Child Maltreatment
http://cmx.sagepub.com/

Does Severity of Physical Neglect Moderate the Impact of an Efficacious Preventive Intervention for Maltreated Children in Foster Care?

Heather N. Taussig, Sara E. Culhane, Edward Garrido, Michael D. Knudtson and Christie L. M. Petrenko

Child Maltreat 2013 18: 56 originally published online 16 October 2012
DOI: 10.1177/1077559512461397

The online version of this article can be found at:
http://cmx.sagepub.com/content/18/1/56

Published by:
SAGE
http://www.sagepublications.com

On behalf of:
APSAC
American Professional Society on the Abuse of Children

Additional services and information for *Child Maltreatment* can be found at:

Email Alerts: http://cmx.sagepub.com/cgi/alerts

Subscriptions: http://cmx.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations: http://cmx.sagepub.com/content/18/1/56.refs.html

>> Version of Record - Mar 13, 2013

OnlineFirst Version of Record - Oct 16, 2012

What is This?

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

Child Maltreatment
18(1) 56-64
© The Author(s) 2012
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1077559512461397
cmx.sagepub.com
SAGE

Does Severity of Physical Neglect Moderate the Impact of an Efficacious Preventive Intervention for Maltreated Children in Foster Care?

Heather N. Taussig[1], Sara E. Culhane[1], Edward Garrido[1], Michael D. Knudtson[1], and Christie L. M. Petrenko[2]

Abstract

Physically neglected youth are at increased risk of mental health problems, but there are few interventions that have demonstrated efficacy in reducing mental health symptoms for this vulnerable population. The Fostering Healthy Futures (FHF) program, which consists of mentoring and skills groups, was developed for preadolescent youth in foster care. In a published randomized controlled trial with 156 youth, FHF demonstrated positive impacts on mental health functioning. The current study sought to determine whether FHF might be particularly effective in ameliorating the impact of neglectful family environments. Because it was not possible to isolate a neglected-only subgroup, as most children with physical neglect histories had experienced other types of maltreatment, we tested the hypothesis that intervention effects would be stronger among children with more severe physical neglect. Findings did not support this hypothesis, however, as severity of physical neglect did not significantly moderate the impact of the intervention on psychosocial outcomes.

Keywords

neglect, foster care, intervention, mental health services

On September 30, 2010, there were 408,425 children living in foster care in the United States (U.S. Department of Health and Human Services, 2011). Children in foster care have high rates of mental health problems, including depression, anxiety, and posttraumatic stress (Clausen, Landsverk, Ganger, Chadwick, & Litrownik, 1998; Pecora, Jensen, Romanelli, Jackson, & Ortiz, 2009). Although a number of internal and external factors contribute to the development of mental health problems, maltreatment experiences may play a particularly salient role for this population. If we can identify those maltreatment experiences that contribute to the development of mental health problems, as well as those that are associated with a positive response to intervention, it might inform efforts to reduce the emotional and financial burden of mental health problems among children in foster care.

Among types of maltreatment, neglect is the most common precipitant for placing a child in foster care (Administration for Children, Youth and Families, n.d.). In a nationally representative study of youth involved with child welfare, neglect was the primary reason for placement in foster care in more than 60% of the cases, and this was true for school-age children and across all racial/ethnic groups. The most common subtypes of neglect were physical neglect (i.e., failure to provide adequate food, clothing, shelter, medical care, or safe living environment) and supervisory neglect (i.e., failure to provide age-appropriate and reasonable supervision; American Humane Association, 2012). The prevalence of physical neglect and supervisory neglect were comparable in this national sample (Administration for Children, Youth and Families, n.d.).

Understanding the effects of neglect on youth functioning is challenging for many reasons. First, neglect is rarely defined in a clear or consistent manner (Gaudin, 1999). Many studies treat neglect as a homogeneous construct and do not differentiate among subtypes of neglect, despite the fact that neglect subtypes may have different effects on functioning. The lack of a clear definition of neglect contributes to inconsistencies in

[1] The Kempe Center for the Prevention and Treatment of Child Abuse and Neglect, Department of Pediatrics, University of Colorado School of Medicine, CO, USA
[2] Mt. Hope Family Center, Department of Clinical and Social Sciences in Psychology, University of Rochester, Rochester, NY, USA

Corresponding Author:
Heather Taussig, Kempe Center, University of Colorado School of Medicine, The Gary Pavilion at The Children's Hospital, Anschutz Medical Campus, 13123 E 16th Ave., B-390, Aurora, CO 80045, USA.
Email: heather.taussig@childrenscolorado.org

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

findings and makes it difficult to draw conclusions across studies. Second, some studies fail to account for the fact that most youth experience multiple types of maltreatment (Herrenkohl & Herrenkohl, 2009; Manly, 2005). Among studies that do account for multiple maltreatment types, different analytic methods are often used, which may also lead to inconsistencies in findings. Finally, studies differ in their use of comparison groups. Some studies compare maltreated to nonmaltreated children, while others examine the relative effects of different subtypes of maltreatment within a maltreated sample. Maltreatment subtype effects are likely to be smaller within maltreated samples than in studies that compare maltreated groups with nonmaltreated comparison groups.

