

Fostering Child Development by Improving Care Quality: A Systematic Review of the Effectiveness of Structural Interventions and Caregiver Trainings in Institutional Care

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Abstract

Quality of child care has been shown to have a crucial impact on children's development and psychological adjustment, particularly for orphans with a history of maltreatment and trauma. However, adequate care for orphans is often impacted by unfavorable caregiver-child ratios and poorly trained, overburdened personnel, especially in institutional care in countries with limited resources and large numbers of orphans. This systematic review investigated the effects of structural interventions and caregiver trainings on child development in institutional environments. **The 24 intervention studies included in this systematic review reported beneficial effects on the children's emotional, social, and cognitive development. Yet, few studies focused on effects of interventions on the child-caregiver relationship or the general institutional environment. Moreover, our review revealed that interventions aimed at improving institutional care settings have largely neglected violence and abuse prevention.** Unfortunately, our findings are partially limited by constraints of study design and methodology. In sum, this systematic review sheds light on obstacles and possibilities for the improvement in institutional care. There must be greater efforts at preventing violence, abuse, and neglect of children living in institutional care. Therefore, we advocate for combining attachment theory-based models with maltreatment prevention approaches and then testing them using rigorous scientific standards. By using approaches grounded in the evidence, it could be possible to enable more children to grow up in supportive and nonviolent environments.

Keywords

institutional care, orphans, care quality, attachment, child maltreatment, prevention, interventions

Introduction

The quality of child care—especially in the early years of a child's life—has been shown to have a crucial impact on development and positive functioning later in life (R. Johnson, Browne, & Hamilton-Giachritsis, 2006). With these findings in mind, good caregiving should include sensitive and consistent caregiver-child relationships (Hungerford & Cox, 2006) as well as a stimulating, nonviolent, and educational environment (Field, 2002; National Institute of Child Health and Human Development Early Child Care Research Network, 2002). These factors are particularly important for children who have been maltreated or traumatized earlier during the course of their lives as is the case with many children living in institutional care. The purpose of the present study is to systematically review the current evidence on the effectiveness of structural interventions and caregiver trainings in institutional care in order to foster children's development through improving care quality and preventing maltreatment. We define structural interventions and caregiver trainings as interventions that

aim to change the context of the institutions themselves as well as the ways in which caregivers interact with the children.

There has been a growing body of evidence pointing to the advantages of family-based care over the institutional placement of children in need (Dozier et al., 2014; Groza, McCreery Bunkers, & Gamer, 2011; Nelson et al., 2007). The generation

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of this evidence has been followed by efforts to implement deinstitutionalization (Vashchenko, Easterbrooks, & Miller, 2010). As a consequence, adopting children from institutions into families has become a widespread practice (McCall, 2013; Wolff & Fesseha, 1998). However, in many countries, particularly in Sub-Saharan Africa and South Asia, the number of orphans has been constantly rising over the last several decades with estimated numbers of 56,000,000 and 40,800,000, respectively, in part as a consequence of the HIV/AIDS epidemic and armed conflicts (Maundeni & Malinga-Musamba, 2013; United Nations Children's Emergency Fund, 2014). Due to poor economic conditions in countries with limited resources and the rising numbers of orphans, the capacities of family- or community-based care efforts have been overburdened and possibilities of foster care or adoption are very limited (Hermenau et al., 2011; Li et al., 2008). Thus, it is not surprising that in many parts of the world, child care institutions, such as orphanages and children's homes, still constitute the most frequently utilized form of providing care for children without parents (Neimetz, 2010; Rygaard, 2010).

However, institutions facing major difficulties due to unfavorable caregiver-child ratios and poorly trained, overburdened personnel often fail to provide care that meets the needs of orphaned or otherwise vulnerable children (D. E. Johnson, Dovbnya, Morozova, Richards, & Bogdanova, 2014; McCall, 2013; Rather & Margoob, 2006). Usually, the child care institutions are able to offer basic provisions of food and shelter, but they lack adequate means to offer sensitive, child-oriented care, possibly leading to the emotional and physical neglect of many children (Oliveira et al., 2012; Vashchenko et al., 2010). The lack of a loving and positive care environment is related to various negative outcomes in child development as well as physical and mental health (D. E. Johnson et al., 2010; R. Johnson et al., 2006; Rather & Margoob, 2006; Van Ijzendoorn, Luijk, & Juffer, 2008; Walakira, Ochen, Bukuluki, & Alllan, 2014).

Furthermore, the aforementioned structural problems may also contribute to high levels of emotional and physical abuse in institutional care (Hermenau, Eggert, Landolt, & Hecker, 2015; Hermenau, Hecker, Elbert, & Ruf-Leuschner, 2014). For example, the reported worldwide rates of violence against children in institutional care were 6 times higher than those of children living in family-based foster care (Pinheiro, 2006). Untrained and undereducated caregivers, in particular, frequently used severe physical punishment to discipline the children (Hermenau, Kaltenbach, Mkinga, & Hecker, 2015). Thus, in addition to trauma-related disorders due to the loss of a parent, other traumatic experiences and adversities during early childhood (Elbert et al., 2009; Ruf & Schauer, 2012) as well as possible maltreatment in the family of origin, orphans and other children are burdened with further experiences of emotional and physical maltreatment in institutional care (Hermenau et al., 2011).

Following De Bellis and Zisk's (2014) framework of "developmental traumatology," child abuse and neglect are examples of a pathogenic relational environment. Children

may develop a low-quality attachment bond or even lack an attachment relationship altogether in the absence of adequate care. Taken together with the experience of violence and abuse, this lack may impact the child's stress response system, and, in this way, the development and structure of the brain as well. These changes to neurodevelopment may lead to mental health problems, such as depression, posttraumatic stress disorder, and internalizing and externalizing problems (Connor, Doerfler, Volungis, Steingard, & Melloni, 2003; Felitti et al., 1998; Hecker, Hermenau, Isele, & Elbert, 2014). Further, individuals with a history of early institutional care showed more academic difficulties and deficits in social skills, such as maintaining trustful interpersonal relationships (Frank, Klass, Earls, & Eisenberg, 1996; Merz, McCall, & Wright, 2013). Beyond these impacts, child maltreatment has been related to epigenetic changes in the stress response axis (Hecker, Radtke, Hermenau, Papassotiropoulos, & Elbert, 2016; McGowan et al., 2009).

Although both the number and the range of barriers to healthy development in institutional child care settings are undeniable (Dozier et al., 2014), child care institutions themselves possess great potential as a fruitful point of intervention, particularly in resource-poor countries (McCall, 2013; Vashchenko et al., 2010). This understanding has led to an increase in research efforts to find ways of protecting children from maltreatment and further harm during their time spent in institutional care (McCall, 2013; Rygaard, 2010). Interventions have generally aimed to improve caregiving and living conditions for affected children. Components of these interventions, however, are diverse, ranging from additional stimulation of the children to professional caregiver training, supervision systems, and changes in the structure of the institutions (e.g., family-like groups, primary caregiver assignment, etc.).

