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ORIGINAL PAPER

Treating Mental Health Disorders for Children in Child Welfare Care: Evaluating the Outcome Literature

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Abstract
Background Children involved in the child welfare system (CWS) have a greater need for mental health treatment relative to children in the general population. However, the research on mental health treatment for children in the CWS is sparse with only one known previous review of mental health services with children in the CWS.
Objective This review reports on an evaluation of the literature examining mental health interventions for children within the CWS.
Methods The Grades of Recommendation Assessment, Development and Evaluation (GRADE) process was used as the basis of the evaluation.

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Results The results reflect that, while the overall quality of research in this area is low and findings are, at times, inconsistent, detailed, manualized interventions using multiple treatment components that focus on family, child, and school factors showed the most promise in regards to child mental health outcomes and placement stability. These interventions not only report the best quality outcomes for children and families, but they were also most highly recommended within the GRADE analysis.
Conclusions These findings emphasize the importance of comprehensive intervention efforts that involve the family and community, as well as the child. The inconsistent positive outcomes may be partially explained by the lack of trauma-informed practices incorporated into treatment for these often traumatized children. Recommendations for research in regards to mental health interventions for children in the CWS are discussed.

Keywords Child maltreatment · Child welfare · Mental health · Effective treatment

Introduction

Children and youth involved in the child welfare system are among society's most vulnerable. Their histories include experience with physical abuse, neglect, maltreatment, sexual abuse, and exposure to intimate partner violence, or too often, a combination of a variety of these experiences with violence Trocmé et al. (2003). In addition, they often experienced high rates of poverty; pre/post natal exposure to drugs, alcohol, and toxins; and parental substance abuse Christian and Schwarz (2011).

Maltreatment and Mental Health

The presence of an increased number of risk factors, including those mentioned above, along with placement instability, is linked to a higher probability that a child will have mental health concerns, social skill deficits, and other life stressors (James et al. 2004; Raviv et al. 2010; Rubin et al. 2004; Rubin et al. 2007; Taussig and Culhane 2010). In support of this, children involved in the child welfare system have a greater need for mental health treatment relative to children in the general population. Canadian data suggests that while 17 % of children and youth under the age of 18 years have at least one identifiable mental health disorder, the prevalence of mental health problems for children in the child welfare system ranges from 32 to 87 % (Burge 2007; Leslie et al. 2005; Nixon et al. 2008; Steele and Buchi 2008).

Access to Mental Health Services

Studies are inconclusive regarding whether this group of children has timely and appropriate access to mental health services. Glisson and Green (2006) report that approximately 64 % of children involved in the child welfare and/or youth justice systems have mental health needs severe enough to require service, but only 23 % actually receive services. Drawing on data from the *National Survey of Child and Adolescent Well-Being (NSCAW)*, Burns et al. (2004) found that nearly half (47.9 %) of the children in the child welfare system between the ages of 2–14 years had clinically significant emotional and/or behavioral problems, but slightly less than 16 % utilized mental health services.

There is a prominent research base for evidence-based mental health treatment for children who have experienced trauma in general. Overall, studies have found cognitive-behavior therapy to be effective for treating post-traumatic stress, as well as anxiety disorders in children (Scheeringa et al. 2011; Silverman, Oritz et al. 2008; Silverman and Motoca 2011; Silverman, Pina et al. 2008). A meta-analytic study conducted by Silverman, Oritz et al. (2008) found cognitive behavior therapy-related treatments were most effective at improving posttraumatic symptoms.

The research on evidence-based mental health treatment for children in the child welfare system is limited despite the high need (Craven and Lee 2006). Some mental health interventions that have demonstrated promising outcomes for children in the child welfare system include treatment foster care (e.g., Farmer et al. 2002; Farmer et al. 2010; Murray et al. 2010), Multisystemic Therapy (e.g., Ogden and Halliday-Boykins 2004; Swenson et al. 2010), parent management training (e.g., Bywater et al. 2010; Chamberlain, Price, Reid et al. 2008; McDaniel et al. 2011), and Parent–Child Interaction Therapy (e.g., Chaffin et al. 2011). These interventions have been shown to reduce behavioral problems and the number of out-of-home placements for children in the child welfare system and reduce parental stress.

The only known review examining the efficacy of mental health treatment for children in the child welfare system is by Craven and Lee (2006). Due to the limited number of studies examining interventions with foster children, these authors included studies examining samples of high-risk children as well as foster children. This systematic research synthesis consisted of 18 interventions that were categorized using Saunders, Berliner, and Hanson's treatment protocol classification system, which is presented as "a clear, criteria-based system for classifying interventions and treatments according to theoretical, clinical, and empirical support" (Craven and Lee 2006, p. 291). Interventions were categorized into six categories based on the presence of a theoretical underpinning, supporting literature, no risk of harm, manualization, the presence of a control-group, and treatment efficacy, ranging from group 1—well-supported, efficacious treatment to 6—concerning treatment. The interventions that were identified as well-supported and efficacious included Incredible Years—Dina Dinosaur, Parent–Child Interaction Therapy, Multidimensional Treatment Foster Care, Multisystemic Therapy, Partners Intervention, and Prenatal and Early Childhood Home Visitation.

Present Study

Given the high rates of mental health problems among children in the child welfare system and the difficult and traumatic family environments these children experience, there is a need for effective mental health services that are tailored to meet the unique experiences of this population. When studies examine a large group of children, with some of them possibly involved in the child welfare system, their unique circumstances and outcomes may be overlooked. The current paper is therefore among the very few of its kind to review the efficacy of mental health treatments specifically for children in the child welfare system. The goal is not only to present the evidence on the efficacy of mental health treatment specifically for children in the child welfare system, but also practice-based evidence so that it is applicable to, and credible for, real world clinical practice.