Despite these conceptual and methodological challenges, the majority of studies find that neglect is associated with mental health functioning. The direction of the effect varies, however, depending on the subtype of neglect examined. Physical neglect is the subtype of neglect most frequently studied, and it is consistently associated with greater internalizing symptoms relative to both maltreated and nonmaltreated comparison groups (Dubowitz, Pitts, & Black, 2004; English et al., 2005; Erickson & Egeland, 2011; Lynch & Cicchetti, 1998; Manly, Kim, Rogosh, & Cicchetti, 2001; Thornberry, Ireland, & Smith, 2001). Supervisory neglect is less frequently studied, but two studies of children in foster care found that children with histories of predominantly supervisory neglect had lower rates of internalizing symptoms than children who had experienced other forms of maltreatment (Pears, Kim, & Fisher, 2008; Petrenko, Friend, Garrido, Taussig, & Culhane, 2011). In contrast, two other studies failed to find any association between supervisory neglect and internalizing symptoms (English et al., 2005; Litrownik et al., 2005).

When subtypes of neglect are collapsed into a single general neglect category, the direction of the effect depends largely on the comparison group. When compared with their nonmaltreated peers, neglected children tend to have more internalizing behavior problems (Bolger & Patterson, 2001; Macfie, Cicchetti, & Toth, 2001; Oshri, Tubman, & Jaccard, 2011), but when compared with children who have experienced other types of maltreatment, neglected children tend to have lower levels of internalizing symptoms (Lau et al., 2005). These findings are consistent regardless of whether the occurrence or severity of neglect is examined.

Given the adverse consequences of neglect, one might expect to find a number of evidence-based interventions aimed at ameliorating the impact of neglect on social and emotional functioning. Unfortunately, there are few programs that have demonstrated efficacy specifically for neglected youth. Even rarer are programs that have demonstrated efficacy for certain subtypes of neglect, despite the fact that these subtypes predict different symptomatology. Most of the programs that address neglect are, understandably, family focused, and do not typically target the social and emotional needs of school-age youth who have experienced neglect (American Humane, 2009; DePanfilis, 2006). A systematic review identified only four evaluations of child-focused programs targeting neglect (Allin, Wathen, & MacMillan, 2005). All were fairly small studies ($N < 50$) and none were restricted to children who had experienced neglect only. These studies were conducted over 15 years ago with preschool-age children, and the longest post-intervention follow-up period was 2 months. The two strongest studies (methodologically) employed play therapy and found that children in the intervention groups demonstrated greater improvements in social and behavioral domains than those in the control groups (Fantuzzo et al., 1996; Udwin, 1983).

While some widely used evidence-based treatment programs, such as Trauma-Focused Cognitive Behavioral Therapy, Multidimensional Treatment Foster Care, Multisystemic Therapy, and Parent–Child Interaction Therapy have included children with histories of neglect, no known studies have documented their efficacy specifically for neglected youth (MacMillan et al., 2009). After reviewing the literature, Allin, Wathen, and MacMillan (2005, p. 499) concluded that "the effectiveness of treatment for children exposed to neglect alone (that is, without co-occurring abuse) cannot be determined from the existing literature," pointing out that neglect often overlaps with abuse, making the number of children and families available for research on neglect-specific interventions small. As Allin and colleagues suggested, it may not be possible to conduct a randomized controlled trial (RCT) with a large enough sample of children who experienced neglect but not abuse. How, then, can we evaluate program efficacy in treating the sequelae of neglect? One method might be to investigate the moderating effect of neglect on treatment outcomes (after controlling for co-occurring abuse), by examining whether interventions are more effective for those who have been neglected.

The current study sought to examine the moderating impact of neglect on the efficacy of the Fostering Healthy Futures (FHF) program, a 9-month intervention for preadolescent children in foster care. Although the FHF program was designed for all maltreated children, it consisted of two components that may be particularly effective for children with histories of neglect: skills groups and mentoring (DuBois, Portillo, Rhodes, Silverthorne, & Valentine, 2011). Since neglect is an act of omission (as opposed to abuse, which is an act of commission), one approach to intervening with neglected children might be to try to ameliorate gaps in their upbringing, for example, by modeling healthy relationships, exposing children to enriching activities, and teaching children social skills. FHF skills groups were designed to bring children in foster care together in order to reduce stigma and provide them with opportunities to learn social skills in a supportive group environment. The FHF mentoring component was designed to provide children in foster care with an additional supportive adult who could serve as a role model and advocate for youth, provide youth with exposure to new experiences, and help youth practice skills learned during group.

The current study was not immune to the aforementioned challenges in evaluating interventions for neglected youth, as the FHF program was not designed specifically for neglected youth, nor could we isolate a neglected-only subgroup within

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

which to examine intervention effects. Therefore, the current study examined whether the intervention, which already demonstrated positive effects on mental health and associated psychosocial outcomes in a rigorous RCT (Taussig & Culhane, 2010), had a greater effect for those children exposed to more serious physical neglect. Studies of other interventions have demonstrated that program effects may be greatest for those children and families who seem to be at the highest risk and might therefore benefit the most from intervention efforts (cf. Goldhaber-Fiebert et al., 2000; Olds et al., 2002; Sandler et al., 2003; Tolan, Gorman-Smith, & Henry, 2004; Wolchik et al., 2002). We selected physical neglect severity as a potential moderator of the intervention effect because the literature suggests that this form of neglect may be the most deleterious. We did not examine the moderating effect of supervisory neglect, as the literature suggests that it is not associated with greater mental health problems. We hypothesized that treatment effects on mental health and associated psychosocial outcomes 6 months postintervention would be most pronounced among those youth who had experienced more severe physical neglect. Exploratory analyses also investigated the extent to which physical neglect severity might moderate treatment effects on other related psychosocial constructs, including self-esteem, social support, social acceptance, coping skills, perceived opportunities, and quality of life, also measured 6 months postintervention.

