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The development of children in foster care

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OVER THREE DECADES
OF LONGITUDINAL RESEARCH
ON THE DEVELOPMENT OF
FOSTER CHILDREN:
A META-ANALYSIS

Published

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ABSTRACT

Large numbers of children over the world experience foster care each year. How best to satisfy their developmental needs and how to avoid placement breakdowns and negative consequences of foster care are important challenges. In this study, a series of four meta-analyses is performed to examine the longitudinal developmental outcomes of children in foster care. The focus is on adaptive functioning and behavioral outcomes. A literature search identified 11 studies suitable for inclusion in the meta-analysis on adaptive functioning ($N = 1,550$), 24 studies for the meta-analysis on internalizing problems ($N = 1,984$), 21 studies for the meta-analysis on externalizing problems ($N = 1,729$) and 25 studies for the meta-analysis on total behavior problems ($N = 2,523$). No overall improvement or deterioration was found for adaptive functioning. However, studies with a timespan longer than one year and studies with larger sample sizes showed development toward more negative adaptive functioning than studies with shorter timespans or smaller samples. No overall increases or decreases in internalizing, externalizing or total behavior problems were found. Based on these results, it is concluded that foster care does not negatively or positively affect foster children's developmental trajectories. Given that many children enter foster care with problems, this is a worrying situation. Further longitudinal research to find the factors necessary for improving foster children's developmental chances is recommended. Furthermore, routine screening and targeted foster-care interventions are advised to ensure that all children who cannot be raised by their own parents, receive the support conducive to their positive development.

INTRODUCTION

If, for any reason, children cannot be raised by their own parents, a child can be placed in a foster family. Foster care has been suggested as a better alternative than residential and group settings, because it most resembles the natural home environment of the child (Roy, Rutter, & Pickles, 2000; Webster, Barth, & Needell, 1999; Wilson & Conroy, 1999). In contrast with institutional or group care, which is characterized by a great discontinuity of caregivers, foster care contains the stability and continuity of care through which foster children can build a close relationship with their foster parents (Tizard & Hodges, 1978).

Though foster care may be considered the preferred out-of-home placement option, much remains unclear about the development of children in foster care (Lawrence, Carlson, & Egeland, 2006; McWey, Cui, & Pazdera, 2010; Simmel, Barth, & Brooks, 2007). Several studies on foster children point at severe psychological problems at the start of placement in foster families (Clausen, Landsverk, Ganger, Chadwick, & Litrownik, 1998; James, 2004; Simms, Dubowitz, & Szilagyi, 2000; Zorc et al., 2013; Hochstadt, Jaudes, Zimo, & Schachter, 1987) and at high rates of problems emerging in foster care (Berkoff, Leslie, & Stahmer, 2006; Lloyd & Barth, 2011; Minnis, Everett, Pelosi, Dunn, & Knapp, 2006), but these studies provide a snapshot and do not give insight in the developmental trajectories of foster children. To understand such trajectories, longitudinal studies are needed (Heath, Colton, & Aldgate, 1994; McWey et al., 2010; Simmel et al., 2007; Taussig, 2002). Since the 70s and 80s of the last century, researchers conducted longitudinal studies to analyze the development of children in foster care (Fanshel & Shinn, 1978; Frank, 1980). Numerous longitudinal studies have been performed across various countries, but results have not been conclusive. Some studies suggest that foster care placements may improve children's functioning (Ahmad et al., 2005; Barber & Delfabbro, 2005; Fernandez, 2009; White, 1997), but other studies reported no improvement (Leathers, Spielfogel, McMeel, & Atkins, 2011; Perkins, 2008) or even deterioration (Fanshel & Shinn, 1978; Frank, 1980; Lawrence et al., 2006). Because large numbers of children over the world experience foster care each year (Stahmer et al., 2009), it is important for these and future foster children to obtain a clearer picture of the impact of foster care on child development.

The challenge of inconclusive findings on the development of foster children may be resolved in a meta-analysis. Using meta-analysis an overall effect size of studies as well as the variance of effect sizes across studies can be analyzed (Borenstein et al., 2009). In the current study, we performed a series of four meta-analyses to examine the longitudinal developmental outcomes of children in foster care. The focus is on adaptive functioning and behavioral outcomes (internalizing, externalizing and total behavior problems), which have often been used as outcome measures in longitudinal studies on foster care (Barber & Delfabbro, 2005; Fanshel & Shinn, 1978; Minty, 1999; Stahmer et al., 2009). We expect to find a positive development of foster children because foster care, which is characterized by a home-like setting and continuity of care that cannot be offered by other kinds of out-of-home-placements, is considered as second best in absolute sense when children cannot stay with their parents (Burns et al., 2004). Methodological differences in design, as reflected in





the moderators, are expected to play a role in the varying outcomes of individual studies. Studies on the development of foster children varied in study length (Frank, 1980; White, 1997), involved small samples and reported considerable attrition across waves (Farmer, Mustillo, Burns, & Holden, 2008) resulting in limited generalizability (Farmer et al., 2008; Maluccio & Fein, 1985). These methodological differences might be reflected in publication type (e.g., peer-reviewed journals are less likely to publish studies with small sample sizes and insignificant results compared to book chapters, reports, and dissertations). Furthermore, the age of foster children is known to be related to behavior problems (McWey et al., 2010). Moderator analyses will therefore be performed on five variables: study length, sample size, attrition, publication type, and mean age.