There is a lack of agreement regarding the most effective methods for identifying, assessing, and synthesizing research. This has resulted in at least three fundamental errors applying research to practice. The first is that there is a reliance on research that has extensive methodological flaws. Second, best-practice evaluations do not always take into account the practitioner perspective and those panels that do inform practitioners are not

always evidence-based. Third, children and youth receive treatment based on clinical practice guidelines developed by panels of experts, which lacks a proper evaluation of the evidence (Van Adel et al. 2011).

Van Adel et al. (2011) suggest that input from practicing clinicians can make treatment reviews more practical and clinically relevant. The Grades of Recommendation Assessment, Development and Evaluation (GRADE) addresses the limitations of previous methods of evaluation by transparently integrating scientific evidence with implications for treatment planning and decision-making in clinical practice (see Van Adel et al., 2011 for more detailed information on the GRADE approach). The GRADE extends beyond traditional meta-analysis in focusing not only on effect sizes and methodological issues related to treatment outcomes, but also reporting on the applied practicality of the interventions. The GRADE was used in the current review to evaluate the research evidence relating outcomes of treatment to children who, once entering the child welfare system, are identified as having some form of mental health disorder. The following research questions were examined:

1. What is the effect of mental health interventions on the outcomes of children in the child welfare system compared to standard child welfare care?
2. What is the quality of that evidence?

Method

Procedure

The search for literature was completed on databases containing peer-reviewed published articles, PsychInfo, and Scholars Portal Search, as well as from the unpublished literature, Proquest Dissertations and Theses, Canadian Child Welfare Search Portal, Child Welfare Information Gateway, Education Resources Information Centre, and Google Scholar. The following search terms were used in different combinations: out-of-home placement/care, looked after children, child welfare, or children in care; children, youth, or adolescents; mental health, mental illness, mental diagnosis, mental health outcomes, or mental health service delivery; and intervention, case management, Multisystemic Therapy, Multidimensional Treatment Foster Care, systemic therapy, or therapy. This search resulted in 350 studies.

Criteria for inclusion

The primary purpose of the review was based on the research questions and pre/post measures that reflected the impact of service. Only studies specifically examining children and adolescents involved with the child welfare services were considered and pharmacological interventions were not included. No limitations as to the mode or who delivered the intervention were set. Finally, for a study to be included in the GRADE analysis, a publication date within the last 10 years was required (January 2001 to August 2011).

Judging the quality of the evidence

Study design in the GRADE analysis is critical but not the sole factor in judging the quality of evidence. Although not typical, a well-designed observational study can provide quality

evidence or even stronger evidence than a poorly designed randomized control trial (Brozek et al. 2009). Therefore, all relevant randomized control trials and studies that compared a treated group with another group were considered for inclusion. The following list of outcome measures were accepted for inclusion: measure of behavioral functioning, psychosocial functioning, placement stability, and parenting ability.

Quality Assessment

The abstracts of the original studies matching the search criteria were initially evaluated. From this group of studies, further examination allowed for the determination whether the study design and outcome measures met inclusion criteria. Thirty studies were initially identified and considered for inclusion. After further investigation, three studies were excluded; two were removed because they did not address the specific outcome measures examined (Fisher et al. 2007; McBeath and Meezan 2009). The third study was removed because it used the identical sample of another study included in the analysis (Chamberlain, Price, Reid et al. 2008).

Cohen's *d* was used for comparing treatment outcomes (Dunst et al. 2004; Lee et al. 2011; Thalheimer and Cook 2002). Effect sizes were calculated based on means and standard deviations, proportions benefiting from an intervention, or values of Chi square analyses, *t*-tests, or *F*-tests. The Effect Size Generator was utilized for studies that used *t*-tests, *F*-tests, or regression (Devilly 2004). For categorical outcomes, the value of Cohen's *d* was calculated using G*Power with Chi square values and sample size Buchner et al. (1996). At times, the calculation of Cohen's *d* required assumptions about the valid sample size for the analysis based on the sample description rather than the number of responses per outcome calculation (Lee et al. 2011). Sample size was considered when effect sizes were computed. Therefore, to determine the average effect size for each outcome variable within each intervention category, the effect sizes of the relevant studies were averaged. When studies examined various outcome measures that fell under the same outcome variable (e.g., numerous measures examining behavioral functioning), the effect sizes for relevant measures were averaged so there was only one effect size for each outcome variable (i.e., behavioral functioning, psychosocial functioning, placement stability, and parenting ability) for each study.

Characteristics of Included Studies

Services Examined

Intervention services in this review included parent or foster parent training (nine studies), Multidimensional Treatment Foster Care and Early Intervention Foster Care (seven studies), Multisystemic Therapy (three studies), general inpatient/outpatient mental health services (three studies), case management interventions (two studies), and a funding arrangement to support service delivery (one study). Cognitive behavioral and group therapy were each only examined by one study.

The comparison group most frequently cited consisted of regular child welfare services (19 studies), including foster care or children and families on a waitlist for services (five studies). Two studies compared foster children with mental health services to those who had not had mental health services, rather than examining specific types of treatment. One study compared foster children with children not involved with child welfare services.

Outcome measures

Eighteen of the studies examined behavioral functioning of children. The most common measure used was the Child Behavior Checklist (13 studies). Additional measures included the Eyberg Child Behavior Inventory (five studies) and Parent Daily Report (two studies). Only one study used each of the following measures: Behavioral Assessment System for Children, Beck Anxiety Inventory and the Child Depression Inventory. Psychosocial functioning was examined by eight studies using the Strengths and Difficulties Questionnaire (three studies), the Social Skills Rating Scale (three studies), and the Child and Adolescent Functional Assessment Scale (two studies). Placement-related outcome measures were assessed by 16 various studies. The measures examined included placement stability (three studies), type of placement (three studies), placement disruption (four studies), number of placements (4 studies), and time in out-of-home placement (two studies). Finally, seven studies examined aspects of parenting ability. Measures used to assess parenting ability included the Parenting Ability Scale (one study), proportion positive reinforcement (one study), Parenting Practice Interview (two studies), Adult-Adolescent Parenting Inventory (one study), Parenting Stress Index (two studies), and Dyadic Parent–Child Interaction Coding System (one study).

