Strengthening Children's Sibling Relationships Using an Online Preventive Intervention Program for Parents

Laurie Kramer,[1, 2] Payton E. Carroll,[1] and Reshika Sai Devarajan[1]

[1]Department of Applied Psychology, Northeastern University

[2]Family Resiliency Center, University of Illinois

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Author Note

Laurie Kramer https://orcid.org/0000-0002-7417-2396

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Correspondence concerning this article should be addressed to Laurie Kramer, Department of Applied Psychology, Northeastern University, 360 Huntington Ave., Boston, MA 02115, United States. Email: l.kramer@northeastern.edu.

Abstract

Objective: To test a new evidence-based online preventive intervention designed to help parents improve the sibling relationships of their 4- to 8-year-old children.

Background: Few evidence-based resources exist to address parents' concerns about fostering positive sibling relationships. To address this need, the emotion-focused online program placed parents in the role of educator, preparing them to teach their children social and emotional competencies shown in previous research to promote prosocial sibling interaction.

Method: 86 mothers provided assessments of children's sibling relationship quality, child and parent emotion regulation abilities, and co-parenting quality, prior to and following completion of four online lessons. A randomly assigned wait list control group of mothers (*n* = 49) provided comparable assessments.

Results: Repeated measures MANCOVAs revealed that, following program completion, participants perceived their children to demonstrate greater sibling warmth and less agonism and rivalry. Effects were sustained at 3-months. Mothers also reported increased abilities to regulate their own emotions as well as greater collaboration/support in their co-parenting relationship.

Conclusion: Results support the effectiveness of the online More Fun with Sisters and Brothers Program for Parents for enabling mothers from diverse international communities to support positive sibling relationships.

Implications: Increasing access to evidence-based tools for strengthening sibling relationships can enable parents to support these vital lifelong bonds.

Key words: sibling relationships, parenting siblings, intervention, sibling conflict, emotion regulation

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The quality of family life, as perceived by parents, is negatively affected when sibling strife is high and warmth is low (Volling et al., in press). Additionally, the mental health of children and adolescents is negatively affected when they experience persistent forms of sibling aggression and/or victimization (Tucker et al., 2023; Wolke et al., 2015). Family systems theory (Cox, 2010; Minuchin, 1974) reinforces the importance of supporting the formation of high quality sibling relationships to promote child and family well-being. However, few evidence-based resources exist to address parents' concerns about helping their children develop a positive relationship (Leijten et al., 2021; Tucker & Finkelhor, 2017). Those resources that do exist are not widely accessible, especially for families who live in rural or under-resourced locations or are grappling with isolation, such as during the COVID-19 pandemic. The purpose of this investigation was to evaluate the effectiveness of an online preventive intervention program designed to enable parents to teach their children a set of social and emotional competencies that research has shown to be instrumental for fostering prosocial sibling relationships in early childhood (Kennedy & Kramer, 2008; Ravindran et al., 2015).

In their survey of 409 Australian parents about their perceived needs for addressing "difficult sibling issues," Pickering and Sanders (2017) found that although parents are aware of what healthy sibling relationships look like, they often feel limited in their ability to help their children achieve such relationships. This is consistent with Kramer et al.'s (1999) finding that parents often report a lack of confidence in carrying out sibling-focused parenting strategies, even those strategies they believe should be effective. Respondents to Pickering and Sanders' survey voiced a strong desire for help in managing sibling animosity and conflict, particularly when accompanied by physical aggression. Additionally, they were most interested in a positive, rather than a punitive, approach to strengthening children's sibling relationships, yet reported having limited access to such resources. Hence, as

described below, the need for effective, evidence-based and tested comprehensive approaches that intentionally target the improvement of children's sibling relationships persists.