METHOD

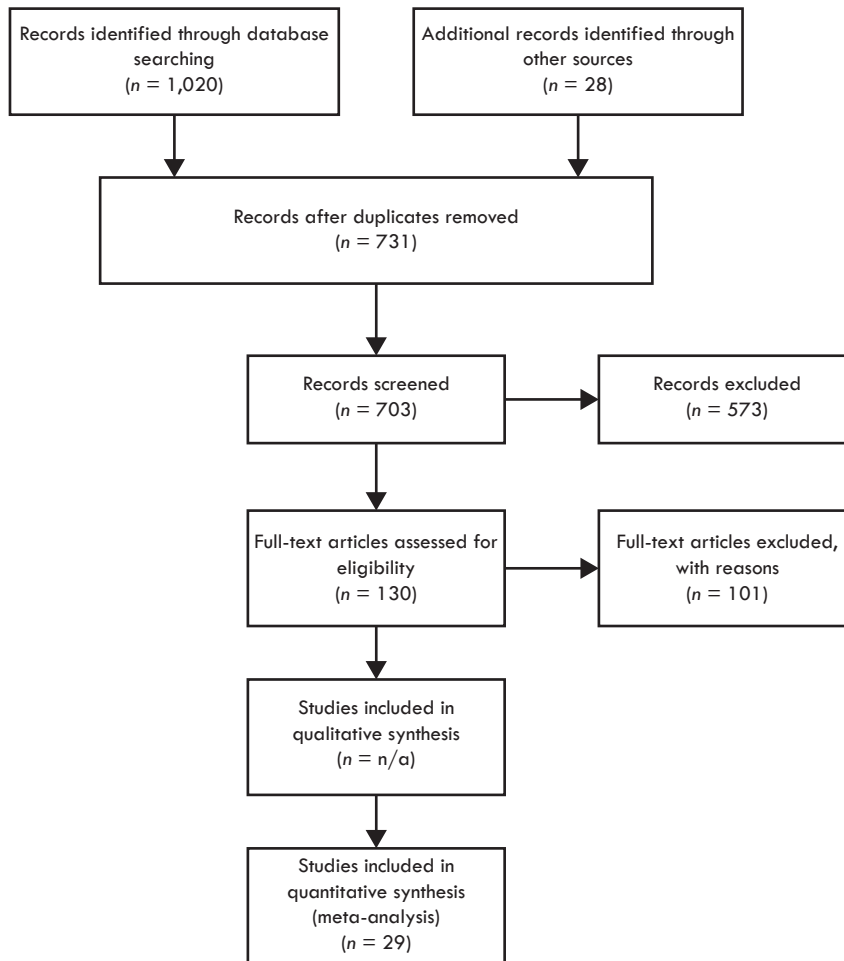
Search Strategy

Four online databases were used to systematically search for longitudinal studies on the development of foster children published until 2013. ERIC, MEDLINE, PsycINFO and ProQuest Dissertations & Theses were searched with the search terms *foster children* or *foster care* combined with *longitudinal*, *repeated measures*, or *pretest posttest*. Second, the reference lists of the retrieved articles, dissertations, books and reports were scanned for relevant studies. Third, the Doctoral Dissertation by Van Oijen (2010) and reviews by Minty (1999) and Maluccio and Fein (1985) were scanned for further potential articles for inclusion in the meta-analysis. This search resulted in 130 studies which included articles, reports, dissertations and book chapters. A flow diagram of our search is presented in Figure 3.1.

Inclusion and Exclusion Criteria

We searched for studies on the behavioral and adaptive development of children in regular foster care. Because multiple studies include several outcomes (Stahmer et al., 2009; Van Oijen, 2010) and respondents may only be included in a meta-analysis once, separate meta-analyses will be conducted for adaptive functioning, internalizing problems, externalizing problems, and total problem behavior. Adaptive functioning is generally defined as meeting age and culturally appropriate standards of personal independence and social functioning (Horwitz, Balestracci, & Simms, 2001). Internalizing behavioral problems are considered problems that primarily affect a person him or herself and are characterized by emotional symptoms such as anxiety, depression, withdrawal and somatic complaints. Externalizing behavior problems primarily affect a person's social environment and refer to delinquent or aggressive behaviors (Achenbach, 1991; Horwitz et al., 2001).

Meta-analysis on longitudinal studies



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Figure 3.1. Flow diagram of all stages of the literature search.

Studies were excluded if they did not provide longitudinal data on these outcome measures. Only studies that reported data allowing to compute an effect size between two moments of measurement were included in the meta-analysis. This means that a study had to provide codeable data for the same group of children on at least two points in time, though between the two time points there were sometimes small variations in sample size because of attrition or non-response. The length of time that elapsed between these two points in time was not used as an exclusion criterion. For longitudinal quasi-experimental studies with an intervention and control group, the control group was included in the meta-analysis. We chose to include control groups of quasi-experimental studies because they provide longitudinal data comparable to those of other children in foster care; intervention groups were excluded because the intervention may have changed the children's behavior in a manner that is atypical for foster children receiving 'care-as-usual'. For the same reason, studies on therapeutic foster care or foster care interventions were excluded. Foster children in all age groups, from infancy to adolescence, were included. Excluded were studies on foster children older than 18 years at



the start of the study. Furthermore, some studies included foster children as well as other kinds of out-of-home placed children (e.g., adoptees, institutionalized children). These studies were included only when they reported on the development of foster children separately, and for this information only. Some studies, clearly longitudinal, could not be included because statistics relevant for our meta-analysis were not reported (Aarons et al., 2010; Vanderfaellie, Van Holen, Vanschoonlandt, Robberechts, & Stroobants, 2013) or foster children and children in other kinds of out-of-home placements or reunified children were combined (Horwitz et al., 2001; Raslaviciene & Zaborskis, 2002; Slinning, 2004; Stahmer et al., 2009). Authors of the articles reporting on these studies were contacted to request additional information. This resulted in the inclusion of four (Bulat, 2010; Minnis et al., 2006; Stahmer et al., 2009; Vanderfaellie et al., 2013) additional studies. The language in which studies were written was not used as an exclusion criterion, thus the current meta-analysis is not limited to English language publications. Four studies written in Dutch were included in the analyses (Bastiaensen, 2001; Damen & Pijnenburg, 2005; Damen & Pijnenburg, 2005; Van Oijen, 2010). One article in German was excluded because the age range of the participants exceeded 18 years at the start of the study (Linderkamp, Schramm, & Michau, 2009). Furthermore, one Lithuanian (Raslaviciene & Zaborskis, 2002) and one French (Dumaret & Duyme, 1982) article were excluded because they both focused on other kinds of out-of-home placements. The 11 studies summarized in Table 3.1 met the inclusion criteria for the meta-analysis on adaptive functioning of foster children and were used in the meta-analysis. Table 3.2 gives an overview of the 29 studies that met the inclusion criteria for the meta-analyses on behavioral functioning (internalizing, externalizing or total behavioral problems) of foster children.

Coding Decisions and Extraction of Effect Sizes

We always used two time-points based on the same sample of children to compute Hedges g . Hedges g is an effect size measure like Cohen's d but is computed slightly different, incorporating an adjustment which removes the bias of Cohen's d . Hedges g is defined as the difference between the two means, divided by the pooled standard deviation (Borenstein et al., 2009). If an article provided more than two time points, we choose to code the two time points that were farthest apart (the first and the last moment of measurement). If articles included multiple independent samples (e.g., foster children from different foster care institutions; boys and girls) these were entered in the meta-analyses separately. If articles included multiple dependent samples (e.g., multiple informants for the same study population) the findings were averaged in the meta-analyses (Borenstein et al., 2009), also when study length differed for type of informant (Bogart, 1988; Rushton, Treseder, & Quinton, 1995). Furthermore, several studies distinguished several aspects of the general domain of adaptive or behavioral functioning, but did not give an overall score (Fanshel & Shinn, 1978; Perkins, 2008). In these studies, the statistics for different aspects of adaptive or behavioral functioning were combined into one general estimator of that domain (Goodman, 1997). Two studies (McWey et al., 2010; Stahmer et al., 2009) used the same data for foster children. Because samples included in meta-analysis must be independent, both articles could not be included in the same meta-analysis. One of these studies is included in the meta-analysis on adaptive functioning and total behavioral problems, but did not report internalizing and externalizing

behavior problems separately (Stahmer et al., 2009). Therefore, the other study is included in the meta-analyses with respect to each of these (McWey et al., 2010). If the same author(s) published more than one article on the same study sample, we chose to include the study with the larger sample size.