Method

Participants

The study was conducted from July 2002 to January 2009 in two participating Colorado counties. Participants were recruited in five cohorts over five consecutive summers from a list of all children, aged 9–11, who were placed in foster care in participating counties. Children were recruited if they (1) had been placed in foster care by court order due to maltreatment within the preceding year, (2) currently resided in foster care within a 35-min drive to skills groups sites, (3) had lived with their current caregiver for at least 3 weeks, and (4) demonstrated adequate proficiency in English (although their caregivers could be monolingual Spanish speaking). When multiple members of a sibling group were eligible, one sibling was randomly selected to participate in the RCT. Participation was voluntary, and could not be court-ordered.

There were 193 children who met initial eligibility criteria and 176 (91%) of these children and their substitute caregivers agreed to participate and completed the baseline interviews. After the baseline interview and prior to randomization, 20 (11.4%) of the participants were deemed ineligible for one or more of the following reasons: they had information on their child welfare records (obtained postinterview) that made them ineligible (e.g., incorrect birth date), they were developmentally delayed, and/or they were not proficient enough in English to participate in the skills groups. Of the remaining 156 who were randomized to treatment and control groups, 12 youth (3 treatment and 9 control; a non-significant difference) were lost to follow up at the 6-month postintervention time point. The final sample of 144 children was 50.7% female, with a mean age of 9.92 (SD = .89). The racial/ethnic distribution of children (nonexclusive categories) was 45.8% Hispanic, 47.2% Caucasian, and 29.9% African American.

Study Protocol

The study protocol was IRB-approved, and informed consent and assent were obtained. All children who participated in the baseline interview were screened for cognitive, educational, and mental health problems, using standardized tests of intellectual ability and academic achievement, as well as normed caregiver- and child-report measures of psychological functioning. The findings and accompanying recommendations were summarized in reports provided to children's caseworkers, who were encouraged to use the reports to advocate for educational and mental health evaluation and services. Following the baseline interview, eligible children were randomized to the "assessment only" (hereafter referred to as *Control*) and the "assessment plus intervention" (hereafter referred to as *Intervention*) groups after stratifying on gender and county. Eligible children were randomized manually, by cohort, in a single block.

The current study uses data collected at the baseline (T1) interview (2–3 months prior to the start of the intervention), and at the Time 3 interview, 6 months postintervention (17–20 months post-baseline). At each time point, children and their current caregivers were interviewed by separate interviewers, typically at the child's residence. Children and caregivers were each paid $40.00 for their participation. Teachers of participating children were also surveyed at Time 3. We were able to survey 89.1% of the children's teachers, who were each paid $25 to complete the survey. Child welfare records were abstracted and coded at the time of the baseline interview.

Intervention

The 9-month FHF intervention consisted of two components: (1) manualized skills groups and (2) one-on-one mentoring by graduate students in social work (FHF is described in detail in Taussig, Culhane, & Hettleman, 2007). The program was designed to be "above and beyond treatment as usual." Although eligibility criteria stipulated that children must be in foster care at the start of the intervention, children's participation continued (with appropriate consent) if they reunified or changed placements during the intervention.

Skills groups. FHF skills groups met for 30 weeks for 1.5 hr/week during the academic year and included 8–10 children and two group facilitators (one licensed clinician and one graduate student trainee). The FHF skills groups followed a manualized curriculum that combined traditional cognitive–behavioral skills group activities with process-oriented material. Units addressed topics including: emotion recognition, perspective taking, problem solving, anger management, cultural identity,

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

change and loss, healthy relationships, peer pressure, and abuse prevention. The skills group curriculum was based on materials from evidence-based skills group programs, including Promoting Alternative Thinking Strategies (Kusché & Greenberg, 1994) and Second Step (Committee for Children, 2001), which were supplemented with project-designed exercises from multicultural sources. The skills group curriculum included weekly activities that encouraged children to practice newly learned skills with their mentors in their communities. A large body of evidence suggests that skills training curricula are effective in reducing risk and promoting resilience in high risk populations (cf. Cooper, Lutenbacher, & Faccia, 2000; Greenberg, Domitrovich, & Bumbarger, 2000; Lipsey, Wilson, & Cothern, 2000), including maltreated children (cf. Berliner & Kolko, 2000; Deblinger, Stauffer, & Steer, 2001; Swenson & Kolko, 2000). Empirical support for the beneficial effects of the PATHS curriculum is reviewed in the *Blueprints* series (Greenberg & Kusché, 2002).

Mentoring. The mentoring component of the FHF program provided 30 weeks of one-on-one mentoring for each child. Mentors were graduate students in social work who received course credit for their work on the project. Mentors were each paired with two children with whom they spent 2–4 hr of individual time each week. They also transported children to and from skills groups and joined the skills group for dinner. Mentors received weekly individual and group supervision and attended a didactic seminar, all of which were designed to support mentors as they: (1) created empowering relationships with children, serving as positive examples for future relationships, (2) ensured that children received appropriate services in multiple domains and served as a support for children as they faced challenges within various systems, (3) helped children generalize skills learned in group to the "real world" by completing weekly activities, (4) engaged children in a range of extracurricular, educational, social, cultural, and recreational activities, and (5) promoted attitudes to foster a positive future orientation. All of the mentoring activities employed by mentors were individually tailored for each child, based on the children's presenting problems, strengths, and interests, as well as their family and placement characteristics. Empirical support for the beneficial effects of mentoring is reviewed in the *Blueprints* series (McGill, 2001), which recognized Big Brothers/Big Sisters (BBBS) as an empirically validated violence prevention program. A recent meta-analysis of mentoring program evaluations found evidence of program effectiveness across multiple domains for youth at all developmental stages from early childhood through adolescence (DuBois et al., 2011).