Evidence-based Resources for Improving Sibling Relationships

Tucker and Finkelhor (2017) conducted a systematic review of relevant resources and identified only five interventions focused on "reducing sibling conflict and aggression." Three of these interventions were directed at advancing siblings' social skills and two were aimed at teaching mediation techniques to parents so that they could act as impartial third parties to facilitate children's conflict resolution efforts, for example, by using problem-solving skills. Although the programs showed gains in children's social skills and sibling relationship quality with small effect sizes, it was difficult to discern which programs were most effective due to differences in the programs' content and methods.

More recently, Leijten et al. (2021) performed a meta-analysis of the parenting programs available to improve sibling interactions and identified only eight programs that had undergone a randomized control evaluation. Four programs focused on behavior management (e.g., parents using social learning principles to reinforce positive sibling interactions and provide negative consequences for antagonistic interactions, such as praise and time-out), three programs focused on mediation approaches, and one program combined behavior management with mediation. A sizeable overall effect was found for parenting programs on sibling interaction. However, due to the small number of studies examined and wide heterogeneity in the observed effect sizes they produced, it was not possible to precisely estimate program effects on specific aspects of sibling interactions. Additionally, although effect sizes were generally stronger for mediation, no systematic findings emerged supporting the superiority of mediation over behavior management approaches. Leijten et al. concluded that "the parenting program literature for sibling interactions is relatively immature in terms of the number, size, and robustness of studies—substantially lagging behind that of other family interventions" (p. 703).

The Need for Comprehensive Programming

As Pickering and Sanders (2023) pointed out, of the multitude of general parent training programs available, very few devote more than a session or two to help parents develop the knowledge and skills necessary for addressing problems in their children's sibling relationships. Furthermore, only weak effects have been found for the effectiveness of these "low-intensity" parenting interventions (p. 1438). Some progress has been made to improve selected issues in sibling relationship quality, such as applying mediation to help children resolve conflicts (Smith & Ross, 2007), overcorrecting aggressive behaviors (Adams & Kelley, 1992), interrupting and redirecting coercive behaviors (Vickerman et al., 1997), time out (Allison & Allison, 1971), and increasing sharing (Tiedemann & Johnston, 1992). However, comprehensive programs that follow family systems theory to produce a holistic approach to both increase positive and decrease negative sibling behaviors, that interrupt coercive cycles of interaction (Patterson, 1984), and that are evidence-based and tested, are rare. Two notable exceptions are the Siblings are Special (SIBS) program (Feinberg et al., 2013), designed as an after-school program for fifth grade children and their younger siblings, and the More Fun with Sisters and Brothers Program (MFWSB, Kennedy & Kramer, 2008; Ravindran et al., 2015), that serves families with siblings aged 4- to 8-years of age.

The Siblings are Special (SIBS) program (Feinberg et al., 2013) was designed as a 12-session afterschool program for 5th grade students and a younger sibling and includes 3 additional family sessions. SIBS follows a multi-faceted approach to teach competencies in emotional understanding, self-control, perspective-taking, social problem solving, conflict resolution, and fair play skills. Feinberg et al. reported that while SIBS improved the quality of sibling relationships in a randomized control study, participation was also linked with improvements in the 5th graders' self-control, social competence, academic performance, and internalizing behavior problems. The program has also been shown to be

effective for low income Latinx families (Updegraff et al., 2016) and those with a child with a chronic disorder (Haukeland et al., 2020).

Directed toward a younger age range, the 5-session, in-person MFWSB program (Kennedy & Kramer, 2008; Ravindran et al., 2015) was aimed at bolstering children's abilities to engage in prosocial behaviors, self-control, emotional understanding and emotion regulation, and collaborative problem solving to resolve disputes. Siblings from 3 families, all aged between 4- to 8-years, participated in 4 group sessions to learn these competencies. Parents observed the sessions and were taught how to prompt and reinforce children's enactments of the target competencies to sustain programmatic gains. A final "transfer of training" session, conducted in each family's home, guided the siblings as they applied their new skills to address conflicts they often faced at home. Results of randomized control evaluations that included siblings from 95 families were favorable, indicating that sibling participants developed more positive ways of interacting with one another, with greater warmth and affection and less conflict and animosity, in contrast to siblings in the wait list control group (Kennedy & Kramer, 2008). A subsequent study with 84 families replicated these effects and also found that participating parents reported increased abilities to regulate their own challenging emotions while parenting siblings (Ravindran et al., 2015). Empirical support for program effectiveness withstanding, the live program was limited in its ability to serve large numbers of families, especially those who were geographically dispersed. The small group, in-person delivery format was also time-intensive and required multiple trained professionals or paraprofessionals to conduct each session.