Information on the test-retest correlations is often missing from articles presenting longitudinal data (Morris & DeShon, 2002). In many meta-analyses that analyze longitudinal data the problem of missing correlations is resolved by treating the means as independent (Jones, Riley, Williamson, & Whitehead, 2009). This approach is likely to result in a biased meta-analysis (Mavridis & Salanti, 2012; Morris & DeShon, 2002; Riley, 2009), and thus we choose to include test-retest correlations in our calculation of effect sizes to account for the dependent nature of the data. To solve the problem of unreported test-retest correlations, the use of an aggregate test-retest correlation coefficient, wherein available correlation coefficients are aggregated, is advised as an option to account for the dependent nature of the data in a meta-analysis based on longitudinal data (Morris & DeShon, 2002). We coded test-retest correlation coefficients, or obtained test-retest correlation coefficients from paired sample t-tests (Cooper, Hedges, & Valentine, 2009).

Two of the authors independently coded the means and standard deviations for both time points as well as the sample size and the moderators. The coded moderators were study length, sample size, publication type, attrition, and mean age. Differences between authors were resolved by discussion. Prior to discussion, the authors coded identically 90% of the time.





Table 3.1. *Studies included in the meta-analysis on adaptive functioning.*

Study (Year of Publication)	Country	N (Attrition)	Study Interval
Ahmad et al. (2005) ¹	Iraq	89 (5.3%)	24 months
Barber & Delfabbro (2005) ¹	Australia	109 (53.62%)	24 months
Bogart (1988) ^{2,3}	USA	20 (n/a)	3-6 months
Fanshel & Shinn (1978) ¹	USA	205 (63.39%)	5 years
Fernandez (2008) ¹	Australia	39 (9.30%)	24 months
Jacobsen et al. (2013) ¹	Norway	56 (6.67%)	12 months
Matthews (1997) ²	USA	48 (52.45%)	6 months
McAuley & Trew (2000) ¹	Northern Ireland	12-15 (16.67%-25.00%)	8 months
Perkins (2008) ²	Canada	201 (45.23%)	12 months
Stahmer et al. (2009) ¹	USA	758 (n/a)	21.3 months
White (1997) ^{2,4}	USA	10 (0.00%)	5 weeks

FP = foster parent, prof. = professional, T = teacher, FC = foster child.

¹Studies published in peer-reviewed journals. ²Studies published in non-peer-reviewed journals. ³Study length differs for type of informant (foster parents: 3 months, social workers: 6 months). ⁴Experimental design.

Table 3.2. *Studies included in the meta-analyses on internalizing (Int), externalizing (Ext) and/or total behavior problems (Total).*

Study (Year of Publication)	Country	N (Attrition)	Study Interval
Ahmad et al. (2005) ¹	Iraq	89 (5.3%)	24 months
Barber & Delfabbro (2005) ¹	Australia	109 (53.62%)	24 months
Bastiaansen (2001) ²	NL	53 (49.52%)	24 months
Bogart (1988) ^{2,3}	USA	20 (n/a)	3-6 months
Bulat (2010) ¹	Croatia	60 (46.43%)	5 years
Damen & Pijnenburg (2005) ²	NL	51 (n/a)	6 months
Damen & Veerman (2005) ²	NL	41 (36.92%)	6 months

Meta-analysis on longitudinal studies

Age Range at T1 (Mean)	% Female	Measure (Informant)
6-18 years (11.1)	50.00%	CBCL Total Competence (FP)
4-17 years (10.8)	48.51%	Social adjustment (prof.)
3-16 years (9.8)	55.00%	VABS (FP), CBCL Total Competence (FP & prof.)
0-12 years (n/a)	49.36%	CBC (prof.)
4-15 years (8.8)	50.85%	Adaptive Functioning (T)
22-25 months (23.3 months)	37.50%	ITSEA Competence Domain (FP)
0.7-17.9 years (n/a)	47.5%	VABS (FP)
4-11 years (8.42)	36.84%	CBCL Total Competence (FP)
10-17 years (12.86)	50.00%	Pro Social Behavior (FC)
0-15 years (4.84)	52.83%	VABS (FP)
7-9 years (8.46)	60.00%	CBCL Adaptive Behavior (FP)

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Age Range at T1 (Mean)	% Female	Measure (Informant)	Meta-Analyses
6-18 years (11.1)	50.00%	CBCL (FP)	Int, Ext, Total
4-17 years (10.8)	48.51%	CBC (prof.)	Int, Ext, Total
8-13 years (10.4)	47.10%	CBCL (FP)	Int, Ext, Total
3-16 years (9.8)	55.00%	CBCL (FP)	Total
10-17 years (13.29)	50.00%	CBCL Anxiety & Depression (FP), YSR, CDI (FC)	Int
0-18 years (10)	50.53%	CBCL (FP)	Int, Ext, Total
5-13 years (9.5)	54.55%	CBCL (FP)	Int, Ext, Total

Table 3.2. (continued)

Study (Year of Publication)	Country	N (Attrition)	Study Interval
Fanshel & Shinn (1978) ²	USA	205 (63.39%)	5 years
Fernandez (2008) ¹	Australia	51 (13.56%)	2 years
Frank (1980) ^{1,4}	USA	50 (0.00%)	5 years
Gonzalez (2000) ²	USA	15 (n/a)	12-24 months
Haight et al. (2010) ¹	USA	7 (30.00%)	7 months
Jacobsen et al. (2013) ¹	Norway	56 (6.67%)	12 months
Lawrence et al. (2006) ^{1,5}	USA	15 (n/a)	pre- & postplacement
Leathers et al. (2011) ¹	USA	6 (53.85%)	12 months
Leon et al. (2008) ¹	USA	142 (n/a)	6 months – 3.2 years
Linares et al. (2007) ¹	USA	156 (n/a)	12 months
Love et al. (2008) ¹	USA	20-22 (4.55%/13.04%)	6 months
Matthews (1997) ²	USA	27 (73.27%)	6 months
McAuley & Trew (2000) ^{1,7}	Northern Ireland	12-15 (16.67%-25.00%)	8 months
McWey et al. (2010) ¹	USA	106 (85.42%)	3 years
Minnis et al. (2006) ¹	Scotland	88 (16.98%)	9 months
Newton et al. (2000) ¹	USA	415 (10.75%)	12 months
Perkins (2008) ²	Canada	201 (45.23%)	12 months
Rushton et al. (1995) ^{1,8}	UK	12/15 (33.33%/16.67%)	5 - 8 years
Stahmer et al. (2009) ¹	USA	752 (n/a)	21.3 months
Van Oijen (2010) ^{2,9}	NL	78/59 (15.22%/15.38%)	21-24 months
Vanderfaellie et al. (2013) ¹	Belgium	49 (36.36%)	24 months
White (1997) ^{2,10}	USA	10 (0.00%)	5 weeks

FP = foster parent, prof. = professional, T = teacher, FC = foster child.

