Published in final edited form as:

J Clin Child Adolesc Psychol. 2019 ; 48(SUP1): S194–S201. doi:10.1080/15374416.2017.1295379.

The Moderating Effect of Risk Exposure on an Efficacious Intervention for Maltreated Children

Lindsey M. Weiler, Ph.D and

Department of Family Social Science, University of Minnesota, 290 McNeal Hall, 1985 Buford Ave, Saint Paul, MN 55108, lmweiler@umn.edu

Heather N. Taussig, Ph.D

Kempe Center for the Prevention and Treatment of Child Abuse and Neglect, University of Colorado School of Medicine, Graduate School of Social Work, University of Denver, 2148 S. High Street, Denver, CO 80208, heather.taussig@du.edu

Abstract

Objective: The current study extends research on the impact of the Fostering Healthy Futures program (FHF; Taussig & Culhane, 2010), a 9-month mentoring and skills group preventive intervention for maltreated children, by examining whether the effect of FHF is moderated by children's baseline risk exposure (i.e., number of adverse childhood experiences).

Method: Participants included 156 racially and ethnically diverse children (ages 9–11, 50.7% female) recently placed in foster care due to maltreatment who were randomized to intervention or control conditions. Baseline and 6-month post-intervention measures included a multi-informant index of mental health functioning and youth-reported symptoms of posttraumatic stress, dissociation, coping skills, social-acceptance, global self-worth, social support, and quality of life. A previously published, empirically-derived risk index was used to assess level of exposure to six adverse childhood experiences (i.e., physical abuse, sexual abuse, removal from a single parent household, high level of exposure to community violence and high numbers of caregiver and school transitions).

Results: Significant intervention by risk interactions were observed in regression models predicting 6-month post-intervention symptoms of posttraumatic stress ($\beta=.38$, $p<.001$) and dissociation ($\beta=.30$, $p<.01$). Among children with low to moderate levels of risk, intervention participants evidenced fewer symptoms, whereas intervention participants with high levels of risk did not differ from the control group.

Conclusions: The results of this study suggest that maltreated children exposed to high numbers of adverse childhood experiences may not experience the same reduction in trauma symptoms post-intervention relative to children exposed to fewer adversities.

Keywords

mentoring; moderation; risk; adverse childhood experiences; mental health

Exposure to myriad adverse childhood experiences, such as abuse, chronic instability, and community violence, is associated with deleterious effects on mental health later in life (Cicchetti & Toth, 2005; Felitti et al., 1998; Hodges, Godbout, Briere, Lanktree, Gilbert, & Kletzka, 2013). The experiences of maltreatment and placement in foster care leave children vulnerable to insecure attachment, depression, anxiety, externalizing behaviors, and poor quality of life (Garland, Hough, McCabe, Yeh, Wood & Aarons, 2001; Taussig & Culhane, 2005). Exposure to adverse childhood experiences has a cumulative effect on behavioral health problems, such that the number of adversities experienced linearly increases risk of problems (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Cecil, Viding, Barker, Guiney, & McCrory, 2014; Edwards, Holden, Felitti, & Anda, 2003; Hodges et al., 2013).

Positive youth development (PYD) programs may mitigate the risk of mental health problems conferred by cumulative exposure to adversity. PYD approaches reject deficit models and focus instead on the promotion of health (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002; Lerner et al., 2005). It is hypothesized that the promotion of positive development will lead to reductions in problem behaviors and buffer high-risk youth from the impact of prior adversity (Bernat & Resnick, 2006; Catalano et al., 2002). Elements of PYD programs vary considerably across interventions but typically involve an intentional, pro-social approach. Some PYD programs focus on helping youth establish positive relationships with competent, caring adults (Ahrens, DuBois, Richardson, Fan & Lozano, 2008; Lerner, Napolitano, Boyd, Mueller, & Callina, 2014) as well as learning social and emotional skills (Berliner & Kolko, 2000; Greenberg, Domitrovich, & Bumbarger, 2001; Guerra & Bradshaw, 2008).