Parents as Teachers of Sibling Relationship Competencies

To address the constraints inherent in a live program, a new online version of the program, More Fun with Sisters and Brothers Program for Parents (MFWSB-P), was created to place parents in the role of educator, equipping them with the information and skills they need to teach their 4- to 8-year-old children the targeted social and emotional competencies. The selected age range of 4- to 8- years

was based on previous research that demonstrated that children as young as 4-years could reliably learn and apply many of the targeted competencies with their infant or toddler-aged sibling (Kramer & Radey, 1997). As families in the US may often space their children more than 48-months apart (Martinez & Daniels, 2023), 8-years was set as the upper age limit. Previous testing with groups of sibling dyads in the 4- to 8-year age range (Kennedy & Kramer, 2008) confirmed that both older and younger siblings in this age range could reliably understand and respond appropriately to the program's content and training methods.

With family systems theory (Minuchin, 1974) and Gottman's model of meta-emotion (Gottman et al., 1997) as its base, the program was designed to teach parents to scaffold children's abilities to interact prosocially and resolve disputes with minimal parental intervention. Specifically, parents were instructed to teach competencies in: (1) initiating social interaction and play; (2) accepting and appropriately declining invitations to play; (3) perspective-taking; (4) identifying and expanding children's emotional vocabulary; (5) regulating intense emotions; and (6) conflict management. Furthermore, the program addressed additional topics of interest to parents (Pickering & Sanders, 2017), such as managing sibling bullying and physical aggression, reducing power imbalances among siblings, and refraining from unfair forms of parental differential treatment.

Family systems theory (Minuchin, 1974) provides a key theoretical framework for this study as it recognizes the interdependence among sibling and parental subsystems in fostering children's development. Minuchin considered it important to strengthen each subsystem while also ensuring clear yet permeable boundaries between them to support healthy family functioning, for example, by avoiding triangulating children into parental disagreements. The theory further highlights how cooperation and support in the parental subsystem enables parents to work together to respond effectively to their children, both as individuals and as members of the sibling subsystem. Interparental cooperation and support may be especially important for responding effectively to sibling strife, which

can be experienced by parents as stressful (Cahill et al., 2024) and, possibly, emotionally dysregulating (Dix, 1991). Having the support of a coparent who can share this parenting responsibility, offer ideas for intervention, or extend emotional and other forms of support, can increase the likelihood that a parent will select more adaptive sibling-focused conflict management approaches (DeMartini & Hazen, 2020). Thus, following family systems theory, MFWSB-P seeks to interrupt ineffective family interaction patterns and promote co-parenting quality by providing parents with a set of evidence-based strategies for fostering positive sibling engagement, even during emotionally charged encounters.

Gottman et al.'s (1997) model of meta-emotion and emotion coaching was used as a foundation for teaching parents how to accept and respond to children's emotional expressions in the sibling context. For example, parents were encouraged to reduce their dismissal of children's negative emotions and instead, coach them through emotion-laden sibling interactions by fostering open communication and helping them to regulate intense emotions. Additionally, parents were shown how to engage in more reflective parenting practices (Fonagy et al., 1991; Slade, 2005) to become more attuned to children's mental states (e.g., thoughts, feelings, desires, beliefs, intentions) and emotional experiences (e.g., frustration, anger, disappointment) that often arise during sibling interactions. This focus on attunement and reflective parenting was intended to encourage parents to be sensitive to their own and their children's intentions and to select adaptive responses during parent-sibling interactions. Additionally, parents were asked to reflect upon their personal goals for their children's relationship, to observe and analyze children's progress in competency development, and to incorporate these observations in their responses to their children.