¹Studies published in peer-reviewed journals. ²Studies published in non-peer-reviewed journals. ³Study length differs for type of informant (foster parents: 3 months, social workers: 6 months). ⁴Experimental design.

Meta-analysis on longitudinal studies

Age Range at T1 (Mean)	% Female	Measure (Informant)	Meta-Analyses
0-12 years (n/a)	49.36%	CBC (prof.)	Int, Ext, Total
4-15 years (8.8)	50.85%	TRF (T)	Int
6-12 years (n/a)	n/a	Psychosocial Problems (prof.)	Total
2-11 years (n/a)	53.33%	CBCL (FP)	Int, Ext, Total
7-14.5 years (9.6)	n/a	CBCL (FP)	Int, Ext, Total
22-25 months (23.3months)	37.50%	ITSEA (FP)	Int, Ext, Total
0-9 years (n/a)	40%	TRF (T)	Int, Ext, Total
4-12 years (8.58)	28%	CBCL (FP)	Int, Ext, Total
10.4-17.9 years (13.2)	27%	Negative Affect (FC)	Int
3-14 years (8.38)	42.31%	Loneliness, CDI (FC), ECBI (P)	Int, Ext, Total
6-17 years (n/a)	60.87%	CDI (FC)	Int, Ext
1.8-6.7 years (n/a)	47.5%	CBCL (FP)	Int, Ext, Total
4-11 years (8.42)	36.84%	TRF (T) CBCL (FP)	Int, Ext, Total
13-16 years (14)	52%	CBCL (FP)	Int, Ext
5-16 years (11.6)	44.34%	SDQ (FP)	Total
2-17 years (6.6)	53.5%	CBCL (FP)	Int, Ext, Total
10-17 years (12.86)	50.00%	Emotional Disorder, Conduct Disorder, Indirect Aggression (FC)	Int, Ext, Total
5-9 years (6.75)	0.00%	Parental Interview (FP)	Int, Ext, Total
0-15 years (4.84)	52.83%	CBCL (FP)	Total
n/a (14.4)	56.5%	CBCL (FP), YSR (FC)	Int, Ext, Total
6-12 years (9.3)	63.27%	CBCL (FP)	Int, Ext, Total
7-9 years (8.46)	60.00%	CBCL (FP)	Total

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Analyses

Data were analyzed using the program Comprehensive Meta-Analysis (Borenstein et al., 2005). Raw mean difference, standard deviation of both time points, aggregated correlation and sample size were used to compute effect sizes. For two studies (Fernandez, 2008; Love, Koob, & Hill, 2008) raw mean difference and paired t were used to compute effect sizes. Four meta-analyses were conducted to examine the developmental outcomes of foster children with respect to four domains: adaptive functioning, externalizing behavior problems, internalizing behavior problems and total problems. Data were analyzed using a random effects model, which does not assume a common underlying effect size for all included studies, and is commonly more appropriate for meta-analyses based on a literature search than a fixed effects model (Borenstein et al., 2009). The Q test is used to test whether studies are homogeneous. A significant Q test suggests true heterogeneity between included effect sizes. The I^2 was used to quantify the heterogeneity between the effect sizes of included studies; the I^2 can be interpreted as the percentage of total variability in a set of effect sizes due to true heterogeneity (Huedo-Medina, Sánchez-Meca, Marin-Martinez, & Botella, 2006). If I^2 is large, then it would make sense to speculate about reasons for the variance, and possibly to apply techniques such as subgroup analysis to try to explain it. Moderator analyses will be performed on five variables: study length, sample size, attrition, publication type, and mean age. The Q statistic was used to test for the significance of moderators.

The jackknife procedure is used to identify studies with large influence on the overall effect size estimate. This procedure gives insight whether the overall effect size is biased by the influence of any one study (Borenstein et al., 2009). Furthermore, because non-significant results may be missing in the studies sampled, due to publication bias, the effect sizes computed in the meta-analysis may be overestimated. To assess the risk of such publication bias, we used Duvall and Tweedie's trim-and-fill procedure the Kendall's τ method. Duvall and Tweedie's trim-and-fill procedure is an iterative procedure that imputes effect sizes until the error distribution closely approximates normality. This procedure provides a more unbiased estimate of the effect size than the observed estimate. The association between the standardized effect sizes and the variance of these effect sizes was calculated using the Kendall's τ method. A significant correlation indicates that small studies with non-significant results tend not to be published, which suggests that publication bias exists. A non-significant Kendall's τ coefficient suggests the absence of such publication bias.

RESULTS

Meta-analysis on Adaptive Functioning

Eleven studies eligible for inclusion yielded twelve effect sizes (Table 3.1). These 11 studies reported on the development of a total of 1,550 foster children, ranging in age from 0 to 18 years. Analyses revealed no overall significant difference between the effect sizes of both measurement points ($g = -0.10, p = .38, N = 1,550$). This means that this meta-analysis showed no improvement or deterioration in the adaptive functioning of foster children during their stay in foster care. The studies included in the meta-analysis were highly heterogeneous ($Q(10) = 143.86, p < 0.001$), and a fairly high proportion of the observed variance reflected real differences in effect size ($I^2 = 92.35$), meaning that studies included in this meta-analysis tended to provide different effect sizes (Higgins, Thompson, Deeks, & Altman, 2003). The forest plot provided in Figure 3.2 gives a graphic depiction of the effect sizes of the included studies. In this forest plot, a positive effect size corresponds with an improvement in adaptive functioning. The Duvall and Tweedie trim-and-fill procedure showed that four studies to the left of the mean needed to be imputed to shift the observed point estimate from -0.10 (95% CI [0.32, 0.12]) to -0.32 (95% CI [0.54, -0.10]), which suggests that four studies with significant deterioration of adaptive functioning would result in a significant overall effect. The jackknife procedure showed that the overall effect remained the same when one study at a time was removed from the meta-analysis. The Kendall's τ was $.26$ ($z = 1.17, p = .12$), which suggests the absence of publication bias. Results are displayed in Table 3.3.

Five moderator analyses were performed to compare studies on the methodological characteristics study length, sample size, attrition, publication type, and mean age. Studies with a timespan less than one year ($g = 0.08, p = .33, k = 6, N = 350$) and studies with a timespan of one year or longer ($g = -0.31, p = .06, k = 5, N = 1,200$) yielded a significant difference, $Q(1) = 4.62, p < .05$. This means that studies following children's development during a longer timespan showed more negative adaptive functioning development than studies with a shorter timespan. Studies with large sample sizes ($N \geq 80$) ($g = -0.44, p < .01, k = 5, N = 1,362$) and studies with small sample sizes ($N < 80$) ($g = 0.33, p < .05, k = 6, N = 188$) also differed significantly from each other, $Q(1) = 14.58, p < .001$. Studies with larger samples sizes showed more negative adaptive functioning outcomes compared to studies with smaller sample sizes. The moderator analyses for attrition, type of publication and mean age did not yield a significant difference.