Intervention Categories

Due to the number of differing interventions, broader intervention categories were created that merged various interventions that were theoretically and conceptually similar in their service delivery models. Interventions were divided into differentiated and undifferentiated interventions. Differentiated interventions were specific and well-defined such as Multidimensional Treatment Foster Care. Typically, these interventions are manualized and involve specific service components for clients, although their approach may vary based on the individual needs of the child and their families. Undifferentiated interventions include broad-based and less focused interventions that provide limited information regarding the services received by the child and his/her families. These services include case management and outpatient mental health services where the specific mental health service received is either unknown or unspecified. Twenty-one studies fell into the differentiated intervention category and six in the undifferentiated intervention group. The differentiated intervention category was further divided into two levels: multiple component interventions (11 studies; e.g. Multidimensional Treatment Foster Care) and single component interventions (10 studies; e.g. Incredible Years Parenting Group). Additional characteristics of the 11 studies in the multiple component intervention category are presented in Table 1 and the 10 studies in the single component intervention category are presented in Table 2. A description of the six articles included in the undifferentiated intervention category are shown in Table 3.

Multiple component interventions Seven out of 11 studies in this category were randomized control trials with a total sample of 1257 ($M = 122.45$; $SD = 108.62$). The age of the children examined ranged from 0 to 14 years, with a mean of about 13 years ($SD = 4.72$). These studies had an average follow-up period of 13.20 months, ($SD = 20.08$). For eight of these studies, the intervention and control groups were considered comparable. The mean sample size for the intervention group was about 45 ($SD = 24.96$). The mean sample size for the comparison group was about 70

Table 1 General characteristics of the studies examining differentiated intervenitons with multiple components

Study	Design	Population	Intervention	Control	Outcome measure	Results
Fisher et al. 2005	RCT	Foster children, n(I) = 47, n(C) = 43; Age: 3–6 years; Sex: 57 boys	EIFC	RFC	Placement stability	Children in the EIFC group were significantly less likely to experience failed permanent placements.
Fisher et al. 2009	RCT	Foster children, n(I) = 29, n(C) = 23; Age: 3–5 years; Sex: 27 boys	EIFC	RFC	Placement stability	No group differences in permanency rates but more than double the rate of successful permanency for the intervention condition.
Miller 2007	RCT	Foster children, n(I) = 37, n(C) = 41; Age: 3–6 years (M = 4.33); Sex: 43 boys	EIFC	RFC	Placement stability	Children in MTFC group had fewer placement disruptions than those in comparison group
Nitkowski et al. 2009	Waitlist Control	Foster children with ODD or CD, n(I) = 12, n(C) = 12; Age: 6–12 years (M = 10.28); Sex: 21 boys	Individual and group CBT therapy; parent counseling program	RFC	Behavioral functioning (CBCL), psychosocial functioning (SDQ)	Conduct and prosocial behavior of treatment group improved significantly more than control group. The CBT program, along with regular foster care, leads to better outcomes.
Ogden & Halliday-Boykins 2004	RCT	Children in Norway child welfare system, n(I) = 62, n(C) = 38; Age: 12–17 years (M = 14.95); Sex: 63 boys	MST	RFC	Behavioral (CBCL) and psychosocial functioning (SSRS), type of placement	MST condition had greater decrease in internalizing behavior, greater increase in social competence, and were maintained in the home significantly more often than control group
Sundell et al. 2008	RCT	Children in Sweden child welfare system, n(I) = 79, n(C) = 77; Age: 12–17 years (M = 15); Sex: 95 boys	MST	RFC	Behavioral functioning, psychosocial functioning, placement disruption (CBCL, SSRS)	There were no differences in outcomes for the two groups. MST was not more effective then standard care
Swenson et al. 2010	RCT	Physically abused foster children, n(I) = 44, n(C) = 42; Age: 10–17 years (M = 13.88); Sex: 38 boys	MST	RFC with Enhanced Outpatient Treatment	Behavioral functioning, psychosocial functioning, type of permanent placement (CBCL, SSRS)	MST was significantly more effective then enhanced outpatient treatment in reducing mental health symptoms, out-of-home placements, and the number of placement changes. There was no difference between groups for psychosocial functioning

Table 1 continued

Study	Design	Population	Intervention	Control	Outcome measure	Results
Thomas 2008	Waitlist control	Foster children, n(I) = 38, n(C) = 52; Age: 1–6 years (M = 13.88); Sex: 43 boys	Infant mental health services: individual play therapy, group therapy, counseling	RFC: children's receiving home—no mental health services	Number of placements	Group that received additional infant mental health services did not differ from control group in number of placement disruptions.
Westermark et al. 2008	RCT	Antisocial youth in Sweden child welfare system, n(I) = 31, n(C) = 275; Age: 13–17 years; Sex: 193 boys	MST	RFC	Placement disruption	Sweden MTFC group had significantly less placement breakdowns then the standard care control group.
Westermark et al. 2011	RCT	Antisocial youth in Sweden child welfare system, n(I) = 20, n(C) = 15; Age: 12–18 years (M = 15.4); Sex: 18 boys	MST	RFC	Behavioral functioning (CBCL)	Effect sizes favored MTFC group with greater reductions in externalizing and internalizing symptoms.
Zeanah et al. 2001	Waitlist control	Maltreated children in child welfare system, n(I) = 95, n(C) = 145; Age: 0–4 years; Sex: 115 boys	Prevention: comprehensive assessment, individual therapy with parents, family therapy, attachment-based	RFC	Time in out-of-home placement, type of permanent placement	Children in intervention group had lower rates of reunification and higher rates of termination than control group. There were no significant differences in time in out-of-home care, but recidivism rates of maltreatment decreased in intervention group.