Given the emphasis on emotion-coaching and reflective parenting practices in the new online MFWSB-P, we were interested in whether the intervention might affect mothers' reports of both their own emotion regulation and collaboration and support in their coparenting relationship. According to Dix's (1991) model of affective processes in parenting, challenging interactions between parents and

children can elicit negative emotional arousal in parents, which can, in turn, reduce the likelihood that parents will engage in adaptive parenting strategies. Thus, parents' abilities to effectively guide their children towards sibling harmony may be significantly affected by their experiences of parenting stress (Cahill et al., 2024; Deater-Deckard et al., 2005) and support from their spouse or co-parent (DeMartini & Hazen, 2020). Ravindran et al. (2015) had found both mothers' and fathers' reports of their own emotion regulation to increase following participation in the in-person MFWSB program. Similarly, having a cooperative relationship with one's partner, in which raising siblings is approached as a collaborative endeavor, can foster parents' abilities to use child-rearing strategies that may require patience, time, and effort, such as helping children to manage conflicts using emotion-coaching or collaborative problem-solving techniques (Cahill et al., 2024). In the current study, we examined whether participation in the intervention was associated with changes in parents' emotion regulation and perceptions of collaboration and support in their coparenting relationship.

Online Program Delivery Mechanism

Instead of directly teaching the targeted competencies to sibling dyads (or triads) in live, in-person pre-scheduled sessions as the original program did, the online version for parents offered four asynchronous lessons that parents could participate in at times and places that were convenient for them. This flexible format is consistent with parents' preferences, as indicated in Pickering and Sanders' (2017) survey in which parents reported that a web-based program would best meet their needs, given its convenience and flexibility; they were least interested in programming that required their physical attendance in multiple sessions. The online format was also intended to make services more accessible to under-served families who have limited access to adequate family education or mental health services as well as to parents who work multiple jobs or lack predictable schedules. Assuming their communities provide reliable internet service, the online format also opened access to the program to families in diverse locations— enabling English-speaking parents from across the globe the opportunity

to participate. As accentuated by the COVID-19 pandemic, online programming can serve as a critical resource for families when access to in-person services is limited.

The online program calls for parents to serve as effective teachers of their children and become agents of change for their families. Previous research has shown that parents can effectively fulfill this role. For example, parents who were trained to use mediation techniques were able to effectively teach their children conflict resolution strategies (Smith & Ross, 2007). Siblings whose parents learned mediation strategies were more likely than those in a control group to communicate with one another about their emotions and form plans for resolving the conflict (Ross & Lazinski, 2014). Furthermore, Haukeland et al. (2020) demonstrated that teaching parents how to respond supportively to their typically developing children as they managed challenges associated with growing up with a sibling with a chronic physical or intellectual disorder was linked with improved parent-sibling communication and child emotional and behavioral health. Given these findings, and those of related studies (e.g., Adams & Kelley, 1992; Linares et al., 2015; Tiedemann & Johnston, 1992), there is ample evidence that, with training and support, parents can effectively teach their children new ways to interact.

In summary, the objective of this study was to test the effectiveness of a new evidence-based preventive intervention designed to enable parents to teach their 4- to 8-year-old children a set of social and emotional competencies that previous research has linked to enhanced sibling relationship quality. Four hypotheses were tested. First, we hypothesized that, following program completion, participants would report improvements in their children's sibling relationships with greater increases in sibling warmth, and fewer agonistic and rivalrous/competitive interactions, in comparison to a wait list control group (H1a). Based on our previous research on the in-person program (Ravindran et al., 2015), we further hypothesized that program effects on sibling relationship quality would be found regardless of children's sex (H1b) and country of residence (H1c) and would be sustained at the 3-month follow-up (H1d). Second, we hypothesized that, following program completion, parents would report

improvements in children's emotion regulation (H2). Third, in line with previous results with the in-person program, we expected that parents in the experimental condition would report increased abilities to regulate their own emotions (i.e., less emotional dysregulation and greater cognitive reappraisal; H3). Finally, we hypothesized that participating parents would experience a more cooperative and supportive coparenting relationship (H4).