Independent Variables

Independent variables measuring abuse and neglect were created based on the occurrence and severity of physical neglect, supervisory neglect, physical abuse, and sexual abuse, which were coded using the Maltreatment Classification System (MCS; Barnett, Manly, & Cicchetti, 1993). The additional maltreatment types included in the MCS (i.e., emotional, moral/legal, and educational maltreatment) were also coded, but are not the focus of the current study. The developers of the MCS report an overall κ of .60 and adequate estimates of interrater agreement (.67 to 1.0; Manly, Cicchetti, & Barnett, 1994).

In the current study, each child's legal petition (filed in the dependency and neglect court proceedings) and social history (completed by caseworkers) were consensus coded by two trained research assistants, and discrepancies were resolved through consultation with one of the senior investigators. We only coded maltreatment that occurred within the prior 2 years, because our review of case files suggested that information about past abuse and neglect was not reliably recorded in case files. Following MCS guidelines, occurrence of each maltreatment type was coded as a dichotomous variable (yes/no), while the severity of each maltreatment type was rated on a scale from 1 to 5, with 5 representing the greatest severity. Children who did not experience a particular type of maltreatment received a 0 for occurrence and severity on that type.

Maximum Abuse Severity, used as a control variable in analyses, was indexed as the severity of physical or sexual abuse, whichever was higher (range, 0 to 5). The mean severity score was .89 ($SD = 1.3$), which includes 92 youth (64%) who received a score of 0 because they did not experience either physical or sexual abuse.

Physical Neglect Severity, used as a potential moderator in analyses, was indexed using the MCS standards for coding the severity of physical neglect. Severity levels ranged from 0 to 5, with a code of 0 indicating no physical neglect, a 1 indicating physical neglect characterized by a caregiver's failure to provide the occasional meal, a clean and sanitary home, clean and appropriate clothes, and/or basic medical care, a code of 3 indicating physical neglect characterized by a caregiver's failure to provide regular meals, shelter for the family, and/or treatment for moderately severe medical and mental health problems, and a code of 5 indicating physical neglect characterized by a caregiver's gross inattention to children's needs resulting in malnutrition, permanent disability, or death. Almost half (47.2%) of the youth had experienced physical neglect, and among those youth, the average severity score was 2.4. The average severity for the whole sample (including those with no physical neglect who received scores of 0) was 1.1 ($SD = 1.4$). Intervention and control groups did not differ on severity ratings, $t(142) = -.06$; $p = .95$.

Intervention Status was used to index whether children were randomly assigned to the control or intervention condition. The current study includes 76 children randomized to the intervention condition and 68 children randomized to the control group. All children randomized to the intervention condition, regardless of whether they started or completed the FHF program, were included in intent-to-treat analyses.

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

Dependent Variables

The dependent variables described below were assessed at baseline and at T3. Program effects on the dependent variables, which were previously reported in a paper that described the main effects of the FHF program on mental health and related outcomes (Taussig & Culhane, 2010), are also summarized below. Program effects are described using Cohen's *d*, which represents the covariate adjusted mean difference between intervention and control groups divided by the pooled standard deviation.

Mental Health Functioning was assessed using a multi-informant index created based on principal components factor analysis of the following variables: (1) mean scores on the Trauma Symptom Checklist for Children (TSCC; Briere, 1996), a widely used, symptom-oriented, youth-report measure of mental health problems, (2) the Internalizing scale of the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) completed by children's caregivers, and (3) the Internalizing Scale of the Teacher Report Form (TRF; Achenbach & Rescorla, 2001) completed by children's teachers. The CBCL and TRF are widely used standardized measures of child emotional and behavior problems (Achenbach & Rescorla, 2001). At T3, the first principal component explained 42% of the variance in these three measures, and factor loadings on the first principal component, which ranged from .59 to .70, were used to create a mental health composite score. The intervention had a strong effect (Cohen's $d = .51$, $p = .003$) on the T3 mental health composite score, such that intervention youth, relative to control youth, had fewer mental health problems, as reported by themselves, their parents/caregivers, and teachers (Taussig & Culhane, 2010).

Positive and Negative Coping Skills were assessed based on youth-report using The Coping Inventory (TCI; Dise-Lewis, 1988). TCI asks youth to report how frequently they use each of 42 strategies for coping with problems. In a study of middle school youth, TCI demonstrated exceptional test–retestreliability (11-week, $r = .98$) and was reliably correlated with a number of related measures, including self-report of anxiety and depression, and teacher-report of coping skill. In the current study, the TCI yielded scores on two project-developed subscales measuring positive and negative coping. Although nonsignificant, intervention effects were in the expected direction for both the positive (Cohen's $d = .25$, $p = .15$) and negative (Cohen's $d = .21$, $p = .16$) coping subscales (Taussig & Culhane, 2010).

Social Acceptance and Global Self-Worth were assessed using The Self-Perception Profile for Children (SPC; Harter, 1982, 1985), a widely used self-report measure of perceived self-competence. The scales have demonstrated adequate reliability and validity (Harter, 1985). In our work with foster youth, baseline scores on the Behavioral Conduct and Social Acceptance subscales were reliably related to all indices of risk behavior 6 years later, after controlling for demographic characteristics and baseline functioning (Taussig, 2002). Intervention effects on the Social Acceptance (Cohen's $d = .17$, $p = .30$) and Global Self-Worth (Cohen's $d = .19$, $p = .23$) scales were nonsignificant (Taussig & Culhane, 2010).