To our knowledge, there is, at this point, no general overview presenting the current state of research regarding the effectiveness of interventions on children's development in institutional environments. Prior meta-studies on the effects of interventions in institutional care focused solely on cognitive development (Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2008). In many low- and middle-income countries, general guidelines and quality control for institutional care are still lacking. To bridge this gap in research and to contribute to developing guidelines for improving care quality, this systematic review aims to examine structural interventions and caregiver trainings implemented around the globe. We focused on interventions that were conducted in institutional care settings, and which aimed to improve the children's development and living conditions by, for example, employing caregiver training or supervision, structural changes, or additional stimulation. A two-part hypothesis was proposed. Caregiver training, structural changes, and enriched caregiving environments (e.g., active stimulation) in child care institutions are expected to have beneficial effects on (1) children's emotional, social, and cognitive development

and (2) the quality of care, the child–caregiver relationship and interactions as well as the overarching institutional environment.

Method

Search Strategy and Study Selection

In order to obtain qualified intervention studies for the analysis, we searched electronic literature databases (Medline, PubMed, PsycInfo, PSYINDEX, Web of Science, and Google Scholar) using the following search terms: “child care institution” (OR “orphanage,” “children’s home,” “institutional care,” “residential care,” “group care”), AND “intervention” (OR “reorganization,” “training,” “changing,” “improving,” “modification,” “stimulation”), AND “orphans” (OR “child,” “infant”), AND “care quality” (OR “child care,” “care condition,” “caregiver”), AND “development” (or “behavioral changes,” “attachment”). The searches were not limited by date. An overview of the selection process is presented in Figure 1. We supplemented our database review by searching the *Infant Mental Health Journal* by hand, as this journal has published many of the recent intervention studies in this area of research. To avoid the potential for publication bias, in our review, we searched for grey literature, that is, unpublished reports, master, and dissertation theses in the following databases using the same search terms described previously: DART-Europe, EThOS, OATD, DissOnline, proQuest, and clinicaltrials.org. Furthermore, we contacted the corresponding authors of all identified studies published or written within the previous 10 years and requested unpublished reports or articles in preparation or under review that may have qualified for inclusion in the present study. Our intensive search for grey literature and unpublished reports did not reveal further studies that fulfilled our inclusion criteria.

Following this search strategy, we identified the abstracts of 124 studies. These studies were published in English language, peer-reviewed journals between 1956 and July 2015. Following an a priori protocol, all studies were analyzed according to the following inclusion criteria: empirical studies with children as participants; studies with controlled and uncontrolled research designs, the presence of a control group composed of children living in the same institution or in comparable conditions; interventions with children aged 0–17 years living full time in child care institutions in any part of the world (studies assessing formerly institutionalized children or children in foster care were excluded); interventions implemented within institutions aiming to change the context of the institutions as well as the ways in which caregivers interacted with the children; and interventions that aimed to improve the children’s development and living conditions by employing one or more intervention components (i.e., caregiver training or supervision, structural changes, or additional stimulation). Studies applying adoption or foster care measures as intervention approaches or exclusively including disabled children were excluded. Comparison conditions included “no intervention” or “pre–post

comparisons.” In terms of outcomes, studies were included which assessed factors of child development, children’s health status, changes in the caregiving quality, or attachment. The actual form or timing of the outcome assessment was not a relevant excluding factor. In the case of several publications reporting the same studies, those articles were treated as one study. After the analysis of the abstracts, 98 studies were excluded due to unsuitability or absence of relevant aspects (see Figure 1 for reasoning). After full-text analysis, we excluded an additional five studies. In total, we identified 23 intervention studies within 21 articles fulfilling all inclusion criteria (see intervention characteristics for details). In an attempt to extend the sample, the reference lists of all selected articles were analyzed, and two international experts were consulted. This strategy yielded one further qualified study.

Data Analysis

According to Lakens (2013a), studies with nonmatched or randomized control groups perform *independent* observations, whereas designs with matched control groups or repeated measures are *dependent* observations. Intervention studies without control groups were analyzed using pre- to postintervention comparisons to assess their effects over time. In interventions with controlled designs, the main effects of intervention were analyzed. The consideration of Group \times Time interaction effects was not possible in most studies due to methodological reasons. Where occasional interaction effects were reported, their effect sizes are reported in addition to the compared main effects of intervention.

Following Lakens’ (2013a) suggestion, effect sizes will be expressed in Cohen’s d_z for dependent observations and in Cohen’s d_s for independent observations, respectively. Our metric for a small effect size was $d \geq .20$, for a medium effect $d \geq .50$, and for a large effect $d \geq .80$ (Cohen, 1992). Effect sizes of studies providing different effect size parameters, such as Cohen’s d_{av} , were converted into Cohen’s d_z or Cohen’s d_s . The effect sizes for studies providing values of t -tests or F tests with 1 df and group sizes were calculated using Lakens’ (2013b) calculation sheet for effect sizes. For the following seven studies, effect size data were retrieved from a previous meta-analysis (Bakermans-Kranenburg et al., 2008) because data for calculation were not available and contacting study authors to receive missing data was not successful: Brossard and Decarie (1971); Casler (1965a); Gavrin and Sacks (1963); Hunt, Mohandessi, Ghodssi, and Akiyama (1976); Sayegh and Dennis (1965); Sparling, Dragomir, Ramey, and Florescu (2005). Some studies separately reported results for quasi-cross-sectional and true longitudinal samples (i.e., the same participants assessed at both time points). In these cases, only the results of true longitudinal samples were analyzed due to their “displaying true intraindividual change” (McCall et al., 2010). When more than one postmeasurement was performed, the latest time point for which data were available was taken into account (excluding the follow-up assessment of the study by Hakimi-Manesh, Mojdehi, and Tashakkori, 1984 for which