Method

Participants

The opportunity to participate in this research was advertised via the project's website and Facebook postings in various parent-oriented groups. Several news outlets produced stories about the program, which led to additional inquiries regarding participation. Interested parents completed an online application that requested basic demographic information about their family. All parents who had at least two children in the 4-to 8-year age range and reported being comfortable reading and responding to questions in English were admitted. All parents entering the study were asked if their child's other parent might consider joining the study, and if so, those parents were contacted via email and invited to complete the online application.

Parents admitted to the program were randomly assigned to experimental and wait list conditions, with the caveat that parents in the same family were assigned to the same condition. Very few fathers (n = 12) completed all measures of the study; therefore, analyses were conducted using only mothers' reports. The final sample was comprised of 86 mothers in the experimental condition and 49 mothers in the wait list control condition. Participants came from the US (n = 105), Canada (n = 15), United Kingdom (n = 7), Australia (n = 2), India (n = 1), Cyprus (n =1), Indonesia (n = 1), Spain (n = 1), Finland (n = 1), and Germany (n = 1).

Table 1 provides additional demographic characteristics of the families. No differences were found in the demographic characteristics of the experimental and control groups, including parent age,

years of education, race/ethnicity, number of children in the family, ages of children, and US versus non-US residence. However, in comparison to the experimental condition, fewer younger siblings in the wait list control group were female ($x^2(1) = 7.97$, $p = .005$). In addition, the experimental group included more individuals of color (26.7%) than the control group (10.2%), $x^2(1) = 5.20$, $p = .023$.

Procedures

Once parents were admitted to the study, they were emailed a passive informed consent form approved by the University's Institutional Review Board, which explained the procedures of the study and their rights as participants but did not require their signature. Participants in both conditions were then asked to complete a set of pre-test questionnaires via Qualtrics that assessed their perceptions of sibling relationship quality, child and parent emotion regulation abilities, child behavior problems, and quality of coparenting. Parents who had more than two children were asked to apply the program's lessons to all of their children, but to complete the study's questionnaires with respect to the two siblings in the 4- to 8-year age range who were closest in age.

Following completion of the pre-test measures, parents in the experimental condition were given access to four online, asynchronous lessons that they could complete at times and locations of their choice, with the goal of completing each lesson within a 2-week time frame. Each lesson, which took approximately 45-minutes to complete, provided background information about the targeted competencies, written instructions (with examples) of how to teach children this competency, sample activities, as well as a video- animated demonstration. Parents could either read or listen to an audio recording of each lesson. Each lesson ended with a summary and an activity for parents to implement with their own children to reinforce competency acquisition. Following each lesson, parents completed a brief progress report to indicate which of the targeted competencies they attempted with their children and the degree to which their children now demonstrated those skills. Parents completed a set

of post-test instruments (which paralleled the pre-test instruments) immediately following the final lesson of the program. A follow-up survey was completed by parents 3-months later.

Parents in the wait list control condition also completed the pre-test measures upon entry to the study using Qualtrics. However, they were then told that the program was at capacity and were asked to wait until access could be granted. After 2 months, the wait list control group was asked to complete the pre-test questionnaires a second time to ensure that we had the most current information about their family. Parents in the wait list control condition were given access to the program once they completed the second set of pre-test questionnaires.