C—control group, CBCL—child behavior checklist, CBT—cognitive behavior therapy, CD—conduct disorder, EIFC—early intervention foster care, I—intervention group, MTFC—multidimensional treatment foster care, MST—multisystemic therapy, ODD—oppositional defiant disorder, SDQ—strengths and difficulties questionnaire, SSRS—social skills rating system, RCT—randomized control trial, RFC—regular foster care

Table 2 General characteristics of the studies examining differentiated interventions with an individual component

Study	Design	Population	Intervention	Control	Outcome measure	Results
Bywater et al. 2010	Waitlist control	Foster children and foster parents in Wales, n(I) = 29, n(C) = 17; Age: 2–16 years; Sex: 23 boys	Incredible years Parenting Group	Waitlist	Behavioral functioning (ECBI), psychosocial function (SDQ), type of permanent placement, parenting ability (parenting scale)	No group differences in SDQ scores but the parent reported child problem behaviors decreased significantly more for intervention group. There were no differences between groups in regards to parenting ability.
Chamberlain, Price, Leve et al. (2008)	RCT	Foster children, their parents, and their foster parents, n(I) = 359, n(C) = 341; Age: 4–13 years (M = 8.8); Sex: 336 boys	Keeping Foster Parents Trained and Supported	RFC	Behavioral functioning (PDR), Parenting ability (Proportion positive reinforcement)	Foster parents in the Keeping Foster Parents Trained and Supported intervention reported significantly fewer child behavior problems than those in the control condition and increased use of positive reinforcement
Letarte et al. 2010	Waitlist Control	Foster children and their parents, n(I) = 26, n(C) = 9; Age: 5–10 years (M = 8.6); Sex: 24 boys	Incredible years Parenting Group	Waitlist	Behavioral functioning (ECBI), parenting ability (PPI)	Incredible years parenting group participants improved significantly more than the control in regards to parenting practices and parent's perception of their child's behavior.
Linares et al. 2006	RCT	Foster children and their biological and foster parents, n(I) = 80, n(C) = 9; Age: 3–10 years (M = 6.2); Sex: Unknown	Combination: Incredible years Program and co-parenting component	RFC	Behavioral Functioning (ECBI), parenting ability (PPI)	Joint parent/foster parent training resulted in significant gains in positive parenting and a trend for fewer externalizing problems
Macdonald and Turner 2005	RCT	Foster parents, n(I) = 67, n(C) = 50; Age: 32–65 years (M = 45); Sex: 89 female, 12 male, 16 couple (No information given on children)	CBT Parent Training	Waitlist	Behavioral functioning (CBCL), number of placement breakdowns	There were no significant differences in CBCL outcomes or placement breakdowns for the two groups.

Table 2 continued

Study	Design	Population	Intervention	Control	Outcome measure	Results
Minnis et al. 2006	RCT	Foster children and their foster parents, n(I) = 76, n(C) = 106; Age: 5–16 years; Sex: 103 boys	Parent training: focuses on communication skills and attachment	RFC	Behavioral functioning (SDQ)	Outcome for intervention group was not different from comparison group but was a trend toward parent-reported decrease in psychopathology and attachment disorders. Cost of intervention group was higher.
Nilsen 2007	Waitlist	Foster children and their foster parents, n(I) = 11, n(C) = 7; Age: 5–12 years (M = 8.11); Sex: 6 boys	Incredible years Parenting Group	Waitlist	Behavioral functioning (BASC), parenting ability (Adult-Adolescent Parenting Inventory (AAPI))	Foster caregiver reported conduct symptoms were significantly lower for children in the Incredible years treatment group. A similar trend was found for externalizing behavior. There were no significant differences in parenting attitudes and stress.
Pears et al. 2007	RCT	Foster children, n(I) = 11, n(C) = 13; Age: M(I) = 6.49, M(C) = 6.61; Sex: 11 boys	Play therapy group: social competence, self-regulation skills	RFC	Behavioral functioning (CBCL)	Children in the group play therapy group had increased social competence and self-regulation skills. No significant differences were found for internalizing and externalizing behavior
Thomas and Zimmer–Gembeck 2011, PCIT	RCT	Children and parents involved in child welfare services, n(I) = 99, n(C) = 51; Age: 2–8 years (M = 5); Sex: 106 boys	PCIT	Waitlist	Behavioral functioning (ECBI, CBCL), parenting ability (PSI, Dyadic Parent–Child Interaction Coding System (DPICS))	Following treatment, child behavior and parental stress significantly improved for the PCIT group. Mothers in PCIT group also reported less child abuse potential and had improved maternal sensitivity

Table 2 continued

Study	Design	Population	Intervention	Control	Outcome measure	Results
Timmer et al. 2006	Comparison Group	Foster children and foster parents, n(I) = 75, n(C) = 98; Age: 2–9 years (M = 4.47); Sex: 237 boys	PCIT	Non-abusive biological parent–child dyads	Behavioral functioning (ECBI, CBCL), parenting ability (PSI)	Decreases in child behavior problems and caregiver distress from pre to post treatment for both groups but they generally did not decrease as much for the foster parent PCIT group as the biological parent PCIT group.

