05	-.11	.06
T2 Parental efficacy	-.12	-.14	-.22*	-.03	-.11	-.01	-.25*	-.24*	-.06	-.08	-.30**	-.17	-.23*	-.29**	-.05
T3 Parental efficacy	-.03	.00	.03	-.04	-.02	.12	.07	.06	.05	.11	-.04	-.37***	-.28**	-.20	.06

Note. Type pre-ado care = Type of pre-adoption care. Fact. Supportive pres. = factor score supportive presence. Resp = responsiveness. Int = *T*

scores internalizing problems. Ext = *T* scores externalizing problems. Att = *T* scores attention problems. Sleep = sleep problems.

^a 0 = institutional care, 1 = foster care.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Interactions between time x type of pre-adoption care x parenting and between time x early deprivation x parenting in predicting change in adaptive and maladaptive behavioral adjustment

	Type of pre-adoption care				Early deprivation			
	<i>F</i>	<i>df</i>	<i>p</i>	partial η^2	<i>F</i>	<i>df</i>	<i>p</i>	partial η^2
Supportive presence								
Responsiveness	2.03	(1.79, 157.54)	.140	.023	0.04	(1.80, 157.92)	.953	.000
Intern. prob.	1.39	(1.58, 138.79)	.250	.016	0.20	(1.59, 140.31)	.767	.002
Extern. prob.	3.42	(1.64, 144.18)	.044	.037	0.01	(1.65, 145.40)	.985	.000
Attention prob.	2.23	(1.61, 141.29)	.122	.025	0.43	(1.61, 141.92)	.611	.005
Intrusiveness								
Responsiveness	0.20	(1.77, 156.03)	.079	.002	1.50	(1.80, 158.69)	.227	.017
Intern. prob.	1.13	(1.58, 139.35)	.316	.013	0.29	(1.59, 140.21)	.698	.003
Extern. prob.	0.44	(1.61, 142.06)	.604	.005	0.07	(1.62, 142.56)	.901	.001
Attention prob.	0.05	(1.61, 141.74)	.924	.001	0.41	(1.63, 143.42)	.623	.005
Parental efficacy								
Responsiveness	0.18	(1.78, 156.16)	.807	.002	0.16	(1.80, 158.43)	.827	.002
Intern. prob.	4.27	(1.60, 140.94)	.023	.046	3.69	(1.60, 140.35)	.037	.040
Extern. prob.	3.28	(1.64, 144.33)	.050	.036	0.73	(1.62, 142.68)	.458	.008
Attention prob.	2.82	(1.64, 144.60)	.073	.031	0.16	(1.63, 143.68)	.807	.002

Note. Intern. prob. = T scores internalizing problems. Extern. prob. = T scores externalizing problems. Attention prob. = T scores attention problems. Degrees of freedom were adjusted using the Greenhouse-Geisser correction. *p*-values were compared with the Bonferroni-corrected significance level of .002.

References

- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA Preschool Forms and Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth & Families.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Askeland, K. G., Hysing, M., La Greca, A. M., Aarø, L. E., Tell, G. S., & Sivertsen, B. (2017). Mental health in internationally adopted adolescents: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 56(3), 203–213. <https://doi.org/10.1016/j.jaac.2016.12.009>
- Barroso, R., Barbosa-Ducharme, M., Coelho, V., Costa, I.-S., & Silva, A. (2017). Psychological adjustment in intercountry and domestic adopted adolescents: A systematic review. *Child and Adolescent Social Work Journal*, 34(5), 399–418. <https://doi.org/10.1007/s10560-016-0485-x>
- Bell, B. G., & Belsky, J. (2008). Parents, parenting, and children's sleep problems: Exploring reciprocal effects. *British Journal of Developmental Psychology*, 26(4), 579–593. <https://doi.org/10.1348/026151008x285651>
- Belsky, J., Fearon, R. M. P., & Bell, B. G. (2007). Parenting, attention and externalizing problems: testing mediation longitudinally, repeatedly and reciprocally. *Journal of Child Psychology and Psychiatry*, 48(12), 1233–1242. <https://doi.org/10.1111/j.1469-7610.2007.01807.x>
- Biringen, Z., Robinson, J. L., & Emde, R. N. (2000). Appendix B: The Emotional Availability