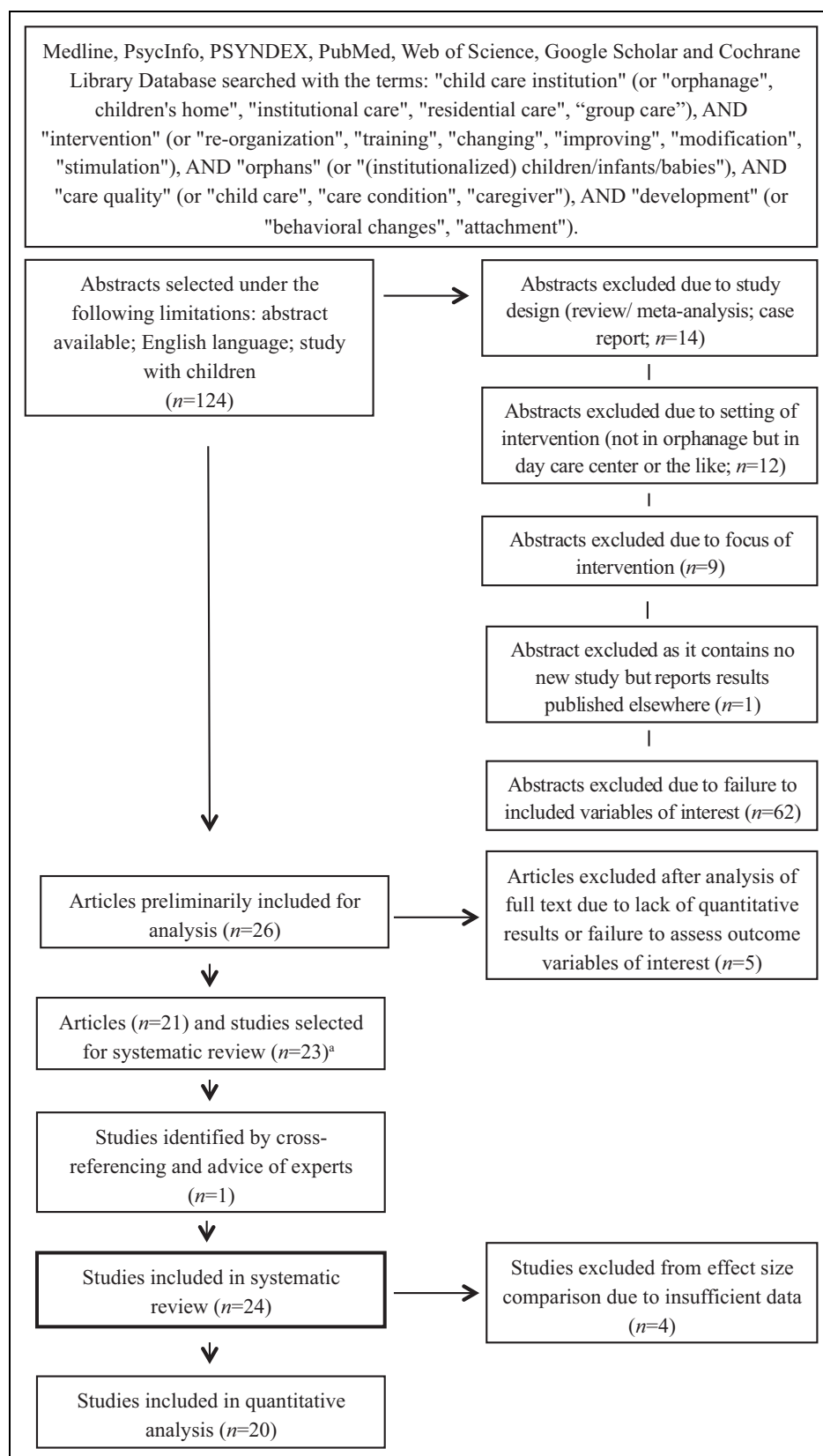


Figure 1. Study selection flowchart. ^aFull-text analysis revealed two studies within one article in two cases (Sparling et al. 2005; The St. Petersburg–USA Orphanage Research Team 2008), thus we included 24 studies within 22 articles at this point of the study search.

data were not calculable). We abstained from calculating pooled effect sizes or other meta-analytic measures because the validity of the findings was limited as a result of the poor study design and methods of the included studies (see below). Furthermore, the heterogeneity across studies was very large.

The outcome variables were grouped into two categories: (1) *development and health*, which included all aspects of children's cognitive, mental, psychomotor, verbal, behavioral, social, and physical development as well as mental and physical health variables and (2) *caregiving or institutional quality and attachment*. The latter covers all outcome variables related to the environment of the institution and caregiver-child interactions and attachment styles. For each category, outcomes of studies with dependent and independent designs were examined separately. Four studies (Casler, 1965b; Espié et al., 2011; Wolff, Dawit, & Zere, 1995; Wright, Lamsal, Ksetree, Sharma, & Jaffe, 2014) only provided qualitative descriptions of results or failed to supply relevant data to calculate effect sizes (e.g., missing standard deviations).

Results

The search strategy identified 24 relevant intervention studies. Effect size calculation was possible for 20 of the 24 included studies. Studies without control groups and studies with matched control groups were considered as dependent designs ($k = 9$). Studies with nonmatched or randomized control studies were regarded as independent ($k = 11$).

Study Characteristics

The 24 included studies examined interventions that were conducted in child care institutions in 15 different countries on 5 continents (see Table 1). Following the World Bank's definition (2014), 29% of the studies were conducted in low or lower middle-income countries, 29% in upper middle-income countries, and 42% in high-income countries. Most authors implemented their intervention in one institution; only three studies compared several institutions within the same study. Interventions took place in state-run and private institutions. The included studies incorporated a total of 1,253 children. The age of the children ranged from below 4 weeks (Espié et al., 2011; Hunt, Mohandessi, Ghodssi, & Akiyama, 1976; Kim, Shin, & White-Traut, 2003) to 16 years (Hermenau, Kaltenbach, et al., 2015; Hermenau et al., 2011), with most children being infants or toddlers (64%). In most cases, postassessments occurred at intervals between a few days and up to 3 years after completion of the intervention, with an average interval of 10 months. Conditions in many child care institutions were described as deficient before interventions began. Unfavorable child-caregiver ratios (Hakimi-Manesh, Mojdehi, & Tashakkori, 1984; Kim et al., 2003; Lecannelier, Silva, Hoffmann, Melo, & Morales, 2014), high levels of depressive symptoms and work overload among caregivers (Hakimi-Manesh et al., 1984; The St. Petersburg-USA Orphanage Research Team, 2008), and

insecure political conditions in the country (Wolff et al., 1995) were some examples cited by researchers.

Intervention Characteristics

In 15 studies, intervention components focused on training and building the capacity of caregivers, and 10 studies included structural changes in the child care institutions. Only seven of the included studies were theory based (see Table 2 for details). Five studies based their intervention approach on attachment theory (Lecannelier et al., 2014; McCall et al., 2010; Smyke, Dumitrescu, & Zeanah, 2002; The St. Petersburg-USA Orphanage Research Team, 2008, Studies 1 and 2). Hermenau et al. (2011) and Hermenau, Kaltenbach, Mkinga, and Hecker (2015) utilized the consequences of repeated exposure to childhood adversities on children's mental health as a theoretical basis for their intervention. Only three studies applied a manualized intervention (Hermenau, Kaltenbach, et al., 2015; Lecannelier et al., 2014; McCall et al., 2010). Nine of the included studies used narrow intervention approaches providing supplementary stimulation for the children or structural changes in the institutions (*stimulation or structural changes approach*). Most of these interventions were provided by external specialists and did not involve the caregiving staff of the target institution. The stimulation interventions lasted 5.3 weeks on average. Each of these studies had experimental and control groups, but only two used a randomized controlled design (Hakimi-Manesh et al., 1984; Kim et al., 2003). In the nine studies using a *stimulation or structural changes approach*, the total number of children examined was 250 and the average number of children per study was 28. The other 15 studies provided broader intervention approaches focused on caregiver training or supervision and additional structural changes (*training approach*), with an average duration of approximately 10 months. The most complex study carried out two different interventions simultaneously (caregiver training plus structural changes, T + Sc, or caregiver training only, TO) in two institutions and compared each one of them to a third institution receiving no intervention (The St. Petersburg-USA Orphanage Research Team, 2008). They also examined groups of children with and without disabilities; however, we considered only the typically developing children included in the study for the purposes of our review. Further, we considered each intervention approach as a single study (Study 1: T + Sc [$n = 108$] and Study 2: TO [$n = 110$]). Sparling et al. (2005) also reported two intervention studies within one publication which are presented separately here. There were 1,003 children examined in training approach interventions, which made up 80% of the total sample of all included studies, with an average sample of 67.