Social Support was indexed using a short form of the People in My Life Measure (PML; Cook, Greenberg, & Kusche, 1995; Gifford-Smith, 2000a). The PML is a 30-item self-report measure, which asks children to rate the quality of the support they receive from parents and peers. The short form demonstrated high internal consistency (αs from .80 to .83) and reliably discriminated between samples of high risk and normative children (Gifford-Smith, 2000b). In the current study, The PML was used to assess perceived support from caregivers, peers, and mentors. These three subscales were factor analyzed using principal components factor analysis. The first principal component explained 45% of the variance in these three scales. Factor loadings on the first principal component, which ranged from .63 to .74, were used to create a composite index of social support. The intervention did not have an impact on this composite index at T3 (Cohen's $d = .02$, $p = .89$; Taussig & Culhane, 2010).

Perceived Opportunities was measured using a modified version of a scale included in the National and Denver Youth Surveys (Huizinga & Esbensen, 1990). Twelve items assessed youths' perception of their opportunities for success (e.g., "Do you think you will have enough education to be what you want when you grow up?"). Huizinga and Esbensen report that the scale demonstrates adequate internal consistency (on average, across measurement waves, $\alpha = .65$). Although not previously reported, the intervention did not have any effect on perceived opportunities at T3 (Cohen's $d = .11$, $p = .51$).

Quality of Life was measured using a modified version of a scale developed by Andrews and Withey (1976), which asks respondents to rate satisfaction in several different domains (e.g., school, home, health, friendships). The authors report that the original items demonstrate good internal consistency and construct validity. Intervention effects on quality of life at T3 were nonsignificant (Cohen's $d = .14$, $p = .38$; Taussig & Culhane, 2010).

Statistical Analyses

Means, medians, and standard deviations were used to describe program attendance for the whole group. Correlations were used to determine whether program attendance varied as a function of physical neglect severity. Multiple regression was first used to estimate the associations between physical neglect severity and T1 measures of mental health and related outcomes, after controlling for maximum abuse severity. Multiple regression was then used to test the hypotheses that severity of physical neglect would moderate intervention effects on mental health and related outcomes measured 6 months postintervention. The regression models examining possible moderator effects included the following variables: the baseline measure of the outcome variable, maximum abuse severity, intervention status, physical neglect severity, and the interaction between physical neglect severity and intervention status. Sample sizes for each analysis varied slightly due to missing data on outcome variables.

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

Table 1. Rates of Maltreatment Types for the Total Sample and Within the Physical and Supervisory Neglect Subsamples.

Maltreatment type	Total sample, $N = 144$ (%)	Physical neglect subsample, $n = 68$, (%)	Supervisory neglect Subsample, $n = 109$ (%)
Physical abuse	33	29	28
Sexual abuse	12	10	11
Moral/legal maltreatment	35	44	41
Emotional maltreatment	62	63	68
Educational neglect	28	38	30
Physical neglect	47	—	53
Supervisory neglect	76	85	—
No other type	—	4	11

Results

Program Attendance

On average, children attended 25.0 (Median = 26.5, $SD = 5.8$) of the 30 skills groups and 26.7 (Median = 28, $SD = 6.25$) of the 30 mentoring visits. These numbers include data from children who withdrew from the program ($n = 5$). Physical abuse severity was not related to the number of skills group sessions attended, but there was a nonsignificant trend suggesting that children with higher levels of physical neglect severity completed more mentoring visits ($r = .21$, $p = .07$).

Overlap Between Physical and Supervisory Neglect and Other Types of Maltreatment

Table 1 shows the prevalence of different maltreatment types within the total sample, within the subsample that experienced physical neglect, and within the subsample that experienced supervisory neglect. As shown, there were high rates of overlap between each of the neglect subtypes and other types of maltreatment. A large majority of children with physical neglect had experienced supervisory neglect, while just over half of the children with supervisory neglect had also experienced physical neglect. The most salient finding was that 4% of the sample had experienced physical neglect only and 11% had experienced supervisory neglect only.

Associations Between Neglect and Baseline Measures of Outcomes

Before conducting regression equations, we examined correlations among the predictor variables and then correlations among the dependent variables. Maximum abuse severity and physical neglect severity were not correlated, $r = -.12$, $p = .15$. Correlations between the eight predictor variables ranged from $r = .06$ to $r = .52$, with an average correlation of .28. Not surprisingly, correlations were greater among indices from the same measure. Next, we examined the T1 associations between severity of physical neglect and each of the eight dependent variables, controlling for maximum abuse severity (reported in Table 2). Severity of physical neglect was significantly associated with social acceptance, such that higher levels of severity were associated with lower levels of social acceptance, $F(1, 142) = 14.98$, $p < .001$. A nonsignificant trend suggested that higher levels of physical neglect severity might also be associated with greater levels of mental health problems, $F(1, 143) = 3.50$, $p = .06$.

Table 2. Associations Between Severity of Physical Neglect and Baseline Measures of Outcome Variables, Controlling for Maximum Abuse Severity.

	Severity of physical neglect	
	Partial correlation	p value
Mental health problems	.16	.06
Positive coping	−.01	.86
Negative coping	.04	.65
Social acceptance	−.31	.00
Global self-worth	−.13	.11
Social support factor score	−.05	.52
Perceived opportunities	−.10	.22
Quality of life	−.08	.32

Moderation Analyses

Because the FHF program had demonstrated beneficial effects on a number of psychosocial domains (as delineated above), moderation analyses sought to examine whether the impact of the intervention on these outcomes differed as a function of severity of neglect. The moderation analyses did not suggest that FHF program effects were stronger among youth who had experienced greater physical neglect severity. Physical neglect severity did not moderate intervention effects on any of the eight outcomes variables measured at T3. Effect sizes were small (r^2s ranging from .00 to .02), suggesting that our failure to find evidence of moderation was not solely attributable to the fact that the study was underpowered.