It was within the PYD framework that the Fostering Healthy Futures program (FHF) was developed. FHF combines weekly one-to-one mentoring with skills groups to promote positive mental health and psychosocial functioning among maltreated children in foster care. FHF was studied in a previously published randomized controlled trial (RCT) and demonstrated positive effects (Taussig & Culhane, 2010). Utilizing intent-to-treat analyses, the FHF treatment group reported better quality of life immediately after the intervention and fewer problems on a multi-informant factor score of mental health functioning and fewer symptoms of dissociation 6-months post-intervention. The effect of the FHF program on children's self-reported symptoms of posttraumatic stress, coping skills, global self-worth, social acceptance, and social support was not statistically significant. The primary aim of this study was to examine whether the impact of FHF was moderated by children's level of baseline risk.

Understanding who is likely to benefit from interventions has important implications for children and families, program directors and staff, and policymakers, as such research can reveal compensatory (i.e., higher-risk groups benefit more) or leveraging (i.e., lower-risk groups benefit more) effects (Spoth, Shin, Guyll, Redmond, & Azevedo, 2006). Little research, however, has been conducted to examine whether baseline risk moderates the impact of mentoring-based interventions. One exception is a study by Herrera, DuBois, and Grossman (2013) which examined whether individual and environmental risk impacted mentoring program outcomes for 1,130 children. Individual risk indicators included youths' academic challenges, problem behavior, and mental health concerns, and environmental risk

indicators included economic adversity, family risk/stress, and peer difficulties. Overall, program impacts on depressive symptoms, peer acceptance, academic self-efficacy, and grades were fairly similar across risk profiles. Among skills group curricula research, moderating analyses have produced mixed findings, suggesting the need for additional research. For instance, one study found the impact of the Promoting Alternative Thinking Strategies curriculum to be stronger for children whose aggression problems were high at baseline (Bierman, Coie, Dodge, Greenberg, Lochman, McMahon, & Pinderhughes, 2010), but another found little evidence that child baseline behavior problems or economic factors (e.g., family socioeconomic status) moderated the intervention effect (Malti, Ribeaud, & Eisner, 2012).

Fostering Healthy Futures Intervention

The FHF program is a 9-month (i.e., 30 week) preventive intervention comprised of weekly one-on-one mentoring and manualized skills groups for maltreated preadolescent (ages 9 to 11 years) children (Taussig, Culhane, & Hettleman, 2007; Taussig, Wertheimer, Fireman, & Raviv, 2015). It is theoretically-grounded in the PYD approach and is informed by literature on risk and resilience, such that the intervention targets factors associated with adaptive functioning in pre-adolescence. FHF is intended to be above and beyond child welfare services as usual.

The first component involves weekly one-to-one mentoring (2–4 hours/week). Mentors are graduate students in social work who aim to create empowering relationships, ensure that children receive appropriate services, help children practice social skills, engage children in extracurricular activities, and foster a positive future orientation. Intervention strategies employed by mentors are tailored to each individual child. The FHF program incorporates mentoring best practices, such as providing regular supervision and monitoring. Because the mentoring program involves high-risk children, significant attention is given to providing children with a healthy relationship and a healthy goodbye.

The second component is a weekly manualized skills group which combines cognitive-behavioral activities with process-oriented material to address key prosocial skills for this developmental period. The FHF curriculum includes materials from evidence-based skills group programs, including PATHS (Kusché & Greenberg, 1994) and Second Step (Committee for Children, 2001). Sessions cover topics including emotion recognition, problem solving, perspective taking, communication, anger management, and dealing with peer pressure. Multicultural materials from other sources, as well as project designed curricula, are integrated into each lesson. The FHF skills group curriculum is tailored to meet the needs of children placed in foster care by incorporating units on coping with change and loss and dealing with worry. Finally, the FHF curriculum supports children in creating lifebooks, which use verbal and nonverbal media to chronicle children's pasts and document their hopes for the future. All sessions include take-home activities which encourage youth to practice skills with their mentors and others in their homes and communities. Details for program implementation can be found here: <http://www.cebc4cw.org/program/fostering-healthy-futures-fhf/detailed>.

Method

Data were collected each year between 2002 and 2006 during a RCT of the FHF program (Taussig & Culhane, 2010). All 9 to 11 year olds from participating urban counties in a Western State within the United States were recruited according to the following criteria: (1) placement in any type of foster care by court order due to maltreatment within the preceding year; (2) current residence within a 35-min drive to intervention sites; and (3) placement with current caregiver for at least 3 weeks. In all, 91% of eligible children and their caregivers agreed to participate. Following the baseline interview, and after stratifying on gender and county, children were randomized by cohort in a single block to intervention and control groups.