Outcome Measures

The studies reported effects on more than 20 different outcome measures regarding the children as well as the institutional

Table 1. Characteristics of the 24 Analyzed Interventions.

Study	Country	Number of Institutions Involved	Sample Size (n)	Child Age	Intervention Approach ^a	Duration of Intervention	Study Design
Berument (2013)	Turkey	6	114	0–6 Years	TRAINING	17 Weeks	Nonmatched control groups
Brossard and Decarie (1971)	Canada	1	29	2–3 Months	STIM/STRUCTURE	8 Weeks	Nonmatched control groups
Casler (1965a)	United States	1	16	<12 Months	STIM/STRUCTURE	10 Weeks	Matched control groups
Casler (1965b)	United States	1	20	<12 Months	STIM/STRUCTURE	10 Weeks	Matched control groups
Espié et al. (2011)	Sudan	1	23	<1 Months	TRAINING	Not specified	No control group
Gavrin and Sacks (1963)	United States	1	132	2–7.5 Years	TRAINING	Not specified	No control group
Hakimi-Manesh, Mojdehi, and Tashakkori (1984)	Iran	1	28	4–14 Months	STIM/STRUCTURE	6 Weeks	RCT
Hermenau et al. (2011)	Tanzania	1	38	3–16 Years	TRAINING	2 Weeks	No control group
Hermenau, Kaltenbach, et al. 2015	Tanzania	1	28	7–12 Years	TRAINING	2 Weeks	No control group
Hunt, Mohandessi, Ghodssi, and Akiyama (1976)	Iran	1	25	<4 Weeks	TRAINING	3 Weeks	Nonmatched control groups
Kim, Shin, and White-Traut (2003)	South Korea	1	45	1–2 Weeks	STIM/STRUCTURE	4 Weeks	RCT
Lecannelier, Silva, Hoffmann, Melo, and Morales (2014)	Chile	1	41	2–12 Months	TRAINING	8 Weeks	No control group
McCall et al. (2010)	El Salvador	1	32	0–8 Years	TRAINING	1 Year	No control group
Rheingold (1956)	United States	1	12	6 Months	STIM/STRUCTURE	8 Weeks	Matched control groups
Saltz (1973)	United States	2	26	1.3–6 Years	STIM/STRUCTURE	4 Years	Matched control groups
Sayegh and Dennis (1965)	Lebanon	1	13	7–14 Months	STIM/STRUCTURE	2 Weeks	Nonmatched control groups
Snyke, Dumitrescu, and Zeanah (2002)	Romania	1	61	0.3–6 Years	STIM/STRUCTURE	Not specified	Nonmatched control groups
Sparling, Dragomir, Ramey, and Florescu (2005), Study 1	Romania	1	104	0–3 Years	TRAINING	13 Months	Nonmatched control groups
Sparling et al. (2005), Study 2	Romania	1	65	2–10 Months	TRAINING	12 Months	RCT
Taneja et al. (2002)	India	1	19	0.5–2.5 Years	TRAINING	3 Months	No control group
The St. Petersburg–USA Orphanage Research Team (2008), Study 1	Russia	2	108	0–4 Years	TRAINING	3 Years	Nonmatched control groups
The St. Petersburg–USA Orphanage Research Team (2008), Study 2	Russia	2	110	0–4 Years	TRAINING	3 Years	Nonmatched control groups
Wolff, Dawit, and Zere (1995)	Eritrea	1	74	4–7 Years	TRAINING	Not specified	No control group
Wright, Lamsal, Ksetree, Sharma, and Jaffe (2014)	Nepal	1	90	0–6 Years	TRAINING	Not specified ^b	No control group

Note. RCT = randomized control group.

^a Intervention provided either supplementary stimulation for the children and/or merely structural changes in the institutions (STIM/STRUCTURE) or caregiver training and/or supervision and additional structural changes (TRAINING). ^b Second assessment took place 2 years after beginning of intervention implementation, but duration of intervention was not specified.

Table 2. Main Results of the 24 Analyzed Interventions.

Study	Theory-Based Intervention	Intervention Manualized	More Than One Institution Involved	Caregiver Training as Intervention Component	Structural Changes as Intervention Component	Child Stimulation as Intervention Component
Berument (2013)			✓	✓	✓	
Brossard and Decarie (1971)						✓
Casler (1965a)						✓
Casler (1965b)						✓
Espié et al. (2011)				✓		
Gavrin and Sacks (1963)				✓	✓	
Hakimi-Manesh et al. (1984)						✓
Hermenau et al. (2011)	✓			✓		
Hermenau, Kaltenbach, et al. (2015)	✓	✓		✓		
Hunt et al. (1976)				✓	✓	
Kim et al. (2003)						✓
Lecannelier et al. (2014)	✓	✓	✓	✓		
McCall et al. (2010)	✓	✓		✓	✓	
Rheingold (1956)						✓
Saltz (1973)						✓
Sayegh and Dennis (1965)						✓
Smyke et al. (2002)	✓				✓	
Sparling et al. (2005), Study 1				✓	✓	
Sparling et al. (2005), Study 2				✓	✓	
Taneja et al. (2002)				✓		
The St. Petersburg–USA Orphanage Research Team (2008), Study 1	✓		✓	✓	✓	
The St. Petersburg–USA Orphanage Research Team (2008), Study 2	✓	✓	✓	✓		
Wolff et al. (1995)				✓	✓	
Wright et al. (2014)				✓	✓	

Note. ✓ = yes/true.

environment. They used more than 15 different assessment instruments including several intelligence tests, general development scales, language ability measures, physical development measures, mental health questionnaires, behavior records as well as attachment and interaction quality measures. The most frequently applied instruments were the Cattell Infant Intelligence Scale (Cattell, 1940) and the Denver II (Frankenburg & Dodds, 1990), both measuring intelligence and developmental quotients. For details of the applied instruments see Tables 3 and 4.

Intervention Effects on Development and Health

Dependent designs. Nine intervention studies with dependent designs reported intervention effects on the children's developmental and/or health status. The majority of studies focused on development, but the observed aspects varied greatly. Seven studies focused on mental and psychomotor development variables (see Table 3). Three of them (Lecannelier et al., 2014; Rheingold, 1956; Taneja et al., 2002) also applied social behavior measures. Hermenau et al. (2011) and Hermenau,

Kaltenbach, et al. (2015) reported outcomes regarding different mental health variables (see Table 3).

Effect sizes (Cohen's d_z) of children's development and health varied greatly (range: 0.30–2.54), indicating positive changes in children's development. Three studies had very large effects with $d_z = 1.35$ ($p < .01$; McCall et al., 2010), $d_z = 1.67$ ($p < .0001$; Taneja et al., 2002), and $d_z = 2.54$ ($p < .001$; Rheingold, 1956). While Rheingold (1956) conducted a stimulation study with a very large effect, the other stimulation study by Saltz (1973) showed a moderate effect ($d_z = 0.61$, $p < .01$) on developmental and health factors. The remaining seven dependent studies provided complex training approaches.

Independent designs. Ten of the 11 studies with independent designs reported intervention effects on children's development or health (see Table 4), one of them for both subcategories (Kim et al., 2003; physical development and physical health). Again, most researchers focused on developmental characteristics, using general and mental development as observed outcome variables in 73% of the studies.