Discussion

FHF is a novel intervention for preadolescent maltreated youth in foster care. It was designed to ameliorate the negative impact of prior adverse experiences and to foster resilience among children with a wide range of functioning in cognitive, social, emotional, and behavioral domains. Although the program targeted children with diverse maltreatment experiences, it was hypothesized that the program might have more beneficial effects for children with histories of neglect, as the mentoring and skills group program components might be particularly well suited for neglected children (Erickson & Egeland, 2011). Given the high rate of comorbidity among maltreatment types, however, it was not possible to isolate a neglected-only group within which to examine the impact of the FHF intervention. For this reason, we tested the hypothesis that intervention

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

effects would be stronger among children with greater physical neglect severity.

Consistent with previous findings (e.g., English et al., 2005; Lynch & Cicchetti, 1998; Manly et al., 2001), we found that children who had experienced more severe physical neglect were less likely to feel socially accepted. The finding suggests that social skills and mentoring interventions which, by design, target social functioning, might be particularly beneficial for children who have experienced more severe physical neglect. Our findings regarding moderation, however, did not support this hypothesis. After controlling for the severity of abuse, we did not find any evidence to suggest that program effects were moderated by physical neglect severity. This finding is contrary to the findings of other studies, which suggest that interventions may have stronger effects for higher risk participants. Our failure to find evidence of moderation may be attributable to a number of factors. First, it is possible that those with the most severe neglect are actually not the children at highest risk. Some studies find that abuse is a stronger predictor of mental health outcomes than neglect (e.g., Lau et al., 2005; Toth, Manly, & Cicchetti, 1992). For this reason, we controlled for maximum abuse severity when conducting all analyses, but still did not find a moderation effect. Second, our measure of physical neglect severity may not be comprehensive. Although we coded maltreatment with the most widely used coding system (MCS; Barnett et al., 1993), the data are limited by the information contained in the documents we coded, which did not include information about distal neglect and which may not have reliably documented all of the more recent neglect experienced by participants. Future studies should employ multiple methods (e.g., youth, parent, and caseworker reports coupled with records) to code the occurrence, severity, and chronicity of neglect. Finally, although statistical power may have limited our ability to find a significant interaction effect, the effect sizes associated with the interaction terms were quite small, suggesting that any power limitations did not mask important effects.

There is a dearth of literature examining the impact of neglect on psychosocial functioning and even fewer intervention studies targeting its deleterious consequences. The current study's findings did not support the hypothesis that the FHF preventive intervention would be more efficacious for children with more severe physical neglect histories, suggesting that we may need more targeted interventions to promote well-being among children who have experienced severe physical neglect.

Acknowledgments

We wish to express our appreciation to the children and families who made this work possible and to the participating county departments of social services for their ongoing partnership in our joint clinical research efforts. We also thank the research and clinical personnel, as well as the interns, who made invaluable contributions to the randomized controlled trial of the Fostering Healthy Futures preventive intervention.

Authors' Note

The funding agencies were not involved in the design and conduct of the study, in the collection, analysis, or interpretation of the data, or in the preparation of the data or preparation, review, or approval of the article. The content is solely the responsibility of the authors and does not represent the official views of the National Institute of Mental Health or the National Institutes of Health.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: This project was principally supported by grants from the National Institute of Mental Health (1 K01 MH01972, 1 R21 MH067618, and 1 R01 MH076919, H. Taussig, PI) and also received substantial funding from the Kempe Foundation, Pioneer Fund, Daniels Fund, and Children's Hospital Research Institute. Dr. Petrenko was supported by a Career Development Award (K01AA020486) from the National Institute on Alcohol Abuse and Alcoholism and Dr. Garrido was supported by a Research Supplement to Promote Diversity in Health-Related Research (R01MH076919-02S1).

References

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington, VT, University of Vermont, Research Center for Children, Youth, & Families.

Administration for Children, Youth and Families. (n.d.). *Who are the children in foster care?* Retrieved from http://www.acf.hhs.gov/programs/opre/abuse_neglect/nscaw/

Allin, H., Wathen, N. C., & MacMillan, H. (2005). Treatment of child neglect: A systematic review. *Canadian Journal of Psychiatry*, *50*, 497-504.

American Humane. (2009). Shining light on chronic neglect: Core issues facing our most vulnerable families. *Protecting Children*, *24.*

American Humane Association. (2012). *Child neglect*. Retrieved June 10, 2012, from http://www.americanhumane.org/children/stop-child-abuse/fact-sheets/child-neglect.html

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of American's perceptions of life quality*. New York, NY: Plenum.

Barnett, D., Manly, J. T., & Cicchetti, D. (1993). Defining child maltreatment: The interface between policy and research. In D. Cicchetti & S. L. Toth (Eds.), *Child abuse, child development, and social policy* (pp. 7-74). Norwood, NJ: Ablex.

Berliner, L., & Kolko, D. (2000). What works in treatment for abused children. In M. P. Kluger (Ed.), *What works in child welfare* (pp. 97-104). Washington, DC: Child Welfare League of America.

Bolger, K. E., & Patterson, C. J. (2001). Pathways from child maltreatment to internalizing problems: Perceptions of control as mediators and moderators. *Development and Psychopathology*, *13*, 913-940.