Participants

Of the 156 participating children, 12 (3 intervention and 9 control, a non-significant difference) were lost to follow-up at the 6-month post-intervention interview (see Taussig & Culhane, 2010 for CONSORT diagram). The final analysis sample ($N=144$) included 76 children randomized to the intervention group and 68 children randomized to the control group. The sample was 50.7% female, with a mean age of 10.38 years ($SD=.88$). The racial/ethnic distribution (nonexclusive) was 47.2% Caucasian, 45.8% Hispanic, 29.9% African American, 7.6% Native American, 1.4% Asian American, 1.4% Pacific Islander, and 1.4% Other. Children experienced the following maltreatment types (nonexclusive): 76% supervisory neglect, 62% emotional maltreatment, 47% physical neglect, 33% physical abuse, and 12% sexual abuse.

Study Procedures

The study protocol was IRB-approved, and informed consent and assent were obtained. Participation was voluntary, and could not be court-ordered. 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 evaluations and services. Participants randomized to the intervention group received the screening assessment and participated in the FHF program. Mentors typically met with children once per week for 2–4 hours. The skills groups included 8–10 children each, met weekly for 1.5 hours per session, and were facilitated by two clinicians. Participants randomized to the control group received the screening assessment and participated in usual child welfare services.

The current study utilized data collected at the baseline (T1) interview (2–3 months prior to the start of the intervention) and at the 6-months post-intervention (T3) interview (17–20 months after T1) because intervention effects in the original RCT were concentrated at T3 (Taussig & Culhane, 2010). Children and their current caregivers were interviewed by separate interviewers. They were each paid \$40 per interview. Children's teachers were surveyed at T3 and paid \$25. Child welfare records were abstracted and coded at T1.

Measurement

Risk index.—To assess baseline risk, a 6-item measure of adverse childhood experiences, which was created and validated for maltreated children in foster care, was used (Raviv, Taussig, Culhane, & Garrido, 2010). The scale demonstrates good predictive validity. The items include: (1) *Physical Abuse*; (2) *Sexual Abuse*; (3) *Removal from a single parent household*; (4) *Exposure to community violence*; (5) *Caregiver Transitions*; and (6) *School Transitions*. Consistent with literature on cumulative risk (e.g., Appleyard et al., 2005), the measure employs conventional standards for dichotomizing and summing the six factors as follows. The abuse exposure and single parent household items were coded as “present” (1) or “absent” (0) from child welfare records. Exposure to community violence, caregiver transitions, and school transitions were dichotomized such that a score of 1 was assigned to scores in the upper quartile of the sample distribution, and a score of 0 was assigned for all others. Exposure to community violence was derived from an adapted 8-item version of the Things I Have Seen and Heard scale (Richters & Martinez, 1993). Children were asked the number of times in the past year they had seen or heard acts such as, “guns being shot” or “seeing someone getting arrested.” Responses ranged from never (0) to four or more times (4). The upper quartile included children with mean scores above 1.63 ($M=1.06$, $SD=.85$). The number of caregivers since birth (range=2–12, $M=4.35$, $SD=2.45$) and number of schools since kindergarten (range=1–23, $M=4.38$, $SD=2.76$) were used for the final two items. Upper quartiles for both included children with six or more caregivers and schools. Upon dichotomizing all risk variables, the factors were summed to create an overall risk score. Higher scores indicate greater risk exposure.

Dependent Variables.—Dependent variables were identical to those measured in the original evaluation (Taussig & Culhane, 2010). *Mental Health Functioning* was assessed using a multi-informant index created based on principal components factor analysis of the following variables: (1) mean score on the Trauma Symptom Checklist for Children (Briere, 1996; TSCC); (2) Internalizing scale of the Child Behavior Checklist completed by children’s caregivers; and (3) Internalizing Scale of the Teacher Report Form at T3 (Achenbach & Rescorla, 2001). The factor score explained 42% of the variance in these measures, and factor loadings ranged from 0.59 to 0.70. The factor score was used in all analyses.