Effect sizes (Cohen's d_s) of children's development and health varied greatly (range: 0.12–2.06). Most studies showed

Table 3. Outcomes and Effects of Studies With Dependent Designs.

Study	Outcome Category ^a	Outcome Variable/ Measures	Assessment Scale/Other	Effect Size ^b	Postassessment	Summary of Effects ^c
Casler (1965a)	Cat. 1	General development	Gesell Developmental Schedules	$d_z = 0.36^d$	10 Weeks	Small effect of intervention on general development compared to matched control group after 10 weeks of intervention but not significant ($p = .48$)
Casler (1965b)	Cat. 1	General development	Gesell Developmental Schedules	—	Not specified	Insufficient data reported
Espié et al. (2011)	Cat. 1	Behavioral development	NBAS; ADBB	—	12 Months	Insufficient data reported
Gavrin and Sacks (1963)	Cat. 1	Cognitive development	Stanford–Binet Scale	$d_z = 0.49^d$	9 Months	Moderate effect of intervention on IQ after max. 9 months of stay ($p < .01$)
Hermenau et al. (2011)	Cat. 1	Mental health	UCLA–PTSD M.I.N.I. SDQ	$d_z = 0.55^e$ $d_z = 0.12^e$ $d_z = 0.22^e$	6 Months	Moderate effect of intervention on PTSD symptoms after 6 months ($p < .05$); no significant effect of intervention on depressive symptoms ($p = .78$) and internalizing/externalizing problems ($p = .14$).
	Cat. 2	Experienced violence	Structured interview:	$d_z = 0.64^e$		Moderate effect of intervention on caregiving quality after 6 months ($p < .01$)
Hermenau, Kaltenbach, et al. (2015)	Cat. 1	Mental health	CDI SDQ RPQ	$d_z = 0.96$ $d_z = 0.34$ $d_z = 0.76$	3 Months	Large effect of intervention on depressive symptoms ($p < .001$); moderate effect of intervention on internalizing and externalizing problems ($p = .042$); large effect of intervention on aggressive behavior ($p = .001$) after 3 months
	Cat. 2	Exposure to physical maltreatment and psychomotor and behavioral development	Maltreatment and Abuse Chronology of Exposure—Pediatric Interview; <i>open question</i> : Psychomotor Development Scale IBR	$d_z = 0.99^f$		Large effect of intervention on exposure to physical maltreatment after 3 months ($p < .05$)
Lecannelier et al. (2014)	Cat. 1	Psychomotor and behavioral development		$d_z = 0.26^e$ $d_z = 0.55^e$	2 Months	No significant effect of intervention on children's psychomotor development after 2 months ($p = .42$); moderate effect of intervention on children's active and reactive behavior ($p < .01$)
McCall et al. (2010)	Cat. 2 Cat. 1	Attachment General development	ADS BDI	$d_z = 0.25^f$ $d_z = 1.35^g$	1.3 Years	Small effect of intervention on attachment quality ($n.s.$, $p = .50$) Large effect of intervention on general development after 1.3 years ($p < .01$)
Rheingold (1956)	Cat. 2	Caregiver–child interaction	CCSERRS	$d_z = 4.1^g$		Very large effect of intervention on caregiving quality (assessed in 20 caregivers) after 1.3 years ($p < .01$)
	Cat. 1	Cognitive and social development	Cattell Infant Intelligence Social Test	$d_z = 1.17^{d,g}$ $d_z = 3.91^{d,g}$	8 Weeks	Large effect of intervention on IQ and social development compared to matched control after 8 weeks of intervention but not significant due to small sample size ($p > .05$)
Saltz (1973)	Cat. 1	Cognitive development	Cattell Infant Intelligence	$d_z = 0.61^h$	1 Year	Large effect of intervention compared to matched control after 1 year ($p < .01$)
Taneja et al. (2002)	Cat. 1	Motor, mental, and social development	DASII motor DASII mental DASII social	$d_z = 1.36^e$, $d_z = 1.96^e$, $d_z = 1.68^e$	3 Months	Large effects of intervention on developmental factors compared to preintervention status ($p < .0001$)
	Cat. 2	Institutional environment	Observed	—		No data reported

(continued)

Table 3. (continued)

Study	Outcome Category ^a	Outcome Variable/ Measures	Assessment Scale/Other	Effect Size ^b	Postassessment	Summary of Effects ^c
Wolff et al. (1995)	Cat. 1	Cognitive and behavioral development	Recorded by staff; Behavior Symptom Questionnaire	—	2 Years	No data reported
	Cat. 2	Institutional environment	Observed	—		No data reported
Wright et al. (2014)	Cat. 1	General development	Observed	—	Not specified	No data reported
	Cat. 2	Institutional environment	Observed	—		No data reported

Note. NBAS = Neonatal Behavior Assessment Scale; ADBB = Alarm Distress Baby scale; UCLA-PTSD = University of California at Los Angeles—post-traumatic stress disorder Index for Children, DSM-IV; M.I.N.I. = Mini-International Neuropsychiatric Interview Kid for Children and Adolescents; SDQ = Strengths and Difficulties Questionnaire; CDI = Children's Depression Inventory; RPQ = Reactive-Proactive Questionnaire; IBR = Infant Behavior Record; ADS = Massie-Campbell Attachment During Stress Scale; BDI = Battelle Developmental Inventory; CCSERRS = Caregiver-Child Social/Emotional/ Relationship Rating Scale; DASII = Developmental Assessment Scale for Indian Infants.

^aCat. 1 refers to variables of child development and health; Cat. 2 refers to variables of caregiving and institutional quality and attachment. ^b— indicates that effect size was not calculable. ^c*p* values were reported by the studies or by Bakermans-Kranenburg et al. (2008). ^dEffect size or *p* value according to Bakermans-Kranenburg et al. (2008). ^eCalculated for the present study using means and standard deviations/*t*-values. ^fCalculated for the present study using χ^2 values. ^gCalculated for the present study using η^2 values. ^hCalculated for the present study using *F* values.

Table 4. Outcomes and Effects of Studies With Independent Designs.