Table 3.3. Results of the meta-analysis on adaptive functioning, internalizing behavior problems, externalizing behavior problems and total behavior problems.

	<i>k</i>	samples	<i>N</i>	<i>g</i>	CI	<i>I</i> ²	<i>Q</i>
Adaptive functioning	11	12	1,550	-.10	-.32, .12	92.35	143.86
Internalizing behavior problems	24	34	1,984	-.10	-.27, .07	91.47	386.78
Externalizing behavior problems	21	29	1,729	-.04	-.24, .15	91.28	321.16
Total behavior problems	25	35	2,523	-.10	-.28, .07	94.36	602.50

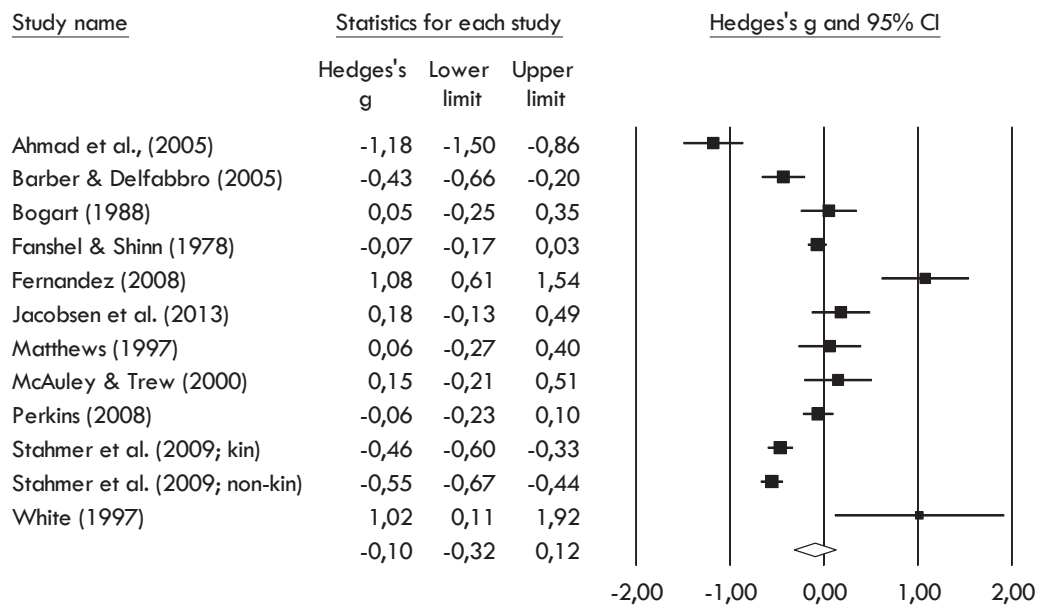


Figure 3.2. Forest plot for the meta-analysis on adaptive functioning.

Meta-analysis on Internalizing Behavior Problems

Twenty-four studies eligible for inclusion yielded thirty-four effect sizes (Table 3.3). In these 24 studies a total of 1,984 foster children participated, ranging in age from 0 to 18 years. Analyses revealed no overall significant difference between the effect sizes of both measurement points ($g = 0.10$, $p = .25$, $N = 1,984$). Thus, this meta-analysis showed no increase or decrease in the internalizing behavior problems of foster children during their stay in foster care. The outcomes of the studies were heterogeneous ($Q(33) = 386.78$, $p < .001$, $I^2 = 91.47$), which indicates that studies included in this meta-analysis tended to provide different effect sizes (Figure 3.3). To accommodate the understanding of the reader, it is good to mention that in this forest plot, a positive effect size represents an increase in

behavior problems. Duvall and Tweedie's trim-and-fill procedure suggested that ten studies to the left of the mean needed to be imputed to shift the observed point estimate from -0.10 (95% CI [-0.28, 0.07]) to -0.30 (95% CI [0.48, 0.11]), which suggests that ten studies with significant decreases of internalizing behavior problems would result in a significant overall effect. When one study at a time was removed, the overall effect remained non-significant. The Kendall's τ was .03 ($z = .24, p = .41$) which suggests an absence of publication bias. Results are displayed in Table 3.3.

The five moderator analyses were performed to compare studies on methodological characteristics (study length, sample size, attrition, type of publication and mean age). Comparing studies with low attrition rates ($g = -0.39, p = .05, k = 9, N = 828$) with studies with high attrition rates ($g = 0.07, p = .74, k = 12, N = 842$) did yield a significant difference, $Q(1) = 4.18, p < .05$. Studies with low attrition rates showed a significant decrease in internalizing behavior in contrast with studies with higher attrition rates. Furthermore, none of the moderator analyses yield significant differences, which means that the moderators cannot explain variation between studies.

Meta-Analysis on Externalizing Behavior Problems

Twenty-one studies eligible for inclusion yielded twenty-nine effect sizes (Table 3.3). These 21 studies were about a total of 1,729 foster children, ranging in age from 0 to 18 years. Analyses revealed no overall significant difference between the effect sizes of both measurement points ($g = 0.04, p = .66, N = 1,729$). This means that this meta-analysis showed no increase or decrease in the externalizing behavior problems of foster children during their stay in foster care. This meta-analysis yield a heterogeneous set of studies ($Q(28) = 321.16, p < .001$), and a large proportion of the observed variance reflected real differences in effect size ($I^2 = 91.28$). Figure 3.4 provides a graphic depiction of the effect sizes of the studies included in this meta-analysis. Increases in behavior problems are represented by positive effect sizes. Duval and Tweedie's trim-and-fill procedure indicated no publication bias. The jackknife procedure showed no difference in overall effect when one study at a time was removed. The Kendall's τ was .02 ($z = .13, p = .45$) which again suggests the absence of publication bias. Results are displayed in Table 3.3.

Five moderator analyses were performed to compare studies on methodological characteristics (study length, sample size, publication type, attrition, and mean age). None of the moderator analyses on externalizing behavior problems turned out to be significant.

