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Reducing Sibling Conflict in Maltreated Children Placed in Foster Homes

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Abstract

Sibling aggression among maltreated children placed in foster homes is linked to other externalizing problems and placement disruption. The reduction of sibling conflict and aggression may be achieved via a multicomponent ecologically focused intervention for families in the foster care system. The focus of the study is to evaluate the feasibility and short-term effectiveness of a transtheoretical intervention model targeting sibling pairs and their foster parent that integrates family systems, social learning theory, and a conflict mediation perspective. In this pilot study, sibling pairs (N=22) and their foster parent were randomized into a three-component intervention (n=13) or a comparison (n=9) group. *Promoting Sibling Bonds* (*PSB*) is an 8-week prevention intervention targeting maltreated sibling pairs ages 5–11 years placed together in a foster home. The *Siblings, Parent, and Joint* components were delivered in a program package at the foster agency by a trained two-clinician team. Average attendance across program components was 73%. Outcomes in four areas were gathered at pre-and post-intervention: observed sibling interaction quality (positive and negative) including conflict during play, and foster parent reports of mediation strategies and sibling aggression in the foster home. At post-intervention, adjusting for baseline scores and child age, intervention pairs showed higher positive (p<.001) and negative (p<.05) interaction quality, and lower sibling conflict during play (p <.01) than comparison pairs. Foster parents in the intervention group reported a higher number of conflict mediation strategies than those in the comparison group (p <.001). Foster parents in the intervention group reported lower sibling physical aggression from the older toward the younger child than those in the comparison group (p <.05). Data suggest that the *PSB* intervention is a promising approach to reduce conflict and promote parental mediation which together may reduce sibling aggression in the foster home.

Keywords

reducing sibling conflict in foster homes

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In 2010, the majority of the 415,000 children nationwide in foster care were part of a sibling group (U.S. Department of Health and Human Services, 2010). In New York City, where the study took place, 57.3% of children placed in 2009 either had a sibling in care or had entered care on the same day as their sibling (New York City Administration for Children's Services, 2012). Despite the important role of positive sibling relationships in child psychological well-being, virtually no attention has been given to the development of effective interventions that promote healthy sibling interactions for maltreated children placed in foster care. While sibling influences have often been ignored in both normative research and preventive interventions with youth and families (Feinberg, Solmeyer, & McHale, 2012) this gap is particularly unfortunate for children placed in foster homes because of their high-risk for negative developmental trajectories across the lifespan (Linares, 2006).

The promotion of harmonious sibling interactions may be an important malleable mechanism by which sibling aggression in the foster home may be reduced (Linares, 2006). Siblings placed together in foster homes are oftentimes the target of each other's frustration, which can result in mutual acts of physical aggression. Sibling physical aggression in the foster home is common; for example in a study of 148 siblings, 82% of their foster parents reported past-year physical aggression acts in the hands of a sibling including: 14% beat-up, 41% kicking, and 69% pushing (Linares, 2008a). Furthermore, in a prospective study of 156 children placed in foster homes in NYC, Linares and colleagues found that while 86% of siblings were placed together at the beginning of the study, a year later 22% experienced a failed placement and became split (Linares, Li, Shrout, Brody, & Pettit, 2007). In that study, positive sibling relationship quality (warmth and nurturance) predicted a lower occurrence of behavior problems, while negative quality (conflict, competition) predicted increased child problems a year later; this finding supports the protective role of positive sibling relationships on child behavior among this vulnerable child population. The current investigation represents a first step to target this largely untapped family resource by developing and pilot testing a short-term, multicomponent, ecologically focused intervention to reduce sibling conflict, enhance sibling interactions, and strengthen the foster parent's ability to nurture positive sibling relationships in the foster home. The intervention targets siblings with a history of child neglect (singly or in combination with physical abuse) because exposure to child neglect is the most common reason for placement in NYC (New York City, Administration for Children's Services, 2012).

Program Rationale

Based on past research on sibling influences in foster care and promising preventive interventions, we developed a transtheoretical intervention model which integrates principles of family systems, emotion regulation, social learning, and parent mediation to target elementary school age maltreated sibling pairs placed in foster homes and their foster caregiver. From a family systems perspective, siblings are considered to exert a salient socializing role in disorganized families where the parental figure is often unavailable (Minuchin & Fishman, 1981; Minuchin, Colapinto, & Minuchin, 1998). Following

placement as a family unit, siblings represent an important resource offering each other continuity and stability; thus creating a unique window of opportunity for enhancing healthy relationships and sibling unity.