Measures

Parents' perceptions of children's sibling relationship quality. Parents provided their perceptions of their children's relationship using an online version of the Parental Expectations and Perceptions of Children's Sibling Relationship Questionnaire (PEPC-SRQ; Kramer & Baron, 1995). Using a 5-point Likert scale (1 = never, 5 = always), parents rated how frequently they observed their children engage in each of 24 behaviors and affects. Parents' reports were summarized using three scales: Warmth (13 items; e.g., "protectiveness such as looking out for the other's welfare"); Agonism (8 items; e.g., "physical aggression such as hitting or pushing"); and Rivalry/Competition (3 items; e.g., "jealousy"). Higher scores indicated reports of greater warmth, agonism, and rivalry/competition. Kramer and Baron (1995) reported that each of the scales has adequate internal consistency and satisfactory test-retest reliability. Internal consistency was satisfactory for the current sample at pre- and post-test (respectively) for Sibling Warmth (α = .92 and .93), Agonism (α = .86 and 88), and Rivalry/Competition (α = .87 and .86). Test-retest reliability for the three scales were .70, .72, and .68 (*p*s < .001), respectively.

Children's emotion regulation. The Emotional Behavior Questionnaire (EBQ, Gottman, et al., 1997) was used to assess parents' perceptions of down regulation, i.e., the degree to which parents perceived their children to require external regulation of their emotions (e.g., how often they acted to

"calm the child when she/he was upset"). Parents rated the degree to which parental intervention was typically needed to regulate each of their children's emotional behaviors using a 5-point Likert scale (1 = never, 5 = very often) for each of 12 items. Higher scores indicated that children needed more parental intervention to regulate emotions. Internal consistency (α) of the EBQ with the current sample was .85 and .83 for older siblings at pre- and post-test, respectively, and .85 and .86 for younger siblings at pre- and post-test, respectively. Test-retest reliability was .996 and .997 (*p*s < .001) for older and younger siblings, respectively.

Parents' emotion regulation in sibling context. Parents' perceptions of the degree to which they personally experience and have difficulty regulating negative emotions while parenting siblings was assessed using the Parental Emotion Regulation in the Sibling Context Questionnaire (PERSCQ; Ravindran et al., 2015). The 12-item instrument consists of two scales: Reactivity and Dysregulation. Reactivity (5 items) taps the degree to which parents experienced negative emotions when their children were interacting negatively but a connection to parenting was not indicated (e.g., "When my children are not getting along, I become very upset."). In contrast, Dysregulation (7 items) taps the degree to which parents felt that the emotions they experienced when their children were not getting along interfered with their ability to parent effectively (e.g., "It's really hard to be a good parent when I'm aggravated about my children's behaviors towards each other"). Parents responded to each item using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) with higher subscale scores indicated higher levels of Reactivity and Dysregulation. Ravindran et al. provided evidence for the internal consistency of these two scales, with α ranging from .82 to .89. In the current study, composite scores of Reactivity (α = .85 at both pre- and post-test) and Dysregulation (α = .80 and .85 at pre- and post-test, respectively) were created by summing ratings across subscale items. Test-retest reliability, measured over a 2-month interval, was .54 and .71, *p*s < .001, for Reactivity and Dysregulation, respectively.

General parent emotion regulation. The Emotion Regulation Questionnaire (ERQ, Gross & John, 2003) assesses the degree to which individuals use emotion regulation strategies in a variety of contexts, not restricted to raising siblings. The 10-item instrument measures two basic strategies for managing emotions: Cognitive Reappraisal (e.g., "I control my emotions by changing the way I think about the situation I am in") and Expressive Suppression (e.g., "I control my emotions by not expressing them"). Parents respond to the items using a 7-point Likert scale (1=strongly disagree, 7 = strongly agree). Gross and John (2003) reported good test-retest reliability and validity. With the current sample, the internal consistency (α) of the Cognitive Reappraisal scale were .88 and .86 at pre- and post-test; alphas for Expressive Suppression were .71 and .80 at pre- and post-test, respectively. Test-retest reliability, over a 2-month period, was .63 $p < .001$ and .71, $p < .001$, for Cognitive Reappraisal and Expressive Suppression, respectively.