Meta-Analysis Total Behavioral Problems

Twenty-five studies eligible for inclusion yielded thirty-five effect sizes (Table 3.3). A total of 2,523 foster children (0-18 years) participated in these studies. Analyses revealed no overall significant difference between the effect sizes of both measurement points ($g = -0.10, p = .24, N = 2,523$). This demonstrates that this meta-analysis showed no increase or decrease in the total behavior problems of foster children during their stay in foster care. The studies included in the meta-analysis were highly heterogeneous ($Q(34) = 602.50, p < 0.001, I^2 = 94.36$), indicating that effect sizes differ among studies included in this meta-analysis. Results are displayed in Table 3.3. The forest plot is provided in Figure 3.5. As



for internalizing and externalizing behavior problems, positive effect sizes correspond with increases in total behavioral problems. Duval and Tweedie's trim-and-fill procedure indicated that nine studies should be imputed to the left of the mean to shift the point estimate from -0.10 (95% CI [-0.28, 0.07]) to 0.27 (95% CI [0.44, -0.09]), which suggests that nine studies with significant decreases of total behavior problems are needed to gain a significant overall effect. The overall effect size remained the same when one study at a time was left out. The Kendall's τ was -.05 ($z = .43, p = .34$) which suggests the absence of publication bias. Like the moderator analyses for externalizing behavior problems, none of the moderator analyses for total behavior problems turned out to be significant. This means that comparing studies on study length, sample size, publication type, attrition, and mean age yield no significant differences.

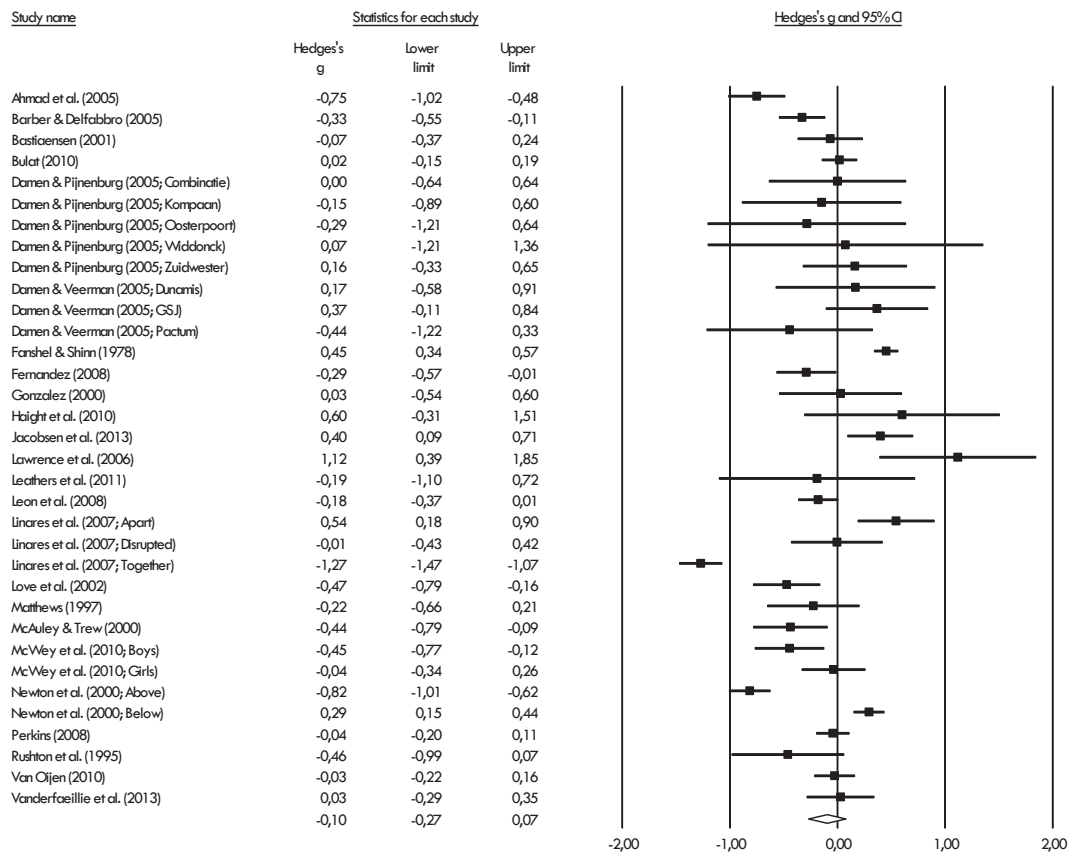
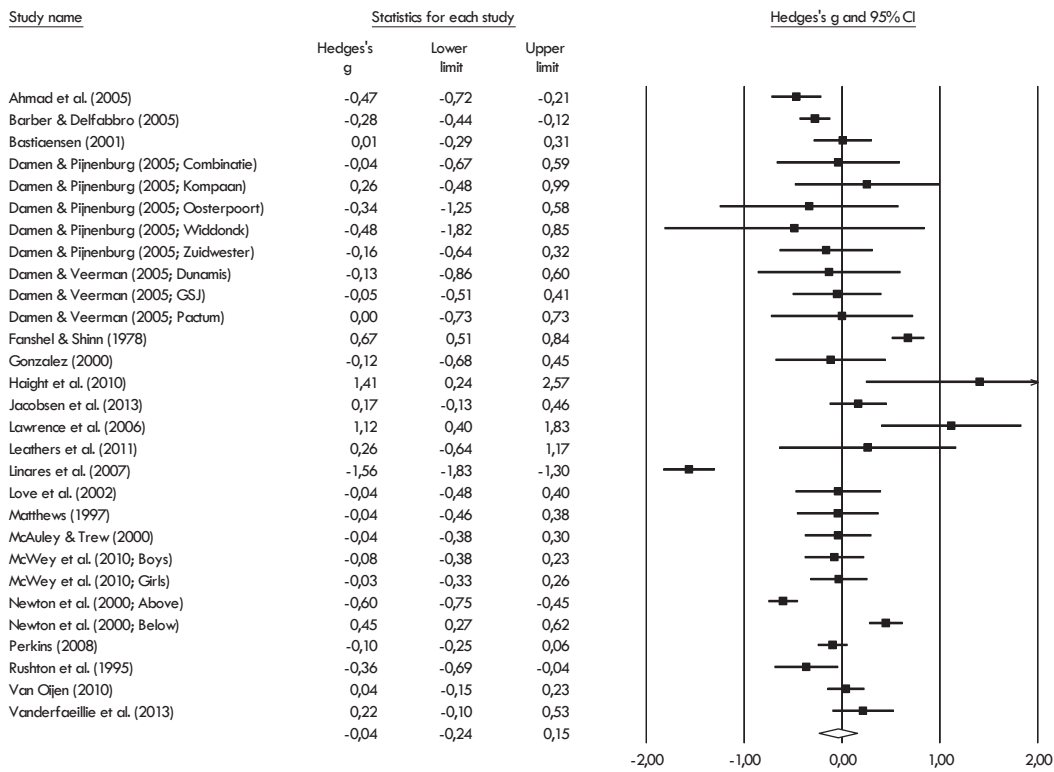


Figure 3.3. Forest plot for the meta-analysis on internalizing behavior problems.

Meta-analysis on longitudinal studies



3

Figure 3.4. Forest plot for the meta-analysis on externalizing behavior problems.