- Scales (3rd ed.; an abridged Infancy/Early Childhood Version). *Attachment & Human Development*, 2(2), 256–270. <https://doi.org/10.1080/14616730050085626>
- Bornstein, M. H., Hendricks, C., Haynes, O. M., & Painter, K. M. (2007). Maternal sensitivity and child responsiveness: Associations with social context, maternal characteristics, and child characteristics in a multivariate analysis. *Infancy*, 12(2), 189–223. <https://doi.org/10.1080/15250000701407525>
- Brodzinsky, D. M. (1987). Adjustment to adoption: A psychosocial perspective. *Clinical Psychology Review*, 7(1), 25–47. [https://doi.org/10.1016/0272-7358\(87\)90003-1](https://doi.org/10.1016/0272-7358(87)90003-1)
- Castle, J., Beckett, C., Rutter, M., & Sonuga-Barke, E. J. S. (2008). VIII. Postadoption environmental features. *Monographs of the Society for Research in Child Development*, 75(1), 167–186. <https://doi.org/10.1111/j.1540-5834.2010.00555.x>
- Cohen, N. J., & Farnia, F. (2011). Social-emotional adjustment and attachment in children adopted from China: Processes and predictors of change. *International Journal of Behavioral Development*, 35(1), 67–77. <https://doi.org/10.1177/0165025410371602>
- De Wolff, M. S., & Van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68(4), 571–591. <https://doi.org/10.1111/j.1467-8624.1997.tb04218.x>
- del Pozo de Bolger, A., Dunstan, D., & Kaltner, M. (2016). A conceptual model of psychosocial adjustment of foster care adoptees based on a scoping review of contributing factors. *Clinical Psychologist*, 22(1), 1–13. <https://doi.org/10.1111/cp.12090>
- Egeland, B., Erickson, M. F., Clemenahagen-Moon, J., Hiester, M. K., & Korfmacher, J. (1990). *24 months tools coding manual. Project STEEP-revised 1990. From mother-child project scales-1978*. Unpublished manuscript, University of Minnesota, Minneapolis.
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). VI. The relationship between quality of

attachment and behavior problems in preschool in a high-risk sample. *Monographs of the Society for Research in Child Development*, 50(1/2), 147–166.

<https://doi.org/10.2307/3333831>

Finet, C., Vermeer, H. J., Juffer, F., & Bosmans, G. (2018). Behavioral adjustment of Chinese adoptees: The role of pre-adoption experiences. *Children and Youth Services Review*, 86, 226–235. <https://doi.org/10.1016/j.childyouth.2018.01.029>

Garvin, M. C., Tarullo, A. R., Van Ryzin, M., & Gunnar, M. R. (2012). Postadoption parenting and socioemotional development in postinstitutionalized children. *Development and Psychopathology*, 24(1), 35–48. <https://doi.org/doi:10.1017/S0954579411000642>

Gleitman, I., & Savaya, R. (2011). Adjustment of adolescent adoptees: The role of age of adoption and exposure to pre-adoption stressors. *Children and Youth Services Review*, 33(5), 758–766. <https://doi.org/10.1016/j.childyouth.2010.11.020>

Groza, V., & Ryan, S. D. (2002). Pre-adoption stress and its association with child behavior in domestic special needs and international adoptions. *Psychoneuroendocrinology*, 27(1), 181–197. [https://doi.org/10.1016/S0306-4530\(01\)00044-0](https://doi.org/10.1016/S0306-4530(01)00044-0)

Gunnar, M. R., & van Dulmen, M. H. M. (2007). Behavior problems in postinstitutionalized internationally adopted children. *Development and Psychopathology*, 19(1), 129–148. <https://doi.org/10.1017/S0954579407070071>

Grotevant, H. D., & McDermott, J. M. (2014). Adoption: Biological and social processes linked to adaptation. *Annual Review of Psychology*, 65(1), 235–265. <https://doi.org/10.1146/annurev-psych-010213-115020>

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.

Ji, J., Brooks, D., Barth, R. P., & Kim, H. (2010). Beyond preadoptive risk: The impact of