Study	Outcome Category ^a	Outcome Variable/Measures	Assessment Scale/ <i>Other</i>	Effect Size ^b	Postassessment	Summary of Effects ^c
Berument (2013)	Cat. 1	Cognitive and language development	Ankara Development Schedule	$d_s = 0.43^d$	18 Weeks	Moderate effect of intervention on infants' and preschoolers' cognitive development compared to controls after 18 weeks ($p < .05$)
	Cat. 2	Institutional care quality	ITERS-R; ECERS	—		Insufficient data reported
Brossard et al. (1971)	Cat. 1	Cognitive development	Griffiths Mental Development Scale	$d_s = 1.16^e$	10 Weeks	Large effect of intervention on IQ compared to control after 10 weeks of intervention ($p = .03$)
Hakimi-Manesh et al. (1984)	Cat. 1	Cognitive and psychomotor development	Bayley Scales of Infant Development II	$d_s = 1.01^f$	6 Weeks	Large effect of intervention compared to control after 6 weeks of intervention ($p = .03$)
Hunt et al. (1976)	Cat. 1	Psychomotor development	Uzgiris-Hunt Ordinal Sensorimotor Scale	$d_s = 1.16^e$	Not specified	Large effect of intervention on psychomotor development compared to control ($p < .01$)
Kim et al. (2003)	Cat. 1	Physical development	Measures of physical development ^g	$d_s = 2.06^f$	23 Weeks	Large effect of intervention on physical development compared to control after 23 weeks ($p < .01$)
	Cat. 1	Physical health	Child health institutional record	$d_s = 3.15^f$		Large effect of intervention on physical health compared to control after 23 weeks ($p < .001$)
Sayegh and Dennis (1965)	Cat. 1	Cognitive development	Cattell Infant Intelligence	$d_s = 0.74^e$	3 Weeks	Moderate effect of intervention on children's IQ compared to control after 3 weeks but not significant ($p = .21$)
Smyke et al. (2002)	Cat. 1	Behavioral and language development	Semistructured interview	—	Not specified	Insufficient data reported
	Cat. 2	Attachment	DAI	$d_s = 0.74^f$		Moderate effect of intervention on children's attachment disorder symptoms compared to control after 3 weeks ($p < .001$)
Sparling et al. (2005), Study 1	Cat. 1	General developmental	Denver II	$d_s = 0.75^e$	13 Months	Moderate effect of intervention on children's general developmental state compared to control ($p < .01$)
	Cat. 2	Caregiving quality	Videotape analysis	—	3 Months	Insufficient data reported; authors report significantly more interaction with adults for the experimental group
Sparling et al. (2005), Study 2	Cat. 1	General developmental	Denver II	$d_s = 0.86^e$	12 Months	Large effect of intervention on children's general developmental state compared to control ($p < .01$)
The St. Petersburg–USA Orphanage Research Team (2008), Study 1	Cat. 1	General development	BDI	$d_s = 1.31^d$	3 Years	Large effect of intervention on general development compared to control after 3 years ($p < .01$)
	Cat. 2	Caregiving quality	PCERA	$d_s = 0.75^d$		Moderate effect of intervention on caregiving quality compared to control after 3 years ($p < .001$)
The St. Petersburg–USA Orphanage Research Team (2008), Study 2	Cat. 1	General development	BDI	$d_s = 0.12^d$	3 Years	No effect of intervention on general development compared to control after 3 years (<i>ns</i>)
	Cat. 2	Caregiving quality	PCERA	$d_s = 0.26^d$		Small effect of intervention on caregiving quality compared to control after 3 years but not significant

Note. ITERS-R = Infant–Toddler Environment Rating Scale-Revised; ECERS = Early Childhood Environment Rating Scale; DAI = Disturbances of Attachment Interview; BDI = Battelle Developmental Inventory; PCERA = Caregiver–Child Interactions During Free Play; *ns* = not significant.

^aCat. 1 refers to variables of child development and health; Cat. 2 refers to variables of caregiving and institutional quality and attachment. ^b“—” indicates that effect size was not calculable. ^c p Values were reported by the studies or by Bakermans-Kranenburg et al. (2008). ^dCalculated for the present study using F values. ^eEffect size or p value according to Bakermans-Kranenburg et al. (2008). ^fCalculated for the present study using means and standard deviations/ t -values. ^gMeasures of physical development included: Cas electronic scale, length rod, and measuring tape.

moderate to large effect sizes. One study reported a very large effect size of $d_s = 3.15$ ($p < .001$; Kim et al., 2003; physical health). Training interventions (range: 0.12–1.31) reported small to large effects, and stimulation/structural interventions (range: 0.74 – 2.06) displayed moderate to large effects indicating an overall advantage of the intervention groups compared to control groups. Berument (2013) and Kim, Shin, and White-Traut (2003) provided Time \times Group interaction effects on children's development ranging from $\eta_p^2 < 0.01$ to $\eta_p^2 = 0.13$. This indicates very small to moderate interaction effects. Smyke, Dumitrescu, and Zeanah (2002) also measured developmental and behavioral variables using a semistructured interview, but effect sizes were not calculable due to the insufficient report of data.

Intervention Effects on Caregiving or Institutional Quality and Attachment

Dependent designs. Four of the nine studies with dependent designs examined changes in the quality of caregiving and the institutional environment or attachment variables, all considering different outcomes and assessment instruments (see Table 3). Because of this variety, the range of effects was very large (range: 0.25–4.10): Lecannelier, Silva, Hoffmann, Melo, and Morales (2014) reported a small but not significant effect of a caregiver training on the children's attachment styles ($d_z = 0.25$, $p = .50$). Hermenau et al. (2011) measured the effect of a caregiver training intervention on the violence exposure of children living in a child care institution, reporting a moderate effect ($d_z = 0.64$, $p < .01$). Hermenau, Kaltenbach, et al. (2015) assessed the impact of caregiver training on the occurrence of physical maltreatment of children in an institution with a large effect ($d_z = 0.99$, $p < .05$). McCall et al. (2010) reported a very large effect ($d_z = 4.10$, $p < .01$) of a training intervention with additional structural changes on institutional quality. A fifth study with a dependent design (Taneja et al., 2002) also observed institutional environment but failed to provide calculable data. However, authors described notable changes in the caregivers' behavior.

Independent designs. Only 5 of the 11 studies with independent designs focused on outcomes of institutional and caregiving quality or attachment variables, each using different instruments (Berument, 2013; The St. Petersburg-USA Orphanage Research Team, 2008, Studies 1 and 2; Smyke et al., 2002; Sparling, Dragomir, Ramey, & Florescu, 2005, Study 1). None of them used a randomized controlled design. Moreover, only three of the studies provided sufficient information to calculate main effects of the intervention (see Table 4). Two of them presented almost commensurate effect sizes: The St. Petersburg-USA Orphanage Research Team (2008) Study 1 reported a moderate effect on child–caregiver interaction quality in the intervention group that had received a comprehensive training intervention plus structural changes in contrast to the control group with no intervention ($d_s = 0.75$, $p < .001$). Also, Smyke et al. (2002) found a moderate effect on attachment in the intervention group

in which the child–caregiver ratio has been improved compared to the control group ($d_s = 0.74$, $p < .001$). In contrast, the second study, conducting a training-only approach, by The St. Petersburg-USA Orphanage Research Team (2008) showed only a small effect on child–caregiver interaction quality when compared to the control group that did not reach statistical significance ($d_s = 0.26$, not significant). Berument (2013) did not provide data for main effects but reported a large Time \times Group interaction effect ($\eta_p^2 = 0.83$, $p < .001$) on care quality for both younger and older children together. The fifth controlled study observing variables of environmental quality or attachment (Sparling et al., 2005; Study 1) did not provide numeric data for any effect size calculation but described significantly more interaction with adults for the intervention group in videotaped caregiver–child interactions.

Discussion

Summary of Evidence

The present review provides insight into the current state of research on peer-reviewed structural interventions and caregiver trainings for child care institution improvement by systematically examining and comparing a wide range of varying interventions conducted over the last 65 years. Our systematic literature search revealed only 24 intervention studies involving 1,253 children. This underlines that the knowledge regarding interventions that address the structure of institutions and the relation between caregiver and children in institutional care is limited thus far, and further research is needed to provide practical guidelines on how to improve institutional care in order to foster children's development.