AAPI—adult-adolescent parenting inventory, BASC—behavioral assessment system for children, C—control group, CBCL—child behavior checklist, CBT—cognitive behavior therapy, DPICS—dyadic parent–child interaction coding system, ECBI—eyberg child behavior inventory, I—intervention group, PDR—parent daily report, parent child interaction therapy, PPI—parenting practice interview, PSI—parenting stress index, SDQ—strengths and difficulties questionnaire, RCT—randomized control trial, RFC—regular foster care

Table 3 General characteristics of the studies examining undifferentiated interventions

Study	Design	Population	Intervention	Control	Outcome measure	Results
Bellamy et al. 2010	Comparison group	Foster children, n(I) = 114, n(C) = 325; Age: M = 7.62; Sex: 228 boys	Outpatient mental health use	No mental health use	Behavioral functioning (CBCL)	Children in foster care who received outpatient mental health services did not have improved mental health outcomes.
DeSena et al. 2005	Matched Comparison	Foster children, n(I) = 375, n(C) = 375; Age: 3–12 years; Sex: 373 boys	SAFE home program: residential unit that aids children in finding foster home; case management	RFC	Number of placements, time in out-of-home care, type of permanent placement	Regular foster care group had comparable or better outcomes (e.g., less placement disruption and more likely to be living with their family) than SAFE Homes group. The intervention is also significantly more expensive than standard care.
Holden et al. 2007	RCT	Foster children, n(I) = 78, n(C) = 79; Age: 7–15 (M = 12.1); Sex: 83	Flexible, case rate payments for mental health services	RFC	Behavioral functioning (CBCL, CAFAS, BERS), psychosocial functioning (CAFAS), type of placement	Children in the case rate payment group were significantly more likely to be placed at home at 12 months. Children in both groups demonstrated improvement on CBCL, BERS, and CAFAS scores. Case rate payment program much less costly than usual-state supported services
Love et al. 2008	RCT	Foster children, n(I) = 23, n© = 23; Age: 6–17 (M = 10.28); Sex: 18 boys	Mental health care	RFC	Behavioral functioning (BAI, CDI, CBCL) Placement disruption	Although children who used mental health services had significantly worse outcomes on depression scale, may be due to Type 1 error
Mears et al. 2009	Comparison Group	Foster children with serious emotional disorders, n(I) = 96, n(C) = 30; Age: 5–19 years (M = 12.3); Sex: 79 boys	Wraparound Services	RFC	Behavioral functioning (CBCL), psychosocial functioning (CAFAS); number of placements	Intervention group had more improvement on the CAFAS scale than children in control group. Children in comparison group experienced significantly lower placements.
Park and Ryan 2009	Comparison Group	Foster children, n(I) = 296, n(C) = 5682; Age: 3–18 (M = 8.9); Sex: 3566 boys	History of inpatient mental health treatment	No previous mental health treatment	Placement disruption	Children with previous inpatient mental health treatment were significantly more likely to experience placement instability than children with no previous inpatient mental health treatment

BERS—behavioral and emotional rating scale, BAI—beck anxiety inventory, C—control group, CDI—child depression inventory, CAFAS—child and adolescent functional assessment scale, CBCL—child behavior checklist, CDI—child depression inventory, I—intervention group, RCT—randomized control trial, RFC—regular foster care, TRF—teacher report form

($SD = 77.46$). All but one of the interventions were manualized, with nine studies including a fidelity measure.

Single Component Interventions Seven out of the 10 studies in this category were randomized control trials with a total sample of 1,785 ($M = 178.50$; $SD = 213.32$). The age of the children examined ranged from 2 to 16 years and the mean age of participants was 6.48 years ($SD = 1.83$) with a follow-up period of 2.33 months ($SD = 3.28$). For nine of these studies, the intervention and control groups were considered comparable. The mean sample size for the intervention group was 88 ($SD = 106.07$). The mean sample size for the comparison group was 84 ($SD = 111.81$). All the interventions were manualized, with seven of the 10 studies having a measure of fidelity.

Undifferentiated Intervention Characteristics Six studies fell under this category. Two of the studies were randomized control trial designs; two studies used matched group comparisons and the other two studies used non-matched group comparison designs. The total number of children examined was 7430 ($M = 1238.33$; $SD = 2334.05$). The age range examined by these studies was 3 to 19 years. The mean age of participants was 10 years ($SD = 2.02$). The total number of children in the intervention groups was much lower than the number of children in the control groups, 907 and 6266 respectively. The average sample size of the intervention group was 151 ($SD = 134.75$) and the average sample size for the control group was 1044 ($SD = 2274.90$). For five of these studies, the intervention and control groups were considered comparable. Only two interventions were manualized and only one had a measure of fidelity.

GRADE Coding

The GRADE coding process involves a panel of researchers grading each study in regards to its quality of evidence (methodology) and strength of recommendation (advantages of the intervention vs. disadvantages). The quality is graded on a scale of 4 (1 = very low, 2 = low, 3 = moderate, and 4 = high) and the strength is given a rating of either 1 = weak or 2 = strong (Van Adel et al. 2011). For this review, there were five coders (the authors of this paper) who independently graded eight articles as a pilot to determine the consistency of coding[1] . These initial eight studies resulted in a percent agreement of 88 % (35/40). Consensus was achieved in areas of disagreement through group discussion and reference to the original article. To decrease coding discrepancy and clarify the coding process for the remaining articles, a coding classification chart was created that described what factors depict each level of the quality and strength ratings. Each rater then separately coded the remaining articles. A percent agreement of 80 % (108/135) was achieved. Where discrepancies were present, the more frequent grade (majority vote) was used.

Design

The final GRADE scores based on consensus for each study were organized according to the three intervention categories to assess the efficacy of the various types of interventions: (1) differentiated interventions that have multiple components, (2) differentiated interventions that have a single component, and (3) undifferentiated interventions. The interventions were

[1] The authors have declared no conflict of interest in relation to this manuscript.