Maltreated children placed in foster homes are at risk for deficits in emotion regulation often leading to sibling conflict and aggression and subsequent placement disruption (Linares et al., 2007). Emotion regulation is critical to form productive interpersonal relationships (Blair, Denham, Kochanoff, & Whipple, 2004). Studies indicate that at the core of the child neglect sequelae are deficits associated with emotion management skills such as problems in understanding and regulating negative emotions such as fear, anger, or sadness (Shipman, Edwards, Brown, Swisher, & Jennings, 2005). Child emotional distress or negative emotion that goes unrecognized, suppressed, or unsupported by a parent may lead to outward dysregulated expression of negative emotion (e.g., aggression to others), because self regulation is an experience-dependent skill critically shaped by maternal scaffolding processes (Shipman, Schneider, & Sims, 2005; Shipman, Schneider, Fitzgerald, Sims, Swisher, & Edwards, 2007; Shields & Cicchetti, 1998, 2001). To promote healthy sibling relationships in foster homes, the sibling component of the intervention promotes emotional self-control during play and prosocial problem-solving skills during sibling interactions. The sibling component was informed by *More Fun With Sisters and Brothers*, an intervention aimed at reducing child negative emotion and increasing sibling positive quality among low-risk preschool pairs (Kennedy & Kramer, 2008); and *Sibling Plus Parent Management*, a social learning-focused intervention aimed at reducing peer aggression among adolescent sibling pairs in which one sibling was at risk for conduct problems (Bank, Snyder, & Prescott, 2002; Bank & Kothari, under review).

Sibling conflict is influenced by and influences family processes including parenting (Patterson, 1982, 1984). Previous research on the parental role in sibling behavior has shown that parental nonintervention over sibling disputes is common (~45%) despite leading to subsequent sibling conflict (Kramer, Perozynski, & Chung, 1999; Perlman & Ross, 1997; Ross, Filyer, Lollis, Perlman, & Martin, 1994; Perozynski & Kramer, 1999; Siddiqui & Ross, 2004). Harsh and authoritarian parental behavior following sibling disputes also may lead to more conflictual sibling exchanges (McHale, Updegraff, Jackson Newsom, Tucker, & Crouter, 2000). The foster parent component of the intervention focuses on positive child management for sibling aggression and mediation training for non aggressive sibling conflict. The child management training drew from the Oregon Social Learning Center (OSLC) key concepts, strategies, and materials of the *Parent Management Training* system (Reid, Patterson, & Snyder, 2002). The conflict mediation program was expanded from the *Mediation-Based Intervention Strategy for Sibling Conflict* program developed by H. Ross (Ross, 2008). In a single 1½ hr conflict mediation session targeting low-risk Canadian parents of 5–10 year old children, Ross and colleagues showed that teaching parents mediation procedures improved their (untreated) children's constructive conflict resolution strategies in the home (Smith & Ross, 2007).

Purpose of the Study

This pilot randomized trial evaluated program uptake (enrollment, retention for assessments and attendance, and staff training needs) and short term outcomes of *Promoting Siblings Bonds* (*PSB*). *PSB* is a 8-week program package for sibling pairs (between ages 5–11 years) and their foster parent aimed at increasing sibling positive interaction, reducing conflict during play, and promoting conflict mediation strategies, as compared to a comparison 'usual care' condition. It was hypothesized that training in parental-assisted mediation will facilitate conflict resolution by siblings (e.g., helping them reach win-win scenarios) leading to less sibling conflict during interactive play and less sibling aggression in the foster home.

Method

Selection of the Sample

As a selected preventive intervention targeting those at high risk for sibling problems, children were eligible to participate regardless of reported level of sibling conflict which ranged from low to high; children were not necessarily identified as being in need of clinical intervention. Eligible sibling pairs were between the ages of 5 years 0 months and 11 years 11 months with official history of child maltreatment (neglect with or without physical abuse) placed together (under the same roof) in the same foster home. A sibling was defined as a child who shared a maternal blood tie and a history of living together prior to placement, and who met these additional criteria: a) Sibling pairs received daily care from a certified relative or non-relative foster parent, and b) Only siblings placed in foster care were included.

The sample was drawn initially from the entire census of age-eligible sibling pairs and subsequently from monthly updated lists of newly placed pairs at three participating foster agencies in New York City during a two-year period starting in 2009. From 68 age-eligible sibling pairs, 20 pairs were found ineligible, 26 declined participation, and 22 pairs were enrolled (Figure 1). Eligible families declined participation due to time constraints (37%; too many services, too busy), lack of interest (27%), no need for the program or dislike of research (22%) and location (14%; home is too far from the agency). In cases with more than one biologically related age-eligible pair in the foster home, the youngest child and next to youngest child were selected as the target pair. From N = 22 enrolled sibling pairs, n=13 pairs were randomized to the intervention group and n=9 pairs to a comparison usual care group. Children and foster parents in both study groups continued to receive services as prescribed by their foster care agencies.

Procedure

Written informed consent was obtained from the biological and the foster parent; and child assent was obtained prior to assessment and randomization. Both study groups received pre- and post-assessments at similar intervals (about 9–10 weeks apart). The foster parent (mother) and the sibling pair under her care were interviewed in the foster home by a trained bilingual bicultural research associate (JJ). A 15–20 minute videotape of the siblings during a standard play procedure in the foster home was gathered to obtain behavioral ratings of dyadic interaction quality and conflict (further described in the Measure section). Play

materials in the assessment were not used in the intervention. Children were interviewed individually in private. In a separate area of the home, the foster parent completed questionnaires administered face-to-face assessing demographics, child behavior problems, sibling relationship quality, sibling aggression, parental mediation strategies, quality of parenting, and mental health service utilization.