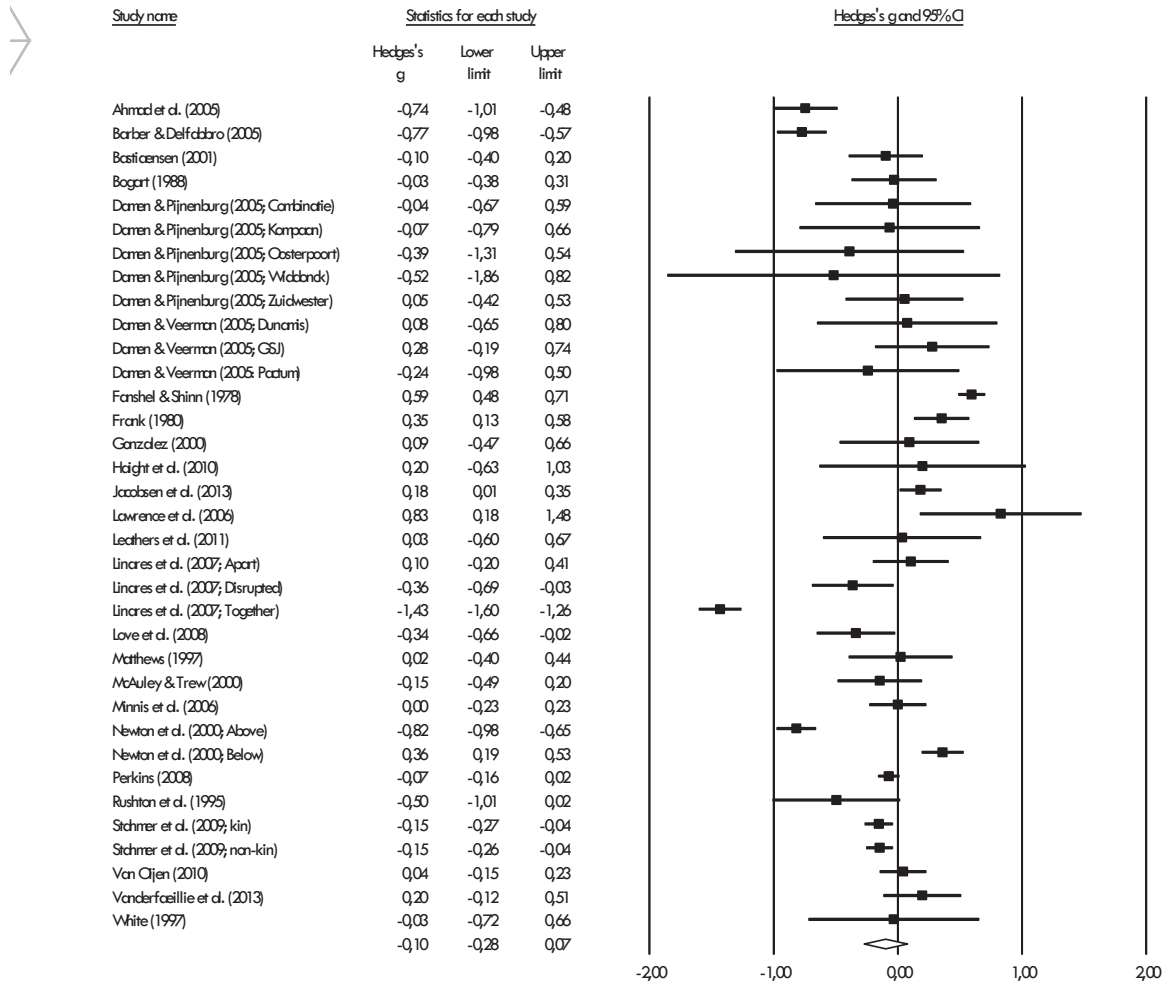


Figure 3.5. Forest plot for the meta-analysis on total behavior problems.

DISCUSSION

In this paper a series of meta-analyses was reported examining the longitudinal developmental outcomes of children in foster care. The focus was on adaptive functioning and behavioral outcomes. Contrary to our expectations, we found that generally foster children did not improve their functioning during their stay in foster care. For adaptive functioning, studies with larger sample sizes ($N \geq 80$) and studies with a timespan longer than one year showed development toward more negative adaptive functioning. The meta-analyses on behavioral functioning showed no overall increases or decreases in internalizing, externalizing or total behavior problems. Comparing studies on attrition rate, showed that studies with low attrition rates ($< 25\%$) showed a significant decrease in internalizing behavior problems in contrast with studies with high attrition rates ($\geq 25\%$). Contrary to expectations, none of the other moderator analyses on methodological characteristics for the meta-analyses on internalizing, externalizing or total behavior problems was significant. This showed that most of the methodological differences in design, as reflected in the five moderators, do not play a decisive role in the varying outcomes of studies. One explanation could be that although studies were categorized for each moderator variable, the categories did not correspond to meaningful distinctions; perhaps they simply were too broad. For example the moderator 'age' was categorized into younger and older than 10 years. This means that the study of Jacobsen, Moe, Ivarsson, Wentzel-Larsen and Smith (2013) with foster children with an average age of less than two years, belonged to the same category as the almost 10-year old foster children in the study of Bogart (1988). The number of studies included in the meta-analyses did not allow for more narrow categories. Another explanation might be that although these single variables were, based on previous research, expected to be related to the development of foster children, it might be that more complex interaction models explain foster care outcomes. For example, it can be imagined that not solely entry of foster care at younger age is responsible for more positive developmental outcomes (McWey et al., 2010), but that, in addition, for benefiting from foster care, these young children should experience an prolonged stay in the foster family without placement disruptions (Gonzalez, 1999).

Former research indicates major developmental problems at the start of the placement in foster families (Berkoff et al., 2006; Clausen et al., 1998; Dubowitz, Zuravin, Starr Jr, Feigelman, & Harrington, 1993; James, 2004; Simms et al., 2000). Foster children experience internalizing or externalizing problems at three to four times the rate of the general population (Clausen et al., 1998) and 13-36% of foster children are characterized by adaptive functioning delays (Berkoff et al., 2006). The results of this meta-analysis showed that foster children do not improve during their stay in the foster family. Though stability may sound positive where it regards the development of children, foster children often enter foster care with high levels of problem behavior (Clausen et al., 1998; James, 2004; Simms et al., 2000; Zorc et al., 2013). This is also true for the studies included in our meta-analyses. Although several studies reported mean scores within the normal range, large percentages of foster children actually do score in the subclinical or clinical range at the same time (Bastiaensen, 2001; Haight, Black, & Sheridan, 2010; Newton et al., 2000). It is worrisome that during





a stay in a foster family problems do not decrease, even more so because foster children's problem behaviors may be one of the main reasons for a foster care breakdown (Oosterman, Schuengel, Wim Slot, Bullens, & Doreleijers, 2007). Apparently, foster care is incapable of reducing these problems or of improving the development of foster children. With regard to adaptive functioning, the studies with samples that were larger than 80 children even suggest that the adaptive functioning of children may deteriorate during their stay in foster care. The moderator analyses further suggest that a longer stay in foster care is not related to better development, as studies longer than a year do not report better outcomes than studies shorter than a year, and with respect to adaptive functioning the studies that were longer than a year even suggested a deterioration in foster children's levels of adaptive functioning. Because of the experienced trauma and the broken attachment, it perhaps should not be expected that children show rapid improvement in foster care, but that even a longer stay in foster care is not associated with improvement in developmental outcomes is worrisome, since it represents a continuation of high degrees of behavior problems during their placement. Moreover, especially externalizing problem behaviors are a major reason for placement breakdown (Oosterman et al., 2007). It is recommended that child welfare tries to prevent or at least reduce the experienced traumas of foster children by being closely involved at an earlier stage before out-of-home placement is realized. Parent-focused intervention (e.g., Schaeffer, Swenson, Tuerk, & Henggeler, 2013) might help to identify problems at an early stage. And although it may not eventually prevent out-of-home placements, it may help to make the start of children in foster care less problematic.