- adoptive family environment on adopted youth's psychosocial adjustment. *American Journal of Orthopsychiatry*, 80(3), 432–442. <https://doi.org/10.1111/j.1939-0025.2010.01046.x>
- Johnson, K. A. (2004). *Wanting a daughter, needing a son: Abandonment, adoption and orphanage care in China*. St. Paul, MN: Yeong and Yeong Book Company.
- Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical Psychology Review*, 25(3), 341–363. <https://doi.org/10.1016/j.cpr.2004.12.004>
- Juffer, F., Palacios, J., Le Mare, L., Sonuga-Barke, E. J. S., Tieman, W., Bakermans-Kranenburg, M. J., ... Verhulst, F. C. (2011). II. Development of adopted children with histories of early adversity. *Monographs of the Society for Research in Child Development*, 76(4), 31–61. <https://doi.org/10.1111/j.1540-5834.2011.00627.x>
- Juffer, F., & Van IJzendoorn, M. H. (2005). Behavior problems and mental health referrals of international adoptees: A meta-analysis. *JAMA*, 293(20), 2501–2515. <https://doi.org/10.1001/jama.293.20.2501>
- Julian, M. M. (2013). Age at adoption from institutional care as a window into the lasting effects of early experiences. *Clinical Child and Family Psychology Review*, 16(2), 101–145. <https://doi.org/10.1007/s10567-013-0130-6>
- Katzenstein, J. M., LeJeune, B. C., & Johnson, K. E. (2016). The role of parenting and family factors in the developmental catch-up for children adopted internationally. *Adoption Quarterly*, 19(3), 224–236. <https://doi.org/10.1080/10926755.2016.1201710>
- Klein Velderman, M., Bakermans-Kranenburg, M. J., Juffer, F., & Van IJzendoorn, M. H. (2006). Effects of attachment-based interventions on maternal sensitivity and infant attachment: Differential susceptibility of highly reactive infants. *Journal of Family Psychology*, 20(2), 266–274. <https://doi.org/10.1037/0893-3200.20.2.266>

- Koot, H. M., Van Den Oord, E. J., Verhulst, F. C., & Boomsma, D. I. (1997). Behavioral and emotional problems in young preschoolers: Cross-cultural testing of the validity of the Child Behavior Checklist 2/3. *Journal of Abnormal Child Psychology*, 25(3), 183–196. <https://doi.org/10.1023/A:1025791814893>
- Kriebel, D. K., & Wentzel, K. (2011). Parenting as a moderator of cumulative risk for behavioral competence in adopted children. *Adoption Quarterly*, 14(1), 37–60. <https://doi.org/10.1080/10926755.2011.557945>
- Kumsta, R., Kreppner, J., Kennedy, M., Knights, N., Rutter, M., & Sonuga-Barke, E. J. S. (2015). Psychological consequences of early global deprivation an overview of findings from the English & Romanian Adoptees Study. *European Psychologist*, 20(2), 138–151. <https://doi.org/10.1027/1016-9040/a000227>
- Le Mare, L., & Audet, K. (2014). Behavior problems in postinstitutionalized Romanian adoptees: Explanatory parameters in the adoptive home. *Merrill-Palmer Quarterly*, 60(3), 245–273. <https://doi.org/10.1353/mpq.2014.0017>
- MacLean, K. (2003). The impact of institutionalization on child development. *Development and Psychopathology*, 15(4), 853–884. <https://doi.org/10.1017/S0954579403000415>
- Masten, A. S. (2001). Ordinary Magic: Resilience processes in development. *American Psychologist*, 56(3), 227–238. <https://doi.org/10.1037//0003-066X.56.3.227>
- Merz, E. C., & McCall, R. B. (2010). Behavior problems in children adopted from psychosocially depriving institutions. *Journal of Abnormal Child Psychology*, 38(4), 459–470. <https://doi.org/10.1007/s10802-009-9383-4>
- Miller, L. C. (2005). *The handbook of international adoption medicine: A guide for physicians, parents, and providers*. Oxford: Oxford University Press.
- Palacios, J., & Brodzinsky, D. M. (2010). Adoption research: Trends, topics, outcomes. *International Journal of Behavioral Development*, 34(3), 270–284.

<https://doi.org/10.1177/0165025410362837>

- Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology*, 53(5), 873–932. <https://doi.org/10.1037/dev0000295>
- Rojewski, J. W., Shapiro, M. S., & Shapiro, M. (2000). Parental assessment of behavior in Chinese adoptees during early childhood. *Child Psychiatry and Human Development*, 31(1), 79–96. <https://doi.org/10.1023/A:1001978122206>
- Rutter, M., Kreppner, J. M., & O'Connor, T. G. (2001). Specificity and heterogeneity in children's responses to profound institutional privation. *The British Journal of Psychiatry*, 179(2), 97–103. <https://doi.org/10.1192/bjp.179.2.97>
- Sroufe, L. A., Coffino, B., & Carlson, E. A. (2010). Conceptualizing the role of early experience: Lessons from the Minnesota longitudinal study. *Developmental Review*, 30(1), 36–51. <https://doi.org/10.1016/j.dr.2009.12.002>
- Stams, G. J. J. M., Juffer, F., & Van IJzendoorn, M. H. (2002). Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: The case of adopted children and their biologically unrelated parents. *Developmental Psychology*, 38(5), 806–821. <https://doi.org/10.1037/0012-1649.38.5.806>
- Tan, T. X. (2010). Preschool-age adopted Chinese girls' behaviors that were most concerning to their mothers. *Adoption Quarterly*, 13(1), 34–49. <https://doi.org/10.1080/10926751003659941>
- Tan, T. X. (2011). Two-year follow-up of girls adopted from China: Continuity and change in behavioural adjustment. *Child and Adolescent Mental Health*, 16(1), 14–21. <https://doi.org/10.1111/j.1475-3588.2010.00560.x>
- Tan, T. X., Camras, L. A., Deng, H., Zhang, M., & Lu, Z. (2012). Family stress, parenting styles, and behavioral adjustment in preschool-age adopted Chinese girls. *Early*

Childhood Research Quarterly, 27(1), 128–136.