Table 4 Summary: overall grade ratings for the intervention categories

	Intervention	Quality ratings	Strength ratings
Differentiated	**Multiple components (n = 11)**	0 High (0 %)	6 Strong (55 %)
		7 Moderate (64 %)	5 Weak (45 %)
		0 Low (0 %)	
		4 Very Low (36 %)	
	Overall GRADE	*Moderate to Low*	*(Strongest) Weak*
	Single component (n = 10)	2 High (20 %)	5 Strong (50 %)
		5 Moderate (50 %)	5 Weak (50 %)
		0 Low (0 %)	
		3 Very Low (30 %)	
	Overall GRADE	*Moderate*	*Weak*
Undifferentiated (n = 6)		0 High (0 %)	2 Strong (33 %)
		2 Moderate (33 %)	4 Weak (66 %)
		3 Low (50 %)	
		1 Very Low (17 %)	
Overall GRADE		*Low*	*(Weakest) Weak*

compared based on their quality and strength scores to determine which intervention category was most effective for children in the child welfare system. Because of the heterogeneity in population characteristics, interventions and outcome measures examined, intervention duration, and follow-up time periods, it was not considered appropriate to perform a meta-analysis.

Results

GRADE Ratings

Individual Studies

Based on 14 randomized control trials and 13 observational or quasi-experimental studies, the quality of the evidence ranged from high to very low. Only randomized control trials were rated as high or moderate. Factors leading to downgrading the quality of randomized control trials from high to moderate included lack of standardized outcome measures, absence of dosage tracking, small sample size, high attrition rates, and lack of a follow-up assessment. For example, Westermark et al. (2011), a randomized control trial, was given a quality rating of moderate because it had a small sample size, a high attrition rate, and no dosage tracking. Quasi-experimental, matched group comparisons were generally rated as low unless they had very poor research designs that included the limitations mentioned above, such as standardized outcome measures and a small sample size. Quasi-experimental studies with serious limitations and observational group comparisons with non-matched groups were given a very low rating. Although Zeanah et al. (2001) had comparable groups, a good sample size, a manualized intervention, blinding of clinicians, and a long follow-up period, it was given a very low rating because it was not a randomized study, the groups were not matched, no

standardized measures were used, there was no dosage tracking, and there was a high attrition rate.

Studies were given a strong rating when they demonstrated that the benefits of the intervention clearly outweighed the risks. Some examples of possible benefits include effective outcomes; cost effectiveness; time-limited, manualized treatment; and practicality for participants and/or clinicians. Westermark et al. (2011) was given a strength rating of strong because the intervention was effective, time-limited, and practical for participants and clinicians. Studies were given a weak rating when the risks of the intervention outweighed the benefits. Possible reasons for giving a weak rating include ineffective outcomes; expensive, unclear intervention guidelines; and impractical for participants and/or clinicians. Zeanah et al. (2001) received a weak rating because the intervention was not effective (non significant differences from the control group and weak effect sizes) and the risks outweighed the benefits.

Intervention Categories

Table 4 summarizes the GRADE ratings organized by intervention. The only high quality studies (n = 2) appeared in the single component category. This demonstrates that the majority of the 14 randomized control trials were downgraded due to methodological issues. The multiple component category had seven moderate quality studies while the single component had five studies rated as moderate. These studies mostly consisted of randomized control trials that were downgraded due to methodological issues. Overall, the undifferentiated category had lower quality studies, with only two of the six studies in the moderate range.

Individual-level interventions were rated as having greater strength of recommendations than the undifferentiated group. Fifty-five percent of the studies in the multiple component group were rated as strong compared with 50 % of the studies in the single component group. For the undifferentiated category, only 33 % of the studies were strongly recommended. These findings indicate that overall all three categories had inconsistent findings. Although the quality and strength ratings were higher for the multiple and single component categories, positive ratings were only given to slightly over half of the multiple component studies and half of the single component studies. The multiple component category was recommended most frequently by the five raters using the GRADE rating method but overall, the quality of research examining mental health interventions for children in the child welfare system is weak.

Reported Outcomes by Intervention Category

Multiple Component Studies

Multiple component studies examined three of the outcome variable categories: behavioral functioning, psychosocial functioning, and placement stability. Parenting ability was not assessed by any of the studies. Table 5 provides a summary of the effectiveness of the interventions. Overall, multiple component interventions had a fairly consistent positive effect on behavioral functioning and placement stability. However, only 50 % of the studies that examined psychosocial functioning found positive effects. From the studies examined, multiple component interventions, such as Multidimensional Treatment Foster Care, Early Intervention Foster Care, and Multisystemic Therapy, were most effective at reducing behavioral problems and increasing placement stability.

Table 5 Overall outcomes for each intervention category

	Intervention	Dependent variable (DV)	Studies that examine DV	Studies with positive results ($p < .05$)	Percentage effective (%)	Effect size (d)
Differentiated	Multiple components (n = 11)	Behavioral functioning	5	4	80	.41 (small)
		Psychosocial functioning	4	2	50	.12 (weak)
		Placement stability	8	6	75	.47 (small)
	Single Component (n = 10)	Behavioral functioning	10	4	40	.33 (small)
		Parenting ability	5	4	80	.36 (small)
Undifferentiated (n = 6)		Behavioral functioning	4	1	25	.10 (weak)
		Psychosocial functioning	2	1	50	.35 (small)
		Placement stability	4	1	25	.45 (small)

Weak effect size = $d < .2$, small effect size = $.2 < d < .5$, moderate effect size = $.5 < d < .8$, strong effect size = $d > .8$. For the dependent variable to be included there had to be at least two studies examining the dependent variable within the intervention category

Single Component Studies

Only two of the possible outcome variables were examined for single component interventions. Of the studies that examined parenting ability, 80 % reported effective results. Only 40 % of the studies examining behavioral functioning found positive outcomes. Given that this category had the highest quality designs, these overall inconsistent findings are discouraging.

Undifferentiated Studies

Undifferentiated studies examined behavioral, psychosocial, and placement related outcome variables. Overall, this category found ineffective outcomes, with only 50 % of the studies examining psychosocial outcomes having positive findings. Twenty-five percent of the studies reported improved behavioral functioning and another 25 % of studies in this category showed improved placement stability.