Although the meta-analyses reported no overall developmental improvements for foster children, individual studies in the meta-analyses showed a wide range of outcomes. There clearly are some studies that did show positive developmental effects for foster children (Ahmad et al., 2005; Barber & Delfabbro, 2005; Fernandez, 2008, 2009) which raises the question which conditions for foster care should be met for improvement and whether there is a common factor in studies in which foster children were reported to benefit from foster care. Knowledge about these conditions can help to formulate foster care policies which ensure that foster children flourish when placed in a foster family. Differences between studies can be due to the fact that studies are conducted in different countries (Bogart, 1988; Clausen et al., 1998; Farmer et al., 2008; Leathers et al., 2011). In the United States, for instance, foster care agencies strongly focus on permanency planning. The U.S. 'Adoption and Safe Families Act' (1997) is aimed at finding permanent homes for foster children who cannot return to their biological parents, because their safety is not warranted with these parents. As a consequence, termination of parental right is more rule than exception in the USA. In Australia, by contrast, termination of parental rights is rare, meaning that children can, and do, remain in foster care indefinitely (Barber & Delfabbro, 2005). On a national level, studies rely on a limited number of foster care agencies for the inclusion of foster children. Foster care policies can vary from one agency to another, especially in the United States where discrepancies between various state policies exist (see for example www.childwelfarepolicy.org where users can compare child welfare state policies) (Blakey et al., 2012; Boots, 1999). Although it is known that placement stability is one of the factors beneficial for foster children (Newton et al., 2000; Rubin, O'Reilly, Luan, & Localio, 2007), states follow different approaches to reduce placement disruptions and

do not monitor the effectiveness of their approaches (Blakey et al., 2012). Another important factor can be found in the use or accessibility and the fidelity of interventions provided by the foster care institutions for foster parents and foster children. These interventions are focused on strengthening the parents' and foster children's skills, decreasing the foster children's behavioral problems, supporting foster parents and enhancing the relationship formation and have shown to be effective in reducing problem behaviors (Chamberlain et al., 2008; Dozier et al., 2006; Fisher & Chamberlain, 2000; McNeil, Herschell, Gurwitch, & Clemens-Mowrer, 2005; Price et al., 2008). Moreover, therapeutic foster care is an even more intensive support service for children in foster care, being characterized by specially trained and intensively supervised foster parents (Curtis, Alexander, & Lunghofer, 2001). Given the problematic developmental functioning of foster children at the start of the foster placement and the lack of improvement during their stay in the foster family, interventions should be considered as part and parcel of regular foster care (Fisher, Chamberlain, & Leve, 2009).



Limitations

When interpreting the results of the current study, two limitations must be kept in mind. First, the longitudinal development of the group of children in foster care as a whole is examined; no distinctions between possibly relevant groups of foster children are made (e.g., kinship/ non kinship, type or severity of maltreatment) because these distinctions were not reported clearly and frequently enough to allow for a meaningful inclusion in a meta-analysis. Nevertheless, subgroups might reveal different developmental trajectories. Recently, a systematic review compared kinship foster care with non-kinship foster care. This review suggested that children in kinship foster care did better than children in non-kinship foster care in terms of their behavioral development, and that kinship is the viable out-of-home placement option (Winokur, Holtan, & Batchelder, 2014). Furthermore, research suggested that foster care outcomes may differ depending on the type or severity of maltreatment a child experienced (Jackson, Gabrielli, Fleming, Tunno, & Makanui, 2014). Foster care might be particularly helpful for children who entered the foster family after having experienced sexual abuse or neglect (McWey et al., 2010; Tarren-Sweeney, 2008). Second, the number of changes of foster homes was not taken into account, while placement instability has been shown to negatively contribute to behavior problems in foster children (Newton et al., 2000; Rubin et al., 2007). However, this information could not be included in the meta-analyses because it was not reported consistently.

Conclusion

Considering the general lack of improvement after a placement in foster care it seems that the new situation that foster care is to many children, is a challenging situation. Many of these children come from a family situation that was ended with the traumatic event of a temporary or permanent loss of their parents. Not only are the children required to cope with these traumatic events, once in foster care they also need to adjust to a new family and living situation. In these taxing circumstances problems in behavioral and adaptive functioning may persist in spite of major environmental improvements (Marinkovic & Backovic, 2007). A clear conclusion of this study is that overall foster children showed no improvement or deterioration in



developmental characteristics with which they entered foster care. Developmental outcomes for foster children are not as positive as some suggest (Ahmad et al., 2005; Barber & Delfabbro, 2005; Fernandez, 2008, 2009; Horwitz et al., 2001), and even though foster care is not as detrimental as claimed by others (Frank, 1980; Lawrence et al., 2006; Lloyd & Barth, 2011), the lack of improvement is a cause for concern. Given that many foster children enter foster care with developmental problems, further longitudinal research is needed to find out what conditions and educational processes are conducive to positive foster care experiences, and to examine whether interaction models can explain differences in the varying outcomes of individual studies. Future studies therefore should not only focus on social-emotional problems, but also on psychosocial strengths; both of children and foster parents (Jee et al., 2011). Furthermore, more research is needed to compare the effectiveness of different child welfare policies. In addition to this, it would help if foster care agencies would uniformly assess and monitor the developmental functioning of their foster children systematically (Burns et al., 2004; Fisher et al., 2009; Garwood & Close, 2001; Harden, 2004). It seems that large variation in the functioning of foster children exists. Screening would stimulate and facilitate foster care professionals to signal developmental challenges and specific developmental needs at an early stage, could enhance creating trauma-informed service systems (Fraser et al., 2014; Kramer et al., 2013), and start and support early intervention and treatment of foster children (Leslie et al., 2005). Targeted foster-care interventions to address specific needs (Chamberlain et al., 2008; Dozier et al., 2006) or even therapeutic foster care (Meadowcroft, Thomlison, & Chamberlain, 1993) is needed to ensure that all children who cannot be raised by their own parents, receive the support that they need.