<https://doi.org/10.1016/j.ecresq.2011.04.002>

Tan, T. X., & Marfo, K. (2006). Parental ratings of behavioral adjustment in two samples of adopted Chinese girls: Age-related versus socio-emotional correlates and predictors.

Journal of Applied Developmental Psychology, 27(1), 14–30.

<https://doi.org/10.1016/j.appdev.2005.12.004>

Tieman, W., van der Ende, J., & Verhulst, F. C. (2005). Psychiatric disorders in young adult intercountry adoptees: An epidemiological study. *American Journal of Psychiatry*, 162(3), 592–598. <https://doi.org/https://doi.org/10.1176/appi.ajp.162.3.592>

Van den Dries, L., Juffer, F., Van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2010). Infants' physical and cognitive development after international adoption from foster care or institutions in China. *Journal of Developmental and Behavioral Pediatrics*, 31(2), 144–150. <https://doi.org/10.1097/DBP.0b013e3181cdaa3a>

Van den Dries, L., Juffer, F., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Alink, L. R. A. (2012). Infants' responsiveness, attachment, and indiscriminate friendliness after international adoption from institutions or foster care in China: Application of Emotional Availability Scales to adoptive families. *Development and Psychopathology*, 24(1), 49–64. <https://doi.org/10.1017/S0954579411000654>

Van der Voort, A., Linting, M., Juffer, F., Bakermans-kranenburg, M. J., Schoenmaker, C., & Van IJzendoorn, M. H. (2014). The development of adolescents' internalizing behavior: Longitudinal effects of maternal sensitivity and child inhibition. *Journal of Youth and Adolescence*, 43(4), 528–540. <https://doi.org/10.1007/s10964-013-9976-7>

Van der Voort, A., Linting, M., Juffer, F., Bakermans-kranenburg, M. J., & Van IJzendoorn, M. H. (2013). Delinquent and aggressive behaviors in early-adopted adolescents: Longitudinal predictions from child temperament and maternal sensitivity. *Children and*

- Youth Services Review*, 35(3), 439–446. <https://doi.org/10.1016/j.childyouth.2012.12.008>
- Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Juffer, F. (1999). The Parental Efficacy Questionnaire. *Unpublished Manuscript, Leiden University, Center for Child and Family Studies.*
- Van IJzendoorn, M. H., Palacios, J., Sonuga-barke, E. J. S., Gunnar, M. R., Vorria, P., McCall, R. B., ... Juffer, F. (2011). I. Children in institutional care: Delayed development and resilience. *Monographs of the Society for Research in Child Development*, 76(4), 8–30. <https://doi.org/10.1111/j.1540-5834.2011.00626.x>
- Verhulst, F. C., Van Der Ende, J., & Koot, H. M. (1996). *Handleiding voor de CBCL 4-18 [Manual for the CBCL 4-18]*. Rotterdam, the Netherlands: Erasmus University and Department of Child and Adolescent Psychiatry, Sophia Children's Hospital.
- Wang, J., & Wang, X. (2012). Sample size for structural equation modeling. In *Structural Equation Modeling: Applications Using Mplus* (pp. 391–427). Chichester, UK: John Wiley & Sons. <https://doi.org/10.1002/9781118356258.ch7>
- Warren, S. B. (1992). Lower treshhold for referral for psychiatric treatment for adopted adolescents. *Journal of American Academy of Child and Adolescent Psychiatry*, 31(3), 512–527. <https://doi.org/10.1097/00004583-199205000-00019>
- Welsh, J. A., & Viana, A. G. (2012). Developmental outcomes of internationally adopted children. *Adoption Quarterly*, 15(4), 241–264. <https://doi.org/10.1080/10926755.2012.731029>
- Windhorst, D. A., Mileva-Seitz, V. R., Linting, M., Hofman, A., Jaddoe, V. W. V., Verhulst, F. C., ... Bakermans-Kranenburg, M. J. (2015). Differential susceptibility in a developmental perspective: DRD4 and maternal sensitivity predicting externalizing behavior. *Developmental Psychobiology*, 57(1), 35–49. <https://doi.org/10.1002/dev.21257>