Preliminary Work

To be responsive to the social ecology of foster care, the *PSB* program was developed with the goals of creating a predictable environment to promote child safety, supporting performance mastery in dyadic play games to build repetition and reliable success, and emphasizing a joint life narrative in program activities to strengthen the sibling bond. Before the pilot trial began, using the same selection and assessment procedures, the multicomponent intervention was implemented in the target agencies with five families. At the same time, program manuals were written for use with these families and minor modifications to the manuals were done after the trial began. Handouts and program materials were translated to Spanish and used with Spanish-speaking families. Drs. Bank and Ross served as consultants to the project; they provided staff training prior and during the implementation of the program.

Description of the Program

Promoting Sibling Bonds (*PSB*) is a family focused 90-minute program package comprised of three components: *SIBS* (sibling pair), *Parent*, (foster parent) and *Joint* (sibling pair-foster parent). The *PBS* program was implemented during 8 consecutive weekly sessions at the community foster care agency. Two master-level academic clinicians (EP & CN) completed all sessions with individual families randomized to the intervention group. In the same 90-minute weekly session, the child clinician delivered the *SIBS* sessions to the sibling pair while the other clinician delivered the *Parent* sessions to the foster parent in an adjacent room. *Joint* sessions took place with the family unit at the beginning and end of each session. About 1/3 spoke primarily Spanish; these families received the intervention in Spanish.

During *SIBS* sessions, a second clinician assisted when the behavioral needs of one or both siblings required individual attention. The child clinician's implemented sessions using instruction, live demonstrations, role playing, coaching, and positive feedback. Siblings practiced the new skills in these sessions and earned *SibBucks* which they traded for small prizes at the end of each visit.

During *Parent* sessions, the clinician first focused on discussing consistent parental management of sibling behavior; and later on the notion that siblings themselves, rather than the parent, negotiate and develop their own prosocial solutions to conflict. Foster parents and their clinician discussed specific sibling conflict, disagreement, or disputes and identified unsuitable and suitable scenarios for mediation training. For aggressive interactions, parents were encouraged to apply consistent parent management strategies such as setting firm family rules including the use of time-out. For non-aggressive interactions, parents were encouraged to use nonharsh and consistent parenting and *mediation* strategies

such as ask, identify problem, brainstorm, and try a solution; and were discouraged to use *non mediation* strategies such as nonintervention, power assertion, command, and lecturing.

During *Joint* sessions, the parent, sibling pair, and clinicians reviewed together week-to-week progress, problem-solved implementation barriers in the foster home, and reinforced positive interactions. Strategies were aimed at promoting family collaboration and skill generalization in the foster home. In between visits, the family was encouraged to practice skills and complete homework (i.e., *CanDo Chart*).

Program Curricula and Strategies

There were three intervention components. The *SIBS* component focused on: 1) Cooperating, taking turns, sharing; 2) Consistent consequences for sibling aggression; 3) Emotion self regulation (*Take a Break*); 4) Try something else (*Turn your Behavior Around*); 5) Support your sibling and identify common ground; and 6) Problem solving and finding a solution. The *Parent* component focused on: 1) Sibling cooperation and communication; 2) Consistent consequences for sibling aggression; 3) The power of positive attention; 4) Self-regulation for yourself and for the children; and 5) Problem solving (Mediation) steps: *Get ready to listen; Get the story straight and the feelings right; Help children name the problem; Brainstorm; and Try a solution*. And the *Joint* component focused on: 1) Barriers in the home; 2) Tracking and applying consequences to specific behaviors; 3) Controlled practice; and 4) CanDo charts.

Following a social learning model, program strategies are based on doing rather than talking, and are highly positive, including frequent use of social and tangible rewards. The clinical team watched videotaped sessions together, coordinated sessions, and developed joint behavioral plans for program activities. The selection of child games and activities were implemented attending to the potential for dyadic success and to birth order. Attending to birth order (older vs. younger) can be particularly important within this population because in single-parent families, powerful proscribed family roles may be determined by birth order (Minuchin, Colapinto, & Minuchin, 1998). For example, if a challenging game was proposed, a game plan with the older child was discussed so that the developmental needs of a young child were taken into consideration (i.e., the older child takes a coaching role).

Program Fidelity

Program fidelity (consistency and quality) was maintained via videotaped sessions which were reviewed over the course of the study, and with periodic program consultation with Drs. Bank and Ross. Clinicians followed a detailed session by session manual and completed self-checklists of the content and procedures covered in each session. The senior investigator (LOL) led weekly clinical meetings and periodically gave feedback to clinicians on adherence to core principles, strategies, and format.