Symptoms of *Posttraumatic Stress* ($\alpha = .80$) and *Dissociation* ($\alpha = .80$) were assessed using each corresponding subscale on the TSCC; T scores were used in analyses (Briere, 1996). *Positive* ($\alpha = .89$) and *Negative* ($\alpha = .64$) *Coping Skills* were assessed by youth report on The Life Events and Coping Inventory (Dise-Lewis, 1988). *Social Acceptance* ($\alpha = .78$) and *Global Self-Worth* ($\alpha = .72$) were assessed using The Self-Perception Profile for Children (Harter, 1985). Three short-form scales (one each for peers, caregivers, and mentors) of the People in My Life measure (Gifford-Smith, 2000) were factor analyzed to create an index of *Social Support* using principal components factor analysis. The social support factor score explained 45% of the variance in these 3 scales; factor loadings ranged from 0.63 to 0.74. Factor scores were used in all analyses. *Quality of Life* was measured using a scale developed by Andrews and Withey (1976), which asks respondents to rate satisfaction in

several domains (e.g., school, home, health, friendships; $\alpha = .75$). Descriptive statistics are presented in Table 1.

Data Analytic Plan

Number of adverse childhood experiences (i.e., risk), rates of program attendance, and associations between risk and T1 mental health outcomes were examined first. Next, moderation analyses were conducted within an intent-to-treat framework using a series of linear regression models which included treatment group status (1=intervention), risk index score (centered at the mean, i.e., 1.78), and the group by risk interaction term as predictors. Covariates included the baseline measure of the outcome as well as variables that differed by group post-randomization in the original evaluation: IQ, maternal criminal history, and exposure to illegal activity. Significant interaction effects were evaluated by significance of simple slopes (i.e., the difference between intervention and control at each conditional value of the moderator variable). Conditional values of baseline risk were chosen at the mean and one standard deviation above and below the mean (Aiken & West, 1991).

Results

Baseline Risk Exposure and Program Attendance

The number of adverse childhood experiences that children were exposed to ranged from 0 to 5. Consistent with Raviv et al. (2010), scores of four or five were combined due to small sample sizes ($n=10$ and $n=3$, respectively). On average, participants had experienced 1.78 ($SD=1.06$) risks. The intervention and control groups did not differ on baseline risk scores, $t(142) = -.37, p=.71$. The intervention group, however, was more likely to have been removed from a single-parent home (see Table 2).

On average, children in the intervention attended 25.0 ($SD=5.8$) of the 30 skills groups and 26.7 ($SD=6.25$) of the 30 mentoring visits. Baseline risk exposure was not related to the number of attended skills groups ($r=.01, p=.96$) or mentoring visits ($r=.06, p=.61$). Five children did not complete the program, but baseline risk did not distinguish program dropouts from completers ($OR=1.24, p=.56$).

Associations between Cumulative Risk and Baseline Measures of Outcomes

Higher levels of cumulative risk were associated with greater T1 mental health problems ($r=.22, p < .01$), dissociation ($r=.23, p < .01$), posttraumatic stress ($r=.24, p < .01$), and negative coping ($r=.48, p < .001$). Risk was also associated with less social support ($r=-.18, p < .05$) and lower global self-worth ($r=-.27, p < .01$). There was a small positive relationship between risk and positive coping ($r=.18, p < .05$). The associations of risk with quality of life ($r=.14, p > .05$) and with social acceptance ($r=.08, p > .05$) were not statistically significant.

Moderation Analyses

Table 3 presents results of the moderation analyses. Because nine models were tested, Holm's modified Bonferroni correction (Holm, 1979) was applied, such that the most significant p value had to be smaller than .0055 (i.e., .05/9), followed by .00625 (i.e., .05/8), and so on in order to reject the null hypothesis. Significant moderation effects of baseline