Coparenting siblings. Parents' perceptions of how effectively they and their spouse/partner coordinate their parenting of siblings was assessed using the "Parenting Siblings with Your Partner" (PSYP) questionnaire (Kramer, 2018), adapted from a measure created by Feinberg et al. (2012). The instrument consists of 19 items that tap Collaboration/Support (11 items, e.g., "My partner and I talk about strategies we can use to better help our children get along") and Disagreement/Undermining (8 items, e.g., "My partner does not trust my abilities to manage conflicts between our children"). Parents responded to each item using a 7-point Likert scale (0 = not true of us; 6 = very true of us). The internal consistency (α) of the Collaboration/Support scale for the current sample was .90 and .92, while the internal consistency of the Disagreement/ Undermining scale was .84 and .83, at pre- and post-test, respectively. Test-retest reliability, measured over a 2-month interval, was .85 and .81 ($ps < .001$) for Collaboration/Support and Disagreement/Undermining, respectively. Collaboration/Support and Disagreement/Undermining were highly correlated at both pre- ($r = -.71$, $p < .001$) and post-test ($r = -.76$,

$p < .001$) for the current sample. To avoid issues of multicollinearity, only the Collaboration/Support subscale was included in subsequent analyses.

Follow-up survey. Administered 3-months following program completion, parents were asked to respond to a set of 15 questions related to the current quality of their children's relationship and their use of competencies taught in the program. For the purposes of this report, we focused on parents' overall assessment of how well their children were currently getting along, using a 7-point Likert scale (1=extremely poorly, 7=extremely well). Kramer and Baron (1995) reported that this item correlates significantly with the PEPC-SRQ scales of sibling Warmth, Agonism and Rivalry/Competition (r's ranged from -.38, $p < .05$, to .68, $p < .001$). With the current sample, test-retest reliability over a 2-month period was .76, $p < .001$.

Results

Preliminary Analyses

Although the mothers included in this study completed all lessons and filled out both pre- and post-test questionnaires, not all participants completed every item, resulting in a small amount (1%) of missing data. Little's missing completely at random test indicated that missing data were missing at random ($x^2 = 9537.83$, df = 9596, $p = .661$). Thus, we followed a procedure of multiple estimation using Expectation Maximization (Schafer, 1997) in SPSS 28 which enabled the retention of all data for analysis.

We next tested for pre-test differences between the experimental and wait list control group for sibling relationship quality, child and parent emotion regulation, and mothers' reports of coparenting quality. Means, standard deviations, and intercorrelations of these dependent variables are presented for the two groups in Tables 2 and 3. No between-group differences were found, indicating that the mothers in the two conditions entered the study reporting similar characteristics.

Next, we examined pre-test associations among the demographic variables (i.e., parent education level, race/ethnicity, US/non-US residence, sibling sex constellation, and sibling age

differences) and the dependent variables (i.e., sibling relationship quality, child and parental emotion regulation, child total behavior problems, and coparenting quality). These analyses were intended to determine whether any participant characteristics should be controlled during hypotheses testing. Few significant effects were found; however, maternal educational level was associated with several dependent measures. Years of education was not normally distributed in this highly educated sample and so a median split was performed to form higher and lower educational groups (Mdn = 17 yrs). A series of one-way ANOVAs revealed that mothers with more years of education reported that their children experienced greater sibling warmth ($F(1,133) = 7.58$, $p = .007$) and less agonism ($F(1,133) = 4.49$, $p = .036$) at pre-test than mothers who completed fewer years of education. More highly educated mothers also indicated experiencing less emotional dysregulation on the PERCSQ ($F(1,133) = 8.59$, $p = .004$) along with greater use of the coping style of cognitive reappraisal ($F(1,133) = 6.00$, $p = .016$) and less expressive suppression ($F(1,133) = 6.89$, $p = .010$) on the ERQ. Given the multiple associations with the pre-test dependent variables, maternal educational level was included as a covariate in all analyses.