Measures

Sibling interaction quality—The *Sibling Interaction Quality* (SIQ; Kramer, 2010) scale was adapted to assess the dyadic quality of the sibling interaction and conflict in the foster home under two standard play conditions: floor puzzle and game play (Connect Four). Play

conditions were selected to reflect different task demands (e.g., low vs. high competition) likely to elicit varying levels of sibling conflict. Siblings were presented with standard play materials and asked not to mind the videographer. No other adults were present. Siblings were videotaped for an average M =18.0 (4.0) minutes.

The interaction quality assessment was comprised of 34-items: a) *Positive interaction* (alpha =.77) consisted of 18 items clustered in three dyadic domains: communication (4 items such as exchange of information, wishes, likes and dislikes); activities (6 items such as joint play, teach, and caregiving) and affect (8 items such as affection, joy, helping); b) *Negative interaction* (alpha = .94) was comprised of 15 items clustered in three dyadic domains: communication (3 items such as unsuccessful exchanges); activities (4 items such as ignoring or unsuccessful initiation of play); and affect (8 items such as prohibition, bossiness, physical aggression, insult, negative emotion) –affect was coded by integrating verbal content, context, facial expressions, gestures, and body movement; and c) *Conflict* was defined as dyads exhibiting three opposing interactive turn units –if conflict was observed, 5 items were used to describe type of conflict resolution (compromise, win/lose, no resolution, reconciliation, requests parent intervention). Items coded as presence =1 or absence = 0 were summed and divided by the number of items in each domain (communication, activities, and affect) to obtain an item mean for *positive interaction* and *negative interaction in* floor puzzle and game play conditions. Item mean ranged from 0 to 1. *Conflict* under the two play conditions was a binary (Y/N) measure.

Videotapes were first transcribed verbatim by a research assistant. Using the written transcription and watching the videotape, a trained coder (SB) coded all tapes; coder was blind to the children's study group (intervention or comparison) and whether tape involved the pre- or post-intervention assessment. Dyadic interactions were coded continuously for presence in three or more passes. Based on a set of training tapes from the pre-trial phase, the senior author and the coder established ≥ 80% reliability before coding of trial tapes began.

Parent conflict mediation—*The Conflict Checklist* (CC; Smith & Ross, 2007) was adapted to assess parent intervention following sibling disputes in the foster home. Via an open-ended questionnaire, the foster parent was asked to describe her behavior following a salient sibling conflict in the past week (i.e., *Tell me what you did*…*How did you intervene*? ….). The word mediation was not used in the assessment. Responses were coded for presence=1 or absence =0 using 10 codes; coded responses were summed in two types of strategies: *mediation* (ask, identify problem, brainstorm, encourage a solution) and *non mediation* (nonintervention, timeout, redirect, authority, command, lecture). For each pair we gathered *number of mediation and non mediation strategy types. Number of mediation types* ranged from 0 to 4, while *number of non mediation types* ranged 0 to 6. Responses were recorded verbatim; protocols were blinded to study group condition and coded by the senior author and a research coordinator (NE) who reached 90% agreement on recorded narratives before coding began.

Sibling aggression—The *Sibling Aggression Scale* (SAS; Linares, 2008b) modeled after the Conflict Tactics Scale-2 is a 13-item scale assessing events in two domains in the past

two-months: 5 verbal/indirect aggressive acts (insult, swear, isolate, yell, destroy; alpha=.63) and 8 physical/direct (push, kick, threaten, grab, beat-up, throw, twist, slap; alpha = .74) aggressive acts. Foster parent reported separately for older and younger child as perpetrators; presence or absence (coded as 1 or 0) and severity (weekly frequency) were summed across items for verbal and physical domains.

Child background characteristics—Official classification of substantiated child maltreatment was obtained from agency caseworkers at the time of enrollment. Subsequently, Child Protective Services (CPS) official records were reviewed for events that precipitated the placement and coded for eight specific types (physical abuse, sexual abuse, failure to provide for basic needs, lack of supervision, failure to protect, emotional neglect, moral/legal neglect, and educational neglect) which were clustered in two broad maltreatment types (neglect and abuse) using the *Maltreatment Classification System* (MCS; Barnett, Manly & Cicchetti, 1993). Prior to the MCS coding, an independent coder and the senior author reached ≥ 80% coder agreement across maltreatment types on six training official records.

Foster parents were administered the *Child Behavior Checklist* (CBCL; Achenbach, 1991) to describe frequency of internalizing and externalizing child problems (alpha = .95). Children with CBCL T-score ≥ 60 were classified as the risk group for behavior problems (Achenbach, 1991). Foster parents also reported on mental health services currently received by the children, including psychotropic medication and individual psychotherapy.

Data Analyses

Missing data—Missing data for interactive measures (sibling interaction and conflict during play) at pre- and post-intervention was 23% (5/22 pairs) and 18% (4/22), respectively, primarily because three children declined to be videotaped. Missingness for self reported data was minimal and ranged from 0% to 13.6%. We applied multiple imputation procedures using regression estimates and sampled residuals (MVA module in SPSS v.20) that are considered an appropriate strategy for small samples (Schafer & Graham, 2002). The primary analyses described below were carried out on each of five imputed data sets and the results were combined using methods described by Rubin (1987).