risk exposure on the relationships between the intervention and symptoms of posttraumatic stress ($sr^2=.07$), and dissociation ($sr^2=.04$) were observed. For the model predicting adjusted post-intervention symptoms of posttraumatic stress (Figure 1), the slope representing children with baseline risk exposure scores 1 SD below the mean was significant, $t(136) = -3.55$, $p=.001$. Among children exposed to relatively few adverse experiences, intervention participants reported fewer symptoms of posttraumatic stress at T3, as compared to the control group. The slopes representing children exposed to average and high numbers of adverse experiences (i.e., 1 SD above the mean) were not significant, $t(136) = -1.57$, $p=.12$, and $t(136) = -1.33$, $p=.19$, respectively. For the model predicting adjusted post-intervention symptoms of dissociation (Figure 2), the slopes representing children with baseline risk exposure scores 1 SD below the mean, $t(136) = -3.58$, $p<.001$, and children with average risk exposure, $t(136) = -2.23$, $p=.03$, were significant. Among children exposed to few and average numbers of adverse experiences, intervention participants reported fewer symptoms of dissociation at T3, as compared to children in the control group. The slope representing children exposed to high levels of risk was not significant, $t(136) = .43$, $p=.67$. Moderating effects on the multi-informant factor score of mental health functioning, positive and negative coping strategies, social acceptance, quality of life, social support and self-worth were not statistically significant.

Discussion

This study augments existing literature by examining whether adverse childhood experiences moderate a PYD intervention for a high-risk population, maltreated children in foster care. Of the nine dependent variables examined, children's baseline risk moderated the impact of the Fostering Healthy Futures (FHF) program on two – symptoms of posttraumatic stress and dissociation. That is, children in the intervention group exposed to fewer risks reported fewer symptoms of posttraumatic stress and dissociation than their counterparts in the control group, whereas group differences were not observed among children exposed to relatively more risks. Moderating effects on a multi-informant factor score of mental health functioning, positive and negative coping strategies, social acceptance, quality of life, social support and self-worth were not statistically significant. In the original RCT, positive impacts were noted for mental health functioning and symptoms of dissociation 6-months post-intervention (Taussig & Culhane, 2010). Interestingly, risk did not moderate the impact on mental health functioning, which may suggest similar benefits across children with varied exposure to adverse childhood experiences. On the other hand, the relative impact of FHF on trauma-related constructs seemed to be dependent on children's level of risk, such that in this study, maltreated children exposed to high numbers of adverse childhood experiences did not experience the same reduction in trauma symptoms post-intervention relative to those exposed to fewer adversities. If these findings are replicated in subsequent studies, this may provide guidance on who to recruit for participation in order to gain maximal benefit in trauma symptom reduction. Again, because risk did not moderate the impact of the program on most outcomes, no definitive conclusions can be made regarding the role of risk and its impact on a range of outcomes.

Consistent with previous research (e.g., Appleyard et al., 2005; Hodges et al., 2013), risk was positively associated with almost all outcome variables in the expected direction. It is

important to recognize, however, that the current study enrolled extremely high-risk children (i.e., those with history of maltreatment and placement in foster care). Presumably, children considered lower risk in the current study's sample are more similar to children considered high risk in other studies because all participants had experienced significant adversity.

Several limitations of the study are noted. Although the sample was racially and ethnically diverse, the findings cannot be generalized to non-maltreated samples or different geographical locations. In addition, this study was unable to examine service utilization. Because children who evidence significant mental health difficulties are more likely to be referred for services than those without such difficulties, it is plausible that the highest risk children in the control group children received more mental health services than those in the FHF intervention. Consequently, this may account for the attenuation of the mental health impact of FHF among the highest risk group. Although we utilized a cumulative measure of risk created and validated for maltreated children in foster care, there are other indicators of risk that may be helpful to evaluate in future studies. Finally, although the study was able to detect moderation effects on two of the nine outcomes, there was limited power to detect small effects.

Although these findings need replication and extension, the results suggest some potential implications and future directions. Importantly, additional services or alternative program structures may be necessary to impact trauma symptoms (i.e., dissociation and post-traumatic stress) for the highest-risk children. Combining PYD programs with evidence-based psychotherapy, such as Trauma-focused Cognitive Behavioral Therapy (Cohen, Mannarino, & Deblinger, 2006), for instance, may reduce trauma symptoms for these children. Additional research is needed to ascertain whether, and how, PYD programs can reach children across the wide continuum of risk. Although no iatrogenic effects were found, PYD programs that include mentoring and/or skills groups should be cognizant of the level of risk experienced by youth, and similar to other preventive interventions, should take care in monitoring whether participants are benefiting. It is premature to presume positive impacts of mentoring and skills-based PYD interventions among high-risk children. Balancing the relative cost of intervention, required dosage, and interaction with adverse childhood experiences is critically important as future research discerns the conditions by which PYD programs are most appropriate and impactful. Evaluating the nuances of program efficacy is critically important as there are currently several federal grant mechanisms aimed at using PYD interventions with our nation's highest-risk youth (e.g., victims of sex trafficking and children of incarcerated parents). As the science of preventive interventions for maltreated children continues to evolve, understanding how to best intervene with high-risk children, and whether there is a level of risk exposure that would contraindicate the use of mentoring and/or skills groups, is necessary.