Nevertheless, our findings are in concordance with our hypothesis that caregiver trainings, structural changes, and enriched caregiving environments in child care institutions have beneficial effects on the child's emotional, social, and cognitive development. Nine intervention studies with dependent designs reported moderate to large effects and 10 with independent designs reported small to large effects on the children's developmental and health status. Very few studies (four with dependent design and five with independent design) focused on the hypothesis that caregiver training, structural changes, and an enriched caregiving environment in child care institutions would have beneficial effects on the quality of care, the child–caregiver relationship, and the general institutional environment. These studies supported our hypothesis showing small to moderate effect sizes. However, more studies focusing on improvement in the general caregiving environment and particularly on the caregiver–child relationship (i.e., attachment and bonding) and prevention of maltreatment are needed.

The intervention approaches were only theory based in less than one third (29%) of the studies included, and only three studies applied a manualized interventions approach. The major theoretical orientation was *attachment theory*. As a consequence of parental loss, and the many and changing caregivers, institutionalized children often lack a secure and

stable attachment to a caregiver (McCall, 2013). The attachment theory implies that long-term adverse effects might be avoided if caregiving standards in the institution were improved because better caregiving should produce more organized and secure attachments as well as better stress regulation (McCall, 2013).

Overall, our findings indicate the need for increasing efforts to improve quality of care in institutional care. The predominant finding of mainly positive effects regarding a wide range of factors demonstrates that structural interventions and caregiver trainings have the potential to contribute effectively to an improvement in children's living conditions in institutional care and, subsequently, on their development. The effect sizes of developmental factors for independent and dependent designs are very similar to the combined effect of adoption on IQ ($d = 1.17$) reported in a study by Van Ijzendoorn, Juffer, and Klein Poelhuis (2005). Our results are also in accordance with previous findings from research on institutional interventions which point out the generally high improvement potentials of child care institutions as well as the children's abilities to overcome previous delays if their living environment is enriched (cf. Bakermans-Kranenburg et al., 2008).

The differing approaches found only partly reflect the time period in which the interventions were conducted. Although the majority of studies with additional stimulation as intervention date back to the 1950s to 1970s, also today many child care institutions in resource-poor countries do not offer small children enough stimulation that would be necessary for a healthy development. As such, these studies can serve as a helpful starting place for institutions that are attempting to enrich the environments of the children under their care. Nevertheless, the tendency of more recent intervention studies to apply several intervention contents simultaneously can generally be considered commendable in terms of promoting adequate child care. While caregiver trainings show rather small and unspecific effects, their impact is considered stable and sustainable (cf. The St. Petersburg-USA Orphanage Research Team, 2008). Particularly, caregiver training (attachment orientated) and structural changes in institutions ("family-like environment") imply that caregivers spent more quality time with the children, thus improving the child-caregiver relationship and providing additional stimulation for the children (Hermenau et al., 2011; Rygaard, 2010).

Limitations of the Included Studies

The body of evidence in this systematic review comes from 24 studies involving 1,253 children from 15 countries. However, the informative value and the validity of the results of this review remain limited. First, the results of the database search revealed only a small number of studies fulfilling our inclusion criteria. Second, nine of the studies included had no control group. The validity of effects of *uncontrolled* studies is limited due to the fact that improvements observed in outcome variables are not necessarily attributable to the intervention itself. The other 15 studies had controlled designs, yet 7 of them only used quasi-experimental designs with intervention groups and nonmatched

control groups. Four studies compared intervention groups to—as far as possible—matched control groups from a different institution or within the same institution, and only three studies were randomized controlled trials (see Table 5 for details). Studies with control groups, however, sometimes lacked a longitudinal design. Thus, group comparisons were limited to intervention main effects and did not allow the calculation of Time \times Treatment interactions. The lack of control groups in more than a third of the studies, as well as the significant attrition rates depleting participant sample sizes (average decrease 32%), illustrate the obstacles involved in the implementation of intervention studies adhering to rigorous scientific standards in this research area. Due to a lack of longitudinal designs or a failure to present Time \times Interaction effects, the internal validity of the *controlled* studies is also limited. However, researchers have to react to the reality of care institutions, such as heavy caregiver turnover and children moving in and out of the system. While this can pose a threat to internal validity, it can also increase external validity and, thus, the feasibility of practical implementation outside research settings. All but nine studies had a very small sample size ($n < 50$), and only one of them (Kim et al., 2003) reported power calculations. Many studies were also poor in their reporting or lacking in quality with respect to methods sequence generation and allocation concealment, incomplete outcome data, reliance on self-reported outcomes, and poor reliability and validity of instruments used to measure outcomes (see Table 5). Therefore, internal validity of the studies is unclear and likely to be poor. However, the studies by The St. Petersburg-USA Orphanage Research Team (2008) and Berument (2013), while using nonmatched control groups, are notable exceptions and present relatively reliable results.

Limitations of Present Systematic Review

Due to the inclusion of studies with different designs, it was necessary to calculate two different effect sizes: Cohen's d_z for dependent and Cohen's d_s for independent designs. As a consequence of this classification, sound methodological designs (i.e., randomized or matched controls) have been grouped with less rigorous designs (i.e., nonmatched controls or uncontrolled studies). Calculation of the preferable Cohen's d_{rm} , which additionally controls for the correlation of the two measurement points and which allows comparisons across within- and between-subject designs (Lakens, 2013a), was not possible due to a lack of reporting correlation values in most studies. Hardly any of the included studies provided effect sizes for their measured results. Thus, additional calculation and using information provided by a previous meta-analysis (Bakermans-Kranenburg et al., 2008) was necessary. Yet, this may be problematic, as the numbers retrieved from another study could be erroneous and this may have impacted our findings. Four studies (Casler, 1965b; Espié et al., 2011; Wolff et al., 1995; Wright et al., 2014) failed to provide any calculable data, and information from other sources was not available. Furthermore, our literature search was limited to studies published in the

Table 5. Risk of Bias.