Preliminary analyses—First, using observed data, psychosocial characteristics, sibling interaction quality, types of parental strategies, and sibling aggression are described for the entire sample before and after the intervention. Preliminary analyses of the interaction data were also conducted to determine the need to combine play conditions (floor puzzle vs. game play) in primary analyses. Second, analyses were conducted to assess baseline differences by study group (intervention vs. comparison ‘usual care’) regarding child characteristics (age, gender, ethnicity, length of placement in the current foster home, type of child maltreatment, elevated behavior problems, and mental health services), and foster parent characteristics (age, years of school completed, number of children in the home, kinship status, and preferred spoken language). Third, we compared baseline characteristics in program outcomes by study groups.

Primary analyses—Following the intent-to-treat methodology, all families randomized to the intervention (n= 13 pairs) and comparison (n=9 pairs) groups were included in the primary analyses. Primary analyses were completed using the generalized linear equation procedure (GENLIN in SPSS version 20) which accommodates for normal and binomial distributions of the continuous and categorical dependent variables and assumes independence across subjects. Using the GENLIN procedure, we examined mean differences by group (intervention vs comparison) in sibling interaction quality (positive and negative), conflict during play, number of parental strategies (mediation and non mediation), and sibling aggression (verbal and physical) at post-intervention (Time 2) adjusting for baseline (Time 1) scores and child age. For child-level measures (i.e., sibling aggression), GENLIN models were run separately for the older and the younger child. Due to the small sample size no moderator analyses were planned.

Results

Program Attendance

From the 13 families randomized to the intervention group, one intervention family declined participation but completed assessments, and a second intervention family completed only 1 session. Eleven children (85%) completed ≥ 6 of the 8 sessions M=6.62 (2.79), while 8 foster parents (62%) completed ≥ 6 of the 8 sessions M= 4.92 (3.45) in an average duration of 10.72 (2.46) weeks. Program average attendance across family members was 73%.

Preliminary Analyses

Psychosocial characteristics across study groups at baseline—Regarding sibling configuration, the average age spacing between pairs was 1.87 (1.05) years. The gender composition was: 26% were both males, 37% were both females, and 37% were of mixed gender. There were no significant group differences in sibling configuration. On average, sibling pairs were between 7.2 and 9.7 years of age. They were 45.5% African American, 18.2% Latino, 27.3% Mixed (African American-Latino), and 9.0% Other (Caucasian, Asian). Siblings had been in foster care on average for 32.37 (38.62) months; and 90% were classified with one or more child neglect type/s (MCS). Three youth with histories of physical or sexual abuse (singly or in combination with neglect) were included because histories were not documented in their CPS official record; their histories were disclosed to study staff following enrollment. There were 57.3% with CBCL T score ≥ 60 CBCL in externalizing problems. In regard to foster parent characteristics, only 22.7% were high school graduates; half were kinship parents; and, 34% spoke primarily Spanish.

Program outcomes across study groups at baseline—Most dyads engaged in *positive interaction* such as information exchange (96%), joint play (96%), and expression of wishes (78%). Fewer dyads showed teaching (18%) or caregiving (5%). Most pairs helped each other (86%); 31% complimented each other. More dyads showed enjoyment during the game play (68%) than during the floor puzzle (28%) condition. *Negative interaction* involving unsuccessful exchanges were infrequent (22%); prohibition (e.g., stop, no) was more commonly observed during game play (79%) than floor puzzle (44%).

Physical aggression (e.g., shove, throw object at, grab object from) was seen in 35% of the pairs.

Pairs showed similar levels of *positive* (M =.36 vs. .40) and *negative* (M =.20 vs. .23) *interaction* across play conditions; thus, data by play condition were combined for primary analyses. Paired comparisons showed higher item means for *positive interaction* than for *negative interaction* M= .75 vs. .42, t (35) = 5.70, p <.001. *Positive* and *negative interaction* were positively correlated (r =.42, p <.01) suggesting a close relationship (positive and negative) between the children. Sibling conflict varied by play condition; conflict during floor puzzle was lower than during game play (33% vs. 63%) Chi Square (1, 18) =5.73, p =. 017. When conflict occurred, the most common dyadic conflict resolution was win/lose, followed by compromise, and no resolution.

Parent mediation strategies—As expected, most foster parents (84%) reported zero number of mediation strategies, while 53% reported one non mediation strategy; the most common non mediation strategy was power assertion such as separating siblings (64%), followed by lecturing (36%). As expected, paired comparisons showed that foster parents reported using a higher number of non mediation than mediation strategies M = 4.1 vs. 1.2, respectively, t (27) = −10.31, p <.0001.