Acknowledgments:

We appreciate the insightful comments on drafts of the manuscript provided by Carla Herrera, PhD, Erin Hambrick, PhD, Tara Rhodes, MA, and Edward Garrido, PhD.

Funding: This project was supported by grants from the National Institute of Mental Health (1 K01 MH01972, 1 R21 MH067618, and 1 R01 MH076919, H. Taussig, PI) and funding from the Kempe Foundation, Pioneer Fund, Daniels Fund, and Children's Hospital Research Institute. Dr. Weiler was supported by USPHS grant T32

MH15442, 'Development of Psychopathology, Psychobiology & Behavior' (UCD Institutional Postdoctoral Research Training Program). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

- Achenbach TM, & Rescorla LA (2001). Manual for the ASEBA School-Age Forms and Profiles. Burlington, VT: University of Vermont Research Center for Children, Youth, & Families.
- Ahrens K, DuBois D, Richardson L, Fan M, & Lozano P (2008). Youth in foster care with adult mentors during adolescence have improved adult outcomes. *Pediatrics*, 121, e246–e252. doi: 10.1542/peds.2007-0508 [PubMed: 18182469]
- Aiken LS, & West SG (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage.
- Andrews F, & Withey S (1976). Social indicators of American's perceptions of life quality. New York: Plenum.
- Appleyard K, Egeland B, van Dulmen M, & Sroufe L (2005). When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry*, 46, 235–245. doi: 10.1111/j.1469-7610.2004.00351.x [PubMed: 15755300]
- Berliner L, & Kolko D (2000). What works in treatment services for abused children? In Kluger MP (Ed.), *What works in child welfare* (pp. 97–104). Washington, D.C.: Child Welfare League of America.
- Bernat D, & Resnick M (2006). Healthy youth development: Science and strategies. *Journal of Public Health Management and Practice*, 12, S10–S16.
- Bierman K, Coie J, Dodge K, Greenberg M, Lochman J, McMahon R, & Pinderhughes E (2010). The effects of a multiyear universal social-emotional learning program: The role of student and school characteristics. *Journal of Consulting and Clinical Psychology*, 78, 156–168. doi:10.1037/a0018607 [PubMed: 20350027]
- Briere J (1996). *Trauma Symptom Checklist for Children: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Catalano RF, Berglund ML, Ryan JA, Lonczak HS, & Hawkins JD (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of the American Academy of Political and Social Science*, 591, 98–124. doi: 10.1177/0002716203260102
- Cecil C, Viding E, Barker ED, Guiney J, & McCrory EJ (2014). Double disadvantage: The influence of childhood maltreatment and community violence exposure on adolescent mental health. *Journal of Child Psychology and Psychiatry*, 55, 839–848. doi:10.1111/jcpp.12213 [PubMed: 24611776]
- Cicchetti D, & Toth SL (2005). Child maltreatment. *Annual Review of Clinical Psychology*, 1, 409–438. doi:10.1146/annurev.clinpsy.1.102803.144029
- Cohen J, Mannarino A & Deblinger E (2006). *Treating trauma and traumatic grief in children and adolescents*. New York: The Guilford Press.
- Committee for Children. (2001). *Second Step: A violence prevention curriculum, grade 2*. Seattle, WA: Author.
- Dise-Lewis JE (1988). The life events and coping inventory: An assessment of stress in children. *Psychosomatic Medicine*, 50, 484–499. [PubMed: 3186892]
- Edwards V, Holden G, Felitti V, & Anda R (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the adverse childhood experiences study. *The American Journal of Psychiatry*, 160, 1453–1460. doi: 10.1176/appi.ajp.160.8.1453 [PubMed: 12900308]
- Felitti V, Anda R, Nordenberg D, Williamson D, Spitz A, Edwards V, & ... Marks J (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14, 245–258. doi:10.1016/S0749-3797(98)00017-8 [PubMed: 9635069]
- Garland A, Hough R, McCabe K, Yeh M, Wood P, & Aarons G (2001). Prevalence of psychiatric disorders in youths across five sectors of care. *Journal of the American Academy of Child and*