Study	Country	Study Design RCT?	Controlled Design (Control Group or Long Baseline)?	Longitudinal Analysis?	Participants' Dropout Below 25%?	Sample Size Bigger Than 50?	Sample Size Calculations?	Quality of Measurements Appropriate (i.e., Standardized Measurements)?
Berument (2013)	Turkey	—	+	+	—	+	—	+
Brossard and Decarie (1971)	Canada	—	+	+	—	—	—	+
Casler (1965a)	United States	—	+	+	—	—	—	+
Casler (1965b)	United States	—	+	+	+	—	—	+
Espié et al. (2011)	Sudan	—	?	+	—	—	—	+
Gavrin and Sacks (1963)	United States	—	—	+	+	+	—	+
Hakimi-Manesh et al. (1984)	Iran	+	+	+	+	—	—	+
Hermenau et al. (2011)	Tanzania	—	+	+	—	—	—	+
Hermenau, Kaltenbach, et al. (2015)	Tanzania	—	+	+	—	—	—	+
Hunt et al. (1976)	Iran	—	+	—	—	—	—	+
Kim et al. (2003)	South Korea	+	+	—	+	—	+	—
Lecannelier et al. (2014)	Chile	—	—	+	—	—	—	+
McCall et al. (2010)	El Salvador	—	—	+	?	—	—	+
Rheingold (1956)	United States	—	+	—	—	—	—	+
Saltz (1973)	United States	—	+	+	—	—	—	+
Sayegh and Dennis (1965)	Lebanon	—	+	+	?	—	—	+
Smyke et al. (2002)	Romania	—	+	—	+	+	—	+
Sparling et al. (2005), Study 1	Romania	—	+	+	+	+	—	+
Sparling et al. (2005), Study 2	Romania	+	+	+	+	+	—	+
Taneja et al. (2002)	India	—	—	+	—	—	—	+
The St. Petersburg–USA Orphanage Research Team (2008), Study 1	Russia	—	+	+	—	+	+	+
The St. Petersburg–USA Orphanage Research Team (2008), Study 2	Russia	—	+	+	—	+	+	+
Wolff et al. (1995)	Eritrea	—	?	+	—	+	—	—
Wright et al. (2014)	Nepal	—	—	+	?	+	—	—

+ = yes/true.

— = no/not true.

? = questionable/unclear.

English language. Although many studies that were conducted in non-English-speaking countries were published in the English language, there may be relevant studies published in other languages. As a result, we cannot completely rule out that this potential selection bias may have impacted our results in an unknown way. The studies were conducted in 15 countries

worldwide and across the span of several decades indicating heterogenous environmental conditions and cultural influences. Furthermore, the studies used different interventions and various outcome measures. This potentially limits the internal validity of our findings, as additional factors may have not been controlled. However, the external validity and generalizability



of our findings may be higher due to the heterogeneous and naturalistic set of studies.

Future Research Directions

The small number of studies that our systematic literature search revealed clearly indicates that the research question of how to improve institutional care to foster children's development has been mainly neglected so far. Our findings underline the urgent need to address this research question using rigorous scientific standards, as the number of children who grow up in institutional care is rapidly increasing, particularly in resource-poor countries.

As different as the institutions were from one another, the intervention approaches were equally diverse. Our findings have shown that less than one third of the intervention approaches were theory based, and only three studies applied manualized interventions. Therefore, we advocate for developing theory-based and manualized training concepts for institutional caregivers that may be based on attachment and that can be tested using rigorous scientific standards. Such training concepts should be able to sustainably improve the life of children in institutional care and be applicable across different institutional settings worldwide. One promising approach that is theory based and manualized is *FairstartGlobal* (www.fairstartglobal.com). It is a curriculum rooted in attachment theory that promotes appropriate caregiver–child interactions and relationships. Its unique benefits include free availability on the Internet, implementation flexibility, administrator and staff involvement in creating its implementation, translation into 26 languages, and current implementation in numerous countries around the globe (McCall, Groark, & Rygaard, 2014; Rygaard, 2010). Yet, its effectiveness still needs to be evaluated.

Abusive discipline measures are still very prevalent in many countries around the world (Stoltenborgh, Bakermans-Kranenburg, Alink, & van Ijzendoorn, 2012; Stoltenborgh, Bakermans-Kranenburg, van Ijzendoorn, & Alink, 2013; Straus, 2010). In resource-poor countries in regions such as Sub-Saharan Africa and South Asia, caregivers are often poorly educated and overstrained. This paucity, coupled with the fact that children living in institutional care are more likely to show behavioral and emotional problems due to early experiences of maltreatment, leaves these children at an elevated risk of experiencing further maltreatment in institutional care (Hermenau et al., 2014). Although the negative impact of maltreatment on the children's development is undeniable (Gershoff, 2002; Hecker, Hermenau, Salmen, Teicher, & Elbert, 2016), only two studies included in this review focused on the prevention of violence and abuse in institutional care (Hermenau, Kaltenbach, et al., 2015; Hermenau et al., 2011). The prevention of physical and emotional abuse in institutional care has otherwise been largely neglected thus far. In contrast to this, the major child maltreatment prevention strategy, developed by the Center for Disease Control and Prevention, the *Safe, Stable, Nurturing Relationships* (SSNR) framework is advocating for (1) measuring the impact of child maltreatment systematically, (2) creating and evaluating new approaches to

Table 6. Critical Findings.

- (1) Structural interventions and caregiver trainings contribute to an improvement in children's living conditions in institutional care.
- (2) Training of caregivers and structural changes have beneficial effects on the children's development.
- (3) The prevention of physical and emotional abuse in institutional care has widely been neglected.
- (4) More efforts are needed to focus on the improvement of general caregiving environment, caregiver–child relationship, and maltreatment prevention.

Table 7. Implications for Practice, Policy, and Research.

- (1) Broad, theory-based approaches are needed and should be tested using rigorous scientific standards.
- (2) Responsive nonviolent caregiver–child interactions are crucial to children's physical and behavioral development.
- (3) Beyond improving caregiver–child attachment, caregiver trainings should also focus on prevention of violence and abuse in institutional care.
- (4) Improving the quality of care may be more important than the type of care (e.g., institutional care vs. foster care).

prevention, (3) applying and adapting evidence-based practices, and (4) building community readiness. In line with the SSNR framework and the fact that abusive discipline measures frequently occur in institutional care settings and that they can add to the psychological burden of prior parental loss and possible adverse experiences in the family of origin (Hermenau et al., 2014), there must be greater efforts at preventing violence against and the abuse and neglect of children living in institutional care (Hermenau, Kaltenbach, et al., 2015).

Recommendations for Institutional Care Policies

Many of the intervention approaches included in the studies of the present review have some important components in common: They all aim at improving the caregiver–child relationship (attachment and bonding), enriching the caregiving environment through additional stimulation and quality time, and at least some focus on preventing maltreatment and further harm (Hermenau, Kaltenbach, et al., 2015; McCall & Groark, 2015; Rygaard, 2010). When designing interventions or improving care facilities, governmental officials, institutional directors, and caregivers should focus on these core elements. Researchers can support practitioners in testing these core elements in rigorous research designs that provide clear conclusions and practical implications.

From our findings and the examples of successful attempts to improve care quality and to prevent maltreatment in institutional care, we can, therefore, conclude two important practical implications: (a) although basic nutrition, sanitation, safety, and medical care are essential, responsive nonviolent caregiver–child interactions are also crucial to children's physical and behavioral development; and (b) improving quality of care may be more important than the type of care (see Tables 6 and 7).

Conclusions

In sum, the results of this review suggest that different interventions seem to have a positive impact on the children's development as well as the environmental factors that may also positively influence the children's development (e.g., child-caregiver attachment). Therefore, we advocate for testing theory-based and manualized intervention approaches by using rigorous scientific standards. Training caregivers and involving them in structural changes enhance the likelihood for sustainable effects. Moreover, our review revealed that interventions aimed at improving institutional care settings have largely neglected the prevention of violence and abuse. Thus, programs mainly based on attachment theory need to be expanded to be able to protect children from further maltreatment and harm in institutional settings. The sustainable implementation of evidence-based prevention programs in child care institutions will enable more children around the globe to grow up in supportive and nonviolent environments, thereby helping them to develop in a healthy manner.

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