Successful outcomes were noted for multiple component interventions that focused on child behavioral and placement outcomes. The outcomes were less successful for single component interventions for child behavioral problems but most successful for parenting outcomes. Psychosocial functioning was not effectively improved by any of the intervention categories. It is important to note that, although some positive outcomes were found, the average effect sizes for all three of the intervention groups and all the outcome variables were small at best (see Table 5). Based on the GRADE analysis, multiple component interventions for children in the child welfare system are most highly recommended but the overall quality of research is low so this recommendation is cautionary as more high quality studies confirming these findings are needed.

Discussion

This review of the literature focused on outcome evaluations of interventions that address mental health problems for children who are involved in the child welfare system. Three specific categories of interventions were examined—(1) Differentiated interventions with multiple components, (2) Differentiated interventions with a single component, and (3) Undifferentiated interventions—and their outcomes using the GRADE approach to determine those most effective in increasing the positive outcomes these children experience.

Summary of Findings

Intervention studies with multiple components proved most consistently effective for behavioral outcomes and showed improved placement stability for children in the child welfare system, a finding consistent with a previous review examining mental health treatment for children in the child welfare system (Craven and Lee 2006). An example of this form of effective intervention is Multidimensional Treatment Foster Care, which coordinates the foster parents, biological parents, as well as other therapists and service providers to work collaboratively to address the child's behavioral problems by providing pro-social and adaptive alternatives. The treatment foster parents are the primary treatment agents for the child(ren). Parents are in close daily contact with the case manager to ensure they are responding appropriately to the child's behavior, and the treatment foster parents meet weekly with the case manager for supervision. The child's biological family concurrently participates in family therapy, parent training, and home visits in order to prepare for reunification. Within the home, behaviors are reinforced through an operant conditioning points system (Fisher and Chamberlain 2000). Early Intervention Foster Care is Multidimensional Treatment Foster Care that has been adapted for a younger population.

Another multiple component intervention is Multisystemic Therapy. Multisystemic Therapy is based on the premise that for a treatment to be effective, it must target risk factors coincidentally and at multiple levels that includes individual, family, school, and community, as well as facilitating interactions between all partners. In Multisystemic Therapy, primary caregivers, therapists, and educators collaborate to deliver a highly individualized, strength-based treatment plan. Multisystemic Therapy therapists teach children behavioral skills, while teaching caregivers how to deliver appropriate positive reinforcement when such skills are used (Henggeler and Schaeffer 2010).

The majority of the multiple component interventions were manualized and detailed information was provided regarding the components of the intervention. The majority of these studies were randomized control trials; however, due to other methodological deficits were rated as moderate in quality. Fidelity measures were frequently included to ensure the delivered treatment was consistent with the original concepts of service. Interventions that focused on the individual child and family with specified targets of service recorded the best outcomes (Fisher et al. 2005; Fisher et al. 2009; Miller, 2007; Nitkowski et al. 2009; Ogden and Halliday-Boykins 2004; Sundell et al. 2008; Swenson et al. 2010; Thomas 2008; Westermark et al. 2011; Westermark et al. 2008).

The single component and undifferentiated categories found much less promising findings for behavioral functioning and placement stability. None of the intervention categories effectively improved psychosocial functioning. The single component category was the only category that examined parenting outcomes. Eighty percent of the relevant studies found that parenting ability improved in the intervention condition. Although single

component studies had the highest quality level, the limited outcome variables examined and inconsistent reported findings for the behavioral functioning of children resulted in an overall weak recommendation for this type of intervention. Although it shows promise for improving parenting ability, more high quality study designs are needed for further confirmation.

One study in the single component intervention group assessed training with foster/parents referred to as Keeping Foster Parents Trained and Supported. This is a component of Multidimensional Treatment Foster Care, an intervention that was also included in the multiple component group (Chamberlain, Price, Leve et al. 2008). While the foster/parent training program alone was considered effective, its efficacy increased when combined with intervention components involving the child(ren) and the family system (Fisher et al. 2005, 2009; Miller 2007; Westermark et al. 2008, 2011). However, when assessed as a multiple component intervention, parenting outcomes were not examined so it is unknown whether parenting ability improved as a result.

When examining mental health interventions for children in the child welfare system, specific, differentiated intervention designs are needed. Undifferentiated interventions reflected broad interventions that were usually examined using retrospective research designs. In certain studies, it was unclear what services were actually being delivered to children, and whether the children within a group had comparable service use. For example, Bellamy et al. (2010) tracked the number of mental health service sessions children received. They defined mental health service use as consisting of three or more sessions. However, the actual nature of service the children received was not clearly described, nor was the level of intensity or dosage identified. In these studies, there are multiple potentially confounding variables. The low quality studies and the weak recommendations given to the undifferentiated category demonstrate the difficulty in making treatment recommendations from studies that look broadly at mental health interventions. The variability in services received even within groups make finding any differences in outcomes between groups very difficult. Additionally, with this type of research, it is more difficult to use randomized control trials, making the valid and reliable measurement of an intervention even more challenging. However, the information these studies offer is important and unique, particularly the studies examining funding arrangements; nevertheless, it is argued that recommendations for treatment for this vulnerable population should not be made based on vaguely described intervention components.

Overall, the findings for the multiple component category appear most promising for improvement in a child/youth's behavioral functioning and placement stability. However, similar to the other two categories, the multiple component interventions also have inconsistent findings, possibly due to the limited quality of these studies. More high quality research designs examining mental health interventions for children in the child welfare system are needed to confirm their efficacy. In addition, although most of the multiple component interventions included parenting components, parenting ability was not assessed independently. It would be beneficial to determine if parenting ability more consistently improves when a more comprehensive intervention technique is used. Lastly, the inconsistency in regards to treatment efficacy may also be a result of the high levels of trauma found in children in the child welfare system and the lack of trauma-focused interventions. Traumatic stress symptoms are debilitating and it is widely accepted that in order to address underlying mental health problems, trauma symptoms need to be addressed initially. Children who are traumatized have difficulty coping with day-to-day activities. They are often in states of hyperarousal, avoidance, dissociation, and can be easily triggered. These children feel unsafe and cannot focus on improving behavioral

problems until their traumatic stress has been reduced (National Crime Victims 2004). If the interventions examined in this study had incorporated a trauma-informed component to treatment the child outcomes may have been more promising.