Sibling aggression—In the past two months, foster parent reported that 91% and 86% of the children perpetrated ≥ 1 verbal and physical aggression acts against their sibling, respectively; yelling (84%) and pushing (71%) were the most commonly reported acts. Weekly frequency of verbal aggression was M = 7.16 (8.39) acts occurring at least once a week for 38% of the sample. Weekly frequency of physical aggression was M= 6.82 (8.39) acts occurring at least once a week for 33% of the sample. Verbal and physical aggression acts were highly correlated (r =.65, p <.001). Similar sibling aggression was reported for older M = 2.82 and 2.68 and younger M = 2.45 and 2.64 children for verbal and physical acts, respectively.

Psychosocial characteristics by study group at baseline—Table 1 shows the demographic and psychosocial characteristics by study group including age, gender, ethnicity, length of placement in the current foster home, type of child maltreatment, CBCL behavior problems, and use of psychotropic medication and individual psychotherapy. Children in both groups were similar in regard to age, gender, ethnicity, and length of placement in the current foster home, level of CBCL behavior problems, and use of individual psychotherapy. In the intervention group there were more neglected children Chi Square (1, 38) = 4.97 p <.05 and fewer children on psychotropic medication Chi Square (1, 44) = 4.70, p <.05 as compared to those in the comparison group. Foster parents in both groups were similar in kinship status, and preferred spoken language. Foster parents in the intervention group were more likely to be younger t (44) = 2.41 p <.05, completed fewer years of education t (42) = 3.03, p < .004, and had more children in their home t (42) = 2.43, p <.0001 as compared to those in the comparison group.

Program outcomes by study group at baseline—Intervention and comparison groups were similar at baseline in regard to program outcomes, including observed sibling

interaction quality (positive and negative), observed conflict during play, and foster parent reports of parental strategies and sibling aggression in the foster home.

Primary Analyses (Table 2)

At post-intervention (Time 2), after adjusting for baseline (Time 1) scores and child age, intervention pairs showed higher positive (β = .324, SE=.057, p <.0001) and negative (β = .058, SE=.025, p <.05) interaction quality. A closer inspection of paired means for post-intervention negative interaction scores, intervention pairs showed less reduction in negative interaction quality from Time 1 to Time 2 compared to comparison pairs (intervention= .37 and .36 vs comparison= .42 vs .29).

Intervention pairs showed lower conflict during floor puzzle than did comparison pairs (β = −1.126, SE=.42, p <.01). Foster parents in the intervention group reported a higher number of parental mediation strategies than those in the comparison group (β = .333, SE=.50, p <.001). Foster parents in the intervention group reported lower sibling physical aggression from the older toward the younger child than foster parents in the comparison group (β = −1.391, SE=.552, p <.05). No significant group differences were found for conflict during the game play condition, parental non mediation, verbal aggression from older toward younger child, or verbal and physical aggression from younger to older child.

Discussion

There is extensive evidence about the adverse effects of sibling aggression on psychological child well-being (Bank, Burraston, & Snyder, 2004; Snyder, Bank, & Burraston, 2005). While universal interventions to promote positive sibling relationships are promising and just emerging (Feinberg, Solmeyer, Hostetler, Sakuma, Jones, & McHale, 2012; Feinberg, Sakuma, Hostetler, & McHale, 2013), none have focused on foster children. This pilot trial begins prevention efforts in a highly vulnerable sample of elementary-school age maltreated siblings by examining feasibility in implementation and initial program effectiveness, including sibling interaction, conflict during play, parental mediation, and sibling aggression.

The study is based on an ethnically diverse, vulnerable sample. The sample comprised primarily ethnic minority (African American, Latino, and Mixed) sibling pairs, ranging in age from 5–11 years old, and placed in the same foster home in NYC. As a prevention intervention trial, the study involved pairs not necessarily known to have child behavior problems or sibling difficulties. While the children were not identified as a clinical sample, given their background characteristics and child maltreatment history at study enrollment they can be characterized as a high risk sample. Ninety percent had documented histories of child neglect; the majority were at risk for externalizing problems (57%); about half received individual psychotherapy; one in five were on psychotropic medications; and most showed a mild to moderate range of sibling physical aggression in the foster home. These sample characteristics suggest that the preventive program may be potentially suitable for a large number of young siblings placed in foster homes.

Enrollment and attendance rates in this pilot study are promising; our enrollment rate for eligible families (22/48) in this hard-to-reach population compares positively with rates found in recent trials in foster care (Chamberlain, Price, Leve, Laurent, Landsverk, & Reid, 2008; Vanschoonlandt, Vanderfaeillie, Van Holen, & De Maeyer, 2012). Attendance rate across intervention components (73%) demonstrated program engagement for this hard-to-reach population. The ample opportunity for make-ups, the foster care agency location for the sessions, and the collaborative approach with families may have facilitated attendance and retention of intervention families. Furthermore, the devotion of our trained clinicians and their weekly reminder calls likely contributed to high program participation. In addition, the feasibility of master-level clinicians implementing the manualized and prescribed intervention in the highly unstable world of foster care is also a program accomplishment. Staff training needs are critical in designing a large clinical trial aimed at program sustainability in the foster care world.