Briere, J. (1996). *Trauma Symptom Checklist for Children—Professional manual*. Odessa, FL: Psychological Assessment Resources.

Clausen, J. M., Landsverk, J., Ganger, W., Chadwick, D., & Litrownik, A. (1998). Mental health problems of children in foster care. *Journal of Child and Family Studies*, *7*, 283-296.

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

Committee for Children. (2001). *Second step: A violence prevention curriculum, grade 2*. Seattle, WA: Author.

Cook, E., Greenberg, M., & Kusche, C. (1995). *People in my life: Attachment relationships in middle childhood*. Presented at the Biennial Meeting of the Society for Research in Child Development, Indianapolis, IN.

Cooper, W. O., Lutenbacher, M., & Faccia, K. (2000). Components of effective youth violence prevention programs for 7-14-year-olds. *Archives of Pediatric and Adolescent Medicine*, *154*, 1134-1139.

Deblinger, E., Stauffer, L. B., & Steer, R. A. (2001). Comparative efficacies of supportive and cognitive behavioral group therapies for young children who have been sexually abused and their nonoffending mothers. *Child Maltreatment*, *6*, 332-343.

DePanfilis, D. (2006). *Child neglect: A guide for prevention, assessment, and intervention*. Washington, DC: U.S. Department of Health and Human Services.

Dise-Lewis, J. E. (1988). The life events and coping inventory: An assessment of stress in children. *Psychosomatic Medicine*, *50*, 484-499.

DuBois, D. L, Portillo, N., Rhodes, J. E., Silverthorn, N., & Valentine, J. C. (2011). How effective are mentoring programs for youth? A systematic assessment of the evidence. *Psychological Science in the Public Interest*, *12*, 57-91.

Dubowitz, H., Pitts, S. C., & Black, M. M. (2004). Measurement of three major subtypes of neglect. *Child Maltreatment*, *9*, 344-356.

English, D. J., Upadhyaya, M. P., Litrownik, A. J., Marshall, J. M., Runyan, D. K., Graham, J. C., & Dubowitz, H. (2005). Maltreatment's wake: The relationship of maltreatment dimensions to child outcomes. *Child Abuse & Neglect*, *29*, 597-619.

Erickson, M. F., & Egeland, B. (2011). Child neglect. In J. E. B. Myers (Ed.), *The APSAC handbook on child maltreatment* (3rd ed., pp. 103-124). Los Angeles, CA: Sage.

Fantuzzo, J., Sutton-Smith, B., Atkins, M., Meyers, R., Stevenson, H., Coolahan, K., & Manz, P. (1996). Community-based resilient peer treatment of withdrawn maltreated preschool children. *Journal of Consulting and Clinical Psychology*, *64*, 1377-1386.

Gaudin, J. M. (1999). Child neglect: Short-term and long-term outcomes. In H. Dubowitz (Ed.), *Neglected children: Research, practice, and policy* (pp. 89-108). Thousand Oaks, CA: Sage.

Gifford-Smith, M. (2000a). *People in my life*. Retrieved June 10, 2002, from http://www.fasttrackproject.org

Gifford-Smith, M. (2000b). *People in My Life: Grade 4, Year 5*. Retrieved January 1, 2009, from http://www.childandfamilypolicy.duke.edu/fasttrack/techrept/p/pml/pml5tech.pdf

Goldhaber-Fiebert, J. D., Bailey, S. L., Hurlburt, M. S., Zhang, J., Snowden, L. R., Wulczyn, F., & Horwitz, S. M. (2011). Evaluating child welfare policies with decision-analytic simulation models. *Administration and Policy in Mental Health and Mental Health Services Research*, August 23.

Greenberg, M. T., Domitrovich, C., & Bumbarger, B. (2000). *Preventing mental disorders in school-age children: A review of the effectiveness of prevention programs*. Pennsylvania State University, PA: Prevention Research Center for the Promotion of Human Development, College of Health and Human Development.

Greenberg, M. T., & Kusché, C. (2002). Promoting alternative thinking strategies. In D. S. Elliot (Series Ed.), *Book 10: Blueprints for violence series*. Boulder: Institute for Behavioral Science, University of Colorado.

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development*, *53*, 87-97.

Harter, S. (1985). *Manual for the self-perception profile for children*. Denver, CO, University of Denver.

Herrenkohl, R. C., & Herrenkohl, T. I. (2009). Assessing a child's experience of multiple maltreatment types: Some unfinished business. *Journal of Family Violence*, *24*, 485-496.

Huizinga, D., & Esbensen, F. (1990). *Scales and measures of the denver youth survey*. Boulder, CO: Institute of Behavioral Science.

Kusché, C., & Greenberg, M. T. (1994). *The PATHS curriculum: Promoting alternative thinking strategies*. Seattle, WA: Developmental Research and Programs.

Lau, A. S., Leeb, R. T., English, D., Graham, J. C., Briggs, E. C., Brody, K. E., & Marshall, J. M. (2005). What's in a name? A comparison of methods for classifying predominant type of maltreatment. *Child Abuse & Neglect*, *29*, 533-551.

Lipsey, M. W., Wilson, D. B., & Cothern, L. (April, 2000). *Effective intervention for serious juvenile offenders*. Washington, DC: Juvenile Justice Bulletin, Office of Juvenile Justice and Delinquency Prevention.

Litrownik, A. J., Lau, A., English, D. J., Briggs, E., Newton, R. R., Romney, S., & Dubowitz, H. (2005). Measuring the severity of child maltreatment. *Child Abuse & Neglect*, *29*, 553-573.