In addition, it is important to note that none of the studies in this category included a cost analysis. It is possible, that although this category of intervention is most effective, it may be too expensive for universal use across the child welfare system. The undifferentiated treatment category was the only category that had studies that examined the cost of treatment and service provision, which is a considerable strength. Lee et al. (2008) have reported on the possibility of identifying cost benefits analysis in their review of 74 child welfare intervention studies, concluding that, in the case of Washington State, early intervention programs, if effectively implemented over a period of 5 years, would save a net amount of $405 million over the lifetime of the participating children. Future research on individual-level interventions should provide information on cost to provide a more comprehensive understanding of the risks and benefits of the treatment.

In summary, multiple component interventions that focus on home and school-based services were given the highest recommendation. These interventions include individual and family therapy, parent training, and social skills training. However, the recommendation for this category is still relatively weak given the inconsistent findings and limited quality of the studies. Additional high-quality, randomized control trials studies examining multiple component mental health interventions for children in the child welfare system are needed to determine if these interventions are consistently effective and only then can strong recommendations be made.

Clinical and Research Implications

While few studies in this review directly examined mental health service utilization, some studies did examine what specific mental health services a child and family received. These results suggest that comprehensive approaches to mental health service with various formats of treatment are most effective. In addition, although access to mental health services is often challenging for these children, when mental health services are delivered, they tend to be intensive and multi modal, involving the child, family, and community.

Need for the comprehensive nature of the interventions received by children in the child welfare system fits with their complex mental health problems. However, an area of need with these children that was not included in any of the research studies relates to trauma. A review of guidelines for treatment for childhood abuse states that any treatment with these children needs to be abuse-informed (National Crime Victims 2004). The intervention descriptions given in the studies that qualified for this review rarely mentioned how trauma was addressed through the intervention. The National Child Traumatic Stress Network (NCTSN) have identified core components of effective interventions with children who have experienced abuse which includes systematic assessment and treatment, addressing both the children and families' traumatic stress reactions and experiences, trauma narration and organization, emotional regulation skills, as well as the parenting skills and behavior management which are the focus of most studies in this review (NCTSN 2008). If a child has traumatic symptoms, these need to be addressed prior to engaging in interventions aimed at improving other mental health problems. In addition, traumatic experiences, particularly ongoing trauma, which many children in the child welfare system experience, can suppress normal brain development and manifest as behavioral and emotional problems that can continue into adulthood, further indicating the importance of addressing trauma first (Hodas 2006). Kinniburgh et al. (2005) have advanced the idea that in addition

to an ecological approach to intervention involving the child's surrounding environment, a developmental approach to therapy that is flexible and addresses a continuum of trauma exposure is essential. Cohen et al. (2010) highlight the frequent co-occurrence of behavioral problems and trauma and provide a great resource to clinicians working with children with co-occurring trauma and behavioral problems. They provide a detailed practical description of how management of behavioral problems can be integrated effectively into trauma-focused treatment. The interventions identified within this review were not grounded in theory and empirical research regarding the effects of trauma on children and their development. Although similar research is needed specifically with the child welfare population, it is hypothesized that if the multiple component interventions incorporate trauma-informed practices, outcomes may be more promising.

Finally, in regards to service use, there is a need for an increased commitment to these children following treatment and in times of transition. Children in the child welfare system experience frequent placement instability, with few consistent support networks in place to help bridge the transition between placements and when youth age out of the child welfare system. Only half of the studies in this review had some type of follow-up period beyond the termination of treatment, which typically did not last more than 6 months and, at most, 1 year. More research is needed examining the long-term outcomes of mental health treatment for this population, particularly due to the instability they often experience.

Limitations in the Current Literature

The fact that only 27 comparison studies have appeared over the past ten years in either the peer review or grey literature examining mental health treatment for children in the child welfare system is a strong indictment of the current status of this literature and speaks to the need for more high quality research to address effective interventions for this vulnerable population. In addition, there are a number of omissions in the current literature. The first of these relates to the absence of quality treatment studies that account for underlying issues of trauma. Second, most of the studies assessed short-term outcomes; little is known about the long-term impact (i.e., over 1 year) of any of the interventions reported in this review. Third, two-thirds of the studies used a single informant to report on a child's treatment progress, and this was typically the parent/guardian. Interpretation of results regarding a child's treatment will vary depending on the informant (Hess and Lacasse 2011). Fourth, there is a lack of empirical studies examining data on the cost of service and how this impacts the overall efficacy of the intervention.

In addition to the limitations of the child welfare literature, there are also some inherent limitations of the GRADE approach that need to be taken into account. First, the GRADE approach could allow for evaluator bias when rating the quality and strength of articles (Brozek et al. 2009), which can lead to inter-rater disagreement. Second, compared to meta-analysis, the GRADE approach is relatively new with limited supporting research in the area of mental health interventions. Lastly, the approach focuses more on the practical implications of interventions (external validity) than the statistical significance, thus limiting the internal validity.

Summary

The GRADE approach was used to examine the literature on effective mental health interventions for children in the child welfare system. Detailed, manualized interventions

with multiple components, including those focusing on family, child, and school involvement, reported the most improved outcomes for children and families and were most highly recommended through the GRADE approach. There remain however, significant methodological problems and inconsistent findings in the current research examining mental health treatment for children in the child welfare system, limiting the strength of recommendation even for the multiple component interventions. The lack of a trauma-informed approach to treatment may partially explain the inconsistent findings. Future research should examine whether incorporating trauma-practices into mental health treatment results in more consistent and effective mental health outcomes for children in the child welfare system.

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