This initial trial shows promising gains relative to a comparison usual care group in measures involving each of the four targeted intervention domains. Adjusting for pre-intervention scores, relative to the comparison group, sibling pairs in the intervention showed higher positive interaction quality and less conflict during low-competition play; parents reported more mediation strategies in response to sibling conflict; and foster parents of older children reported less sibling physical aggression in the foster home. Less reduction in negative interaction quality shown in intervention children should be closely scrutinized in future trials.

While children in study groups were similar in 8 of the 10 background characteristics, despite our randomization procedures, foster parents in the intervention group were younger, less educated, and had more children in their home than the comparison foster parents. These baseline differences did not have an impact on initial program outcomes; unmeasured group differences, however, may have had an unknown impact on target parental or child outcomes. In light of relative educational disadvantage, the intervention gains of foster parents are noteworthy. Clinicians were challenged to maintain their active involvement over the course of the sessions. Addressing barriers to effective skill generalization in an often crowded foster home was also a challenge of the work with the foster parent. The *Joint* component of the intervention (e.g., practice of learned skills) may be particularly relevant for generalization efforts. The program appears promising for foster parents with a large spectrum of background characteristics, including low education and crowded households.

Somewhat surprisingly, lower conflict was observed for intervention pairs during floor puzzle (low competition play) but not during the game play where there were more occasions for conflict to unfold. We speculate that pairs in the intervention showed lower conflict in less competitive play because this play task calls for *win-win* scenarios (‘*we will get it done sooner if we work together*’), as compared with competitive (board game) where there is a clear winner. This finding suggests that foster parents may provide ample *win-win* play materials in the foster home as a ways to reduce conflict during play.

A number of limitations should be noted. First, the sample was heterogeneous in clinical profiles and background characteristics; and was small in size. A larger clinical trial study is

needed to support these initial findings; moderation studies are also needed to sort out sibling subgroups most likely to profit from such an intervention. Second, we recruited about half (46%) of eligible families, which limits the generalizability of the findings to families in the foster care system. The most frequent (37%) reason for refusals (i.e., too many services already in place; not enough time; too busy) suggests a need to integrate services for foster families to promote higher enrollment rates, particularly when sibling relationships are not perceived by families as problematic. Third, it is yet unknown whether program results are clinically meaningful or will be retained over time. More research is needed to answer these important effectiveness questions. Fourth, given that the *PSB* was offered as a three-component package, it is unknown which component/s are the '*active ingredients*' responsible for the positive program signals, whether one may be sufficient, or whether the summation is critical for outcome effectiveness. Given the natural differential attendance to program components expected within an intervention arm, a large trial with sufficient sample size may disentangle these questions. Finally, the inclusion of other outcomes, such as disrupted sibling placement, is important in child welfare and should also be considered in future studies.

Despite study limitations, particularly its small sample size, the *Promoting Sibling Bonds* program targets an important untapped family resource in foster care that deserves further scrutiny. Increased programmatic efforts to address the needs of high-risk siblings in foster homes seem feasible and warranted.

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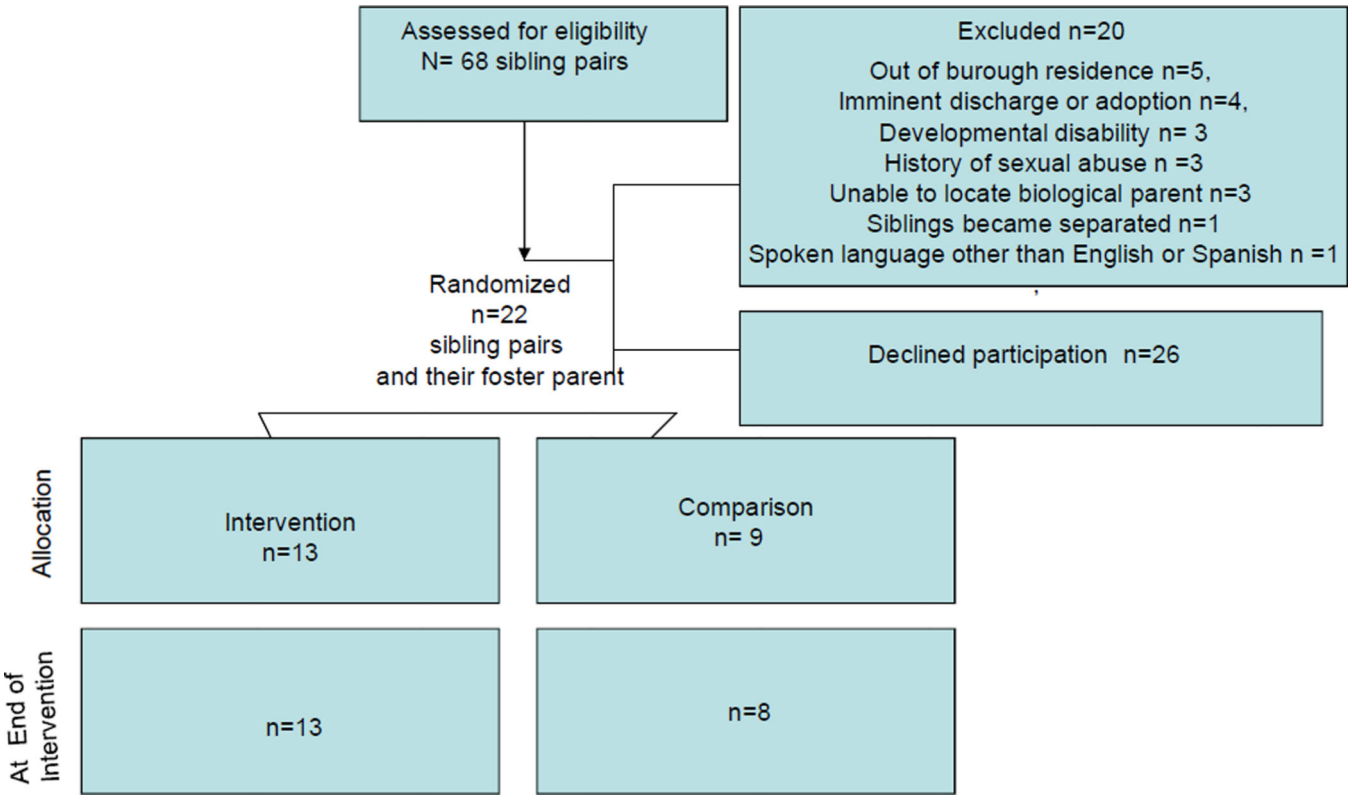