Lynch, M., & Cicchetti, D. (1998). An ecological-transactional analysis of children and contexts: The longitudinal interplay among child maltreatment, community violence, and children's symptomatology. *Development and Psychopathology*, *10*, 235-257.

Macfie, J., Cicchetti, D., & Toth, S. L. (2001). Dissociation in maltreated versus non-maltreated preschool-aged children. *Child Abuse & Neglect*, *25*, 1253-1267.

MacMillan, H. L., Wathen, C. N., Barlow, J., Fergusson, D. M., Leventhal, J. M., & Taussig, H. N. (2009). Interventions to prevent child maltreatment and associated impairment. *Lancet*, *373*, 250-266.

Manly, J. T. (2005). Advances in research definitions of child maltreatment. *Child Abuse & Neglect*, *29*, 425-439.

Manly, J. T., Cicchetti, D., & Barnett, D. (1994). The impact of subtype, frequency, chronicity, and severity of child maltreatment on social competence and behavior problems. *Development and Psychopathology*, *6*, 121-143.

Manly, J. T., Kim, J. E., Rogosch, F. A., & Cicchetti, D. (2001). Dimensions of child maltreatment and children's adjustment: Contributions of developmental timing and subtype. *Development and Psychopathology*, *13*, 759-782.

McGill, D. (2001). Big brothers big sisters of America. In D. S. Elliot (Series Ed.), *Book 2: Blueprints for violence series*. Boulder: Institute for Behavioral Science, University of Colorado.

Olds, D. L., Robinson, J., O'Brien, R., Luckey, D., Pettitt, L., Henderson, C. R., Ng, R. K., & Talmi, A. (2002). Home visiting by paraprofessionals and by nurses: A randomized, controlled trial. *Pediatrics*, *110*, 486-496.

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014

Oshri, A., Tubman, J. G., & Jaccard, J. (2011). Psychiatric symptom typology in a sample of youth receiving substance abuse treatment services: Associations with self-reported child maltreatment and sexual risk behaviors. *AIDS and Behavior*, *15*, 1844-1856.

Pears, K. C., Kim, H. K., & Fisher, P. A. (2008). Psychosocial and cognitive functioning of children with specific profiles of maltreatment. *Child Abuse & Neglect*, *32*, 958-971.

Pecora, P. J., Jensen, P. S., Romanelli, L. H., Jackson, L. J., & Ortiz, A. (2009). Mental health services for children placed in foster care: An overview of current challenges. *Child Welfare*, *88*, 5-26.

Petrenko, C. L. M., Friend, A., Garrido, E. F., Taussig, H. N., & Culhane, S. E. (2012). Does subtype matter? Assessing the effects of maltreatment on functioning in preadolescent youth in out-of-home care. Child Abuse & Neglect, *36*, 633-644.

Sandler, I. N., Ayers, T. S., Wolchik, S. A., Tein, J.-Y., Kwok, O.-M., Haine, R. A., & Griffin, W. A. (2003). The family bereavement program: Efficacy evaluation of a theory-based prevention program for parentally bereaved children and adolescents. *Journal of Consulting and Clinical Psychology*, *71*, 587-600.

Swenson, C. C., & Kolko, D. J. (2000). Long-term management of the developmental consequences of child physical abuse. In R. M. Reece (Ed.), *Treatment of child abuse: Common ground for mental health, medical and legal practitioners* (pp.135-154). Baltimore, MD: The Johns Hopkins University Press.

Taussig, H. N. (2002). Risk behaviors in maltreated youth placed in foster care: A longitudinal study of protective and vulnerability factors, *Child Abuse & Neglect*, *26*, 1179-1199.

Taussig, H. N., & Culhane, S. E. (2010). Impact of a mentoring and skills group program on mental health outcomes for maltreated children in foster care. *Archives of Pediatrics and Adolescent Medicine*, *164*, 739-746.

Taussig, H. N., Culhane, S.E., & Hettleman, D. (2007). Fostering Healthy Futures: An innovative preventive intervention for preadolescent youth in out-of-home care. *Child Welfare*, *86*, 113-131.

Thornberry, T. P., Ireland, T. O., & Smith, C. A. (2001). The importance of timing: The varying impact of childhood and adolescent maltreatment on multiple problem outcomes. *Development and Psychopathology*, *13*, 957-979.

Tolan, P. H., Gorman-Smith, D., & Henry, D. (2004). Supporting families in a high-risk setting: Proximal effects of the SAFEChildren preventive intervention. *Journal of Consulting and Clinical Psychology*, *72*, 855-869.

Toth, S. L., Manly, J. T., & Cicchetti, D. (1992). Child maltreatment and vulnerability to depression. *Development and Psychopathology*, *4*, 97-112.

Udwin, O. (1983). Imaginative play training as an intervention method with institutionalized preschool children. *British Journal of Educational Psychology*, *53*, 32-39.

U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2011). *The AFCARS report preliminary FY 2010 estimates as of June 2011*. Retrieved 30 September, 2011, from http://www.acf.hhs.gov/programs/cb/stats_research/afcars/tar/report18.htm

Wolchik, S. A., Sandler, I. N., Millsap, R. E., Plummer, B. A., Greene, S. M., Anderson, E. R., & Haine, R. A. (2002). Six-year follow-up of preventive interventions for children of divorce: A randomized controlled trial. *Journal of the American Medical Association*, *288*, 1874-1881.

Downloaded from cmx.sagepub.com at UNIV OF CO HEALTH SCIENCE CTR on January 10, 2014