- Adolescent Psychiatry, 40, 409–418. doi: 10.1097/00004583-200104000-00009 [PubMed: 11314566]
- Gifford-Smith M (2000). People in My Life. Retrieved June 10, 2002, from <http://www.fasttrackproject.org>.
- Greenberg MT, Domitrovich C, & Bumbarger B (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention & Treatment*, 4, 1–59. doi: 10.1037/1522-3736.4.1.41a
- Guerra N, & Bradshaw C (2008). Linking the prevention of problem behaviors and positive youth development: Core competencies for positive youth development and risk prevention. *New Directions in Child and Adolescent Development*, 122, 1–17. doi: 10.1002/cd.225
- Harter S (1985). *Manual for the Self-Perception Profile for Children*. Denver, CO: University of Denver.
- Herrera C, DuBois DL, & Grossman J (2013). The role of risk: Mentoring experiences and outcomes for youth with varying risk profiles. New York: MDRC.
- Hodges M, Godbout N, Briere J, Lanktree C, Gilbert A, & Kletzka N (2013). Cumulative trauma and symptom complexity in children: a path analysis. *Child Abuse & Neglect*, 37, 891–898. doi: 10.1016/j.chiabu.2013.04.001 [PubMed: 23643387]
- Holm S (1979). A simple sequential rejective multiple test procedure. *Scandinavian Journal of Statistics*, 6, 65–70.
- Kusché CA, & Greenberg MT (1994). *The PATHS Curriculum. Promoting Alternative Thinking Strategies*. Seattle, WA: Developmental Research and Programs.
- Lerner RM, Lerner JV, Almerigi JB, Theokas C, Phelps E, Gestsdottir S, ... & Smith LM (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents: Findings from the first wave of the 4-H study of positive youth development. *The Journal of Early Adolescence*, 25, 17–71. doi: 10.1177/0272431604272461
- Lerner RM, Napolitano CM, Boyd MJ, Mueller MK, & Callina KS (2014). Mentoring and positive youth development. In DuBois DL & Karcher MJ (Eds.), *Handbook of youth mentoring* (2nd ed., pp. 17–28). Thousand Oaks, CA: Sage.
- Malti T, Ribeaud D, & Eisner M (2012). Effectiveness of a universal school-based social competence program: The role of child characteristics and economic factors. *International Journal of Conflict and Violence*, 6, 249–259.
- Raviv T, Taussig HN, Culhane SE, & Garrido EF (2010). Cumulative risk exposure and mental health symptoms among maltreated youth placed in out-of-home care. *Child Abuse & Neglect: The International Journal*, 34, 742–751. doi: 10.1016/j.chiabu.2010.02.011
- Richters JE, & Martinez PE (1993). Violent communities, family choices, and children's chances: An algorithm for changing the odds. *Development and Psychopathology*, 5, 609–627.
- Spoth R, Shin C, Gyll M, Redmond C, & Azevedo K (2006). Universality of effects: An examination of the comparability of long-term family intervention effects on substance use across risk-related subgroups. *Prevention Science*, 7, 209–224. doi: 10.1007/s11121-006-0036-3 [PubMed: 16791523]
- Taussig HN, & Culhane SE (2005). Foster care as an intervention for abused and neglected children In Kendall-Tackett KA & Giacomoni SM (Eds), *Child victimization: Maltreatment, bullying, and dating violence, prevention and intervention* (pp. 20:1–20:25). Kingston, NJ: Civic Research Institute.
- Taussig HN, & Culhane SE (2010). Impact of a mentoring and skills group program on mental health outcomes for maltreated children in foster care. *Archives of Pediatrics & Adolescent Medicine*, 164, 739–746. doi:10.1001/archpediatrics.2010.124 [PubMed: 20679165]
- Taussig HN, Culhane S, & Hettelman D (2007). Fostering Healthy Futures: An innovative preventive intervention for preadolescent youth in out-of-home care. *Child Welfare*, 86, 113–131. doi: 0009-4021/2007/0507113-131 [PubMed: 18422051]
- Taussig HN, Wertheimer R, & Fireman O, & Raviv T (2015). *Fostering Healthy Futures Implementation Manual*.