Figure 1.
Study Flow Chart

Table 1

Psychosocial Characteristics by Study Group at Baseline (Time 1)

Child characteristics	Study Group		
	Intervention (n=26)	Comparison (n=18)	*p*
	M(SD)	M(SD)	
Age in years			
Younger	7.18 (1.55)	7.28 (1.89)	.90
Older	9.70 (1.13)	8.53 (1.50)	.07
Gender (%)			.14
Male	61.5	38.9	
Female	38.5	61.1	
Ethnicity (%)			.06
African American	38.5	55.6	
Latino	26.9	0	
Mixed	15.4	44.4	
Other (Caucasian, Asian)	19.2	0	
Length of placement in the current foster home			.07
12 months or less	53.8	44.4	
12 – 24 months	30.8	11.1	
Longer than 24 months	15.4	44.4	
MCS[a] type of child maltreatment (%)			
Any neglect	100	78	.03
Any abuse	5	22	.12
CBCL[b] behavior problems (%)			
Internalizing	26.9	44.4	.23
Externalizing	65.4	50.0	.31
On psychotropic medication (%)	7.7	33.3	.03
On individual psychotherapy (%)	59	41	.62
Foster parent characteristics	n=13	n=9	
Age (parent) in years	47.6 (11.5)	55.0 (7.06)	.02
Years of school completed (parent)	10.7 (2.1)	12.7 (2.2)	.01
Number of children in the home	2.8 (1.3)	1.1 (1.2)	<.001
Kinship (%)	46.2	55.6	.54
Preferred spoken language (%)			
English	61.5	72.2	.46
Spanish	38.5	27.8	

Table 2

Baseline (Time 1) and Post-intervention (Time 2) Means (SD) or Percentages for Study Outcomes by Study Groups

	Study Group				
	Intervention		Comparison		
Study outcome	**Time 1**	**Time 2**	**Time 1**	**Time 2**	***p***
	M (SD)[a] or %		**M (SD)[a] or %**		
Sibling interaction quality (SIQ)					
Positive	.73 (.28)	.69(.26)	.84(.18)	.70(.22)	.000
Negative	.46(.38)	.31(.25)	.42(.41)	.26(.23)	.022
%Conflict (floor puzzle)	37	7	33	33	.007
%Conflict (game play)	69	72	56	67	.500
Number of parental strategies (CC)					
Mediation	.11(.31)	.34(.48)	.25(.44)	.11(.32)	.001
Non mediation	1.73(.93)	1.44(.52)	1.59(.69)	1.50(.69)	.414
Sibling aggression (perpetration) (SAS)					
Older child					
Verbal	2.93(1.08)	1.94(1.42)	2.63(1.12)	2.63(1.51)	.101
Physical	2.77(2.17)	1.35(1.58)	2.56(2.51)	2.00(1.41)	.012
Younger child					
Verbal	2.53(1.70)	1.81(1.77)	2.40(1.58)	2.20(1.41)	.258
Physical	2.46(2.30)	1.59(1.76)	2.89(1.90)	2.22(2.11)	.530

Note.

[a]Means and SDs averaged across imputed datasets are presented. P values refer to GENLIN analyses comparing means for post-intervention (Time 2) by group after adjusting for baseline (Time 1) scores and child age. SIQ=Sibling Interaction Quality; CC=Conflict Checklist; SAS=Sibling Aggression Scale.