As a next step, we investigated the presence of child sex effects on the demographic and dependent variables, as measured at pre-test. Given the modest sample size, it was not possible to test for effects of all four sibling sex constellations. Instead, we examined differences between same- and mixed-sexed dyads and found no significant effects on the demographic or main dependent variables.

Hypothesis Testing

Sibling relationship outcomes. To test Hypothesis 1a, we examined the degree to which the intervention was associated with improvements in child sibling relationship quality, as reported by mothers, from pre- to post-test. Three 2 (Group: Experimental, Control) x 2 (Observation: Pretest, Posttest) repeated measures MANCOVAs, with mothers' reports of sibling relationship quality (warmth, agonism, and rivalry/competition) as the dependent variables, and controlling for maternal education level, were conducted. These analyses produced significant group by observation interaction effects for

sibling warmth, $F(1,133) = 31.31$, $p < .001$; agonism, $F(1,133) = 43.20$, $p < .001$; and rivalry/competition, $F(1,133) = 22.95$, $p < .001$. As shown in Table 2, mothers in the experimental group perceived their children to demonstrate greater warmth and less agonism and rivalry/competition following completion of the program in comparison to mothers in the wait list control group whose reports remained stable across the observations. Following Cohen (1988), partial eta-squares were computed to estimate effect sizes. Effect sizes over .01 are considered small, those exceeding .06 are considered medium, and those over .14 are considered large. In the current study, large effect sizes (d) were found for the intervention on sibling warmth (d = .19), agonism (d = 25), and rivalry/competition (d = .15).

Given the significant intervention effects for sibling relationship quality, we next investigated child sex effects to learn whether mothers of same-sexed children reported more improvements in sibling relationship quality than those that were mixed-sexed (H1b). Three 2 (Condition: Experimental, Control) x 2 (Observation: Pre-test, Post-test) x 2 (Sex: same-, mixed-sexed) repeated measures MANCOVAs were performed on mothers' reports of sibling warmth, agonism, and rivalry/competition, respectively, controlling for maternal educational level. No significant effects were found. Thus, according to mothers' reports, the program appears to have similar effects for same- and mixed-sexed siblings.

Next, we examined whether program effects differed for families living within the US as opposed to those outside the US (H1c). A series of three 2 (Condition: Experimental, Control) x 2 (Time: pre-test, post-test) x 2 (Nation: 0 = non-US; 1 = US) repeated measures MANCOVAs, controlling for maternal education, were conducted using the PEPC-SRQ scales as dependent variables. No significant effects were found, indicating that the program produced similar effects on sibling relationship quality for English-speaking families who reside in different countries.

To estimate whether program gains in sibling relationship quality were sustained over time (H1d), we examined the reports of 47 mothers from the experimental group who completed the 3-

month follow-up survey. Mother's ratings of how well their children got along at post-test were significantly correlated with their ratings at 3-months following completion of the program, r = .30, p = .029. Additionally, mothers' post-test ratings of sibling warmth on the PEPC-SRQ were significantly correlated with their rating of overall relationship quality at follow-up, r = .44, p = .002. However, post-test ratings of sibling agonism and rivalry/competition were not correlated with the follow-up rating of sibling relationship quality. This suggests that the most sustained gains from the program, according to mothers, occurred with respect to prosocial sibling behaviors.

Children's emotion regulation. We next examined whether the intervention was associated with improvements in mothers' reports of child emotion regulation (H2). A series of 2 (Group: Experimental, Control) x Observation (Pretest, Posttest) repeated measures MANCOVAs, controlling for maternal education level, were conducted to test the effects of the intervention on mothers' reports of the degree to which they needed to down regulate their older and younger children's emotional behaviors. No effects were found for older or younger siblings' down regulation. Because Ravindran et al. (2015) had found significant associations among gains in down regulation and sibling relationship quality with the in-person program, we conducted a parallel post-hoc analysis with the current data. When controlling for pre-test measures of down regulation and maternal education