Figure 1.
The moderating effect of baseline risk exposure on adjusted post-intervention posttraumatic stress symptoms. * $p = .001$

Figure 2.
The moderating effect of baseline risk exposure on adjusted post-intervention symptoms of dissociation. * $p < .05$, ** $p < .001$

Table 1

Descriptive Statistics for Dependent Variables at Baseline

Variable	Intervention (n=76)		Control (n=68)	
	M (SD)	Skewness	M (SD)	Skewness
Mental Health Functioning, factor score	-.004(1.03)	-.10	-.04(1.00)	.06
Posttraumatic Stress, <i>t</i> score	47.84 (9.18)	.81	47.50 (9.38)	.71
Dissociation, <i>t</i> score	48.63 (9.41)	.87	47.87 (9.45)	.82
Quality of Life	2.73 (.26)	-1.05	2.69 (.29)	-.85
Social Acceptance	3.17 (.78)	-.90	2.98 (.83)	-.84
Positive Coping	1.95 (.44)	.05	1.84 (.41)	.23
Negative Coping	1.25 (.17)	2.42	1.20 (.17)	1.28
Self-Worth	3.46 (.62)	-1.53	3.40 (.62)	-1.06
Social Support, factor score	.13 (.98)	-.51	-.12 (1.04)	-.22

Note. No significant group differences were observed between the intervention and control groups. Skewness values for the total sample were all less than absolute value of 2, thus transformations were not used.

Table 2

Baseline Risk Exposure for the Total Sample, Intervention, and Control Groups

Variable	Total Sample	Intervention	Control	χ^2/t
Physical Abuse	32.6%	39.5%	25.0%	3.42
Sexual Abuse	11.8%	9.2%	14.7%	1.04
Single-parent Household	65.3%	73.7%	55.9%	5.02 [*]
Community Violence	21.5%	19.7%	23.5%	.31
Caregivers Transitions	25.7%	22.4%	29.4%	.93
School Transitions	23.6%	19.7%	27.9%	1.34
Risk Index Score (Sum of Risk Variables)				
0	8.3%	7.9%	8.8%	
1	35.4%	31.6%	39.7%	
2	34.7%	40.8%	27.9%	
3	12.5%	10.5%	14.7%	
4–5	9.0%	9.2%	8.8%	
Average Risk Score, <i>M</i> (<i>SD</i>)	1.78 (1.07)	1.82 (1.04)	1.75 (1.10)	-.37

Note.

^{*} $p < .05$. Risk variables represent the 6 items in the risk index. Percentages correspond to the proportion of children who were coded as '1' as outlined in the measurement section, indicating the risk factor was present in their lives.

Table 3

Effect of Interaction Term on Dependent Variables

Dependent Variable	Interaction Term (Risk x Group)					
	B	SE(B)	β	95% CI (B)	t	p
Mental Health Functioning	.24	.16	.167	[-.08, .56]	1.49	.14
Posttraumatic Stress	4.62	1.33	.38	[1.97, 7.25]	3.47	.001 **
Dissociation	3.78	1.33	.30	[1.16, 6.40]	2.86	.005 *
Quality of Life	-.04	.04	-.10	[-.12, .04]	-.88	.38
Social Acceptance	-.13	.09	-.15	[-.31, .06]	-1.35	.18
Positive Coping	-.003	.05	-.007	[-.11, .10]	-.06	.95
Negative Coping	.05	.03	.18	[-.01, .10]	1.69	.09
Self-Worth	-.14	.08	-.20	[-.30, .01]	-1.8	.07
Social Support	.11	.16	.08	[-.20, .41]	.68	.50

Note. In addition to the interaction term, models included the following predictors and covariates: group status, risk index score, IQ, maternal criminal history, exposure to illegal activity and the baseline measure of the outcome. Holm's modified Bonferroni correction was applied to the nine models.

**
p<.0055

*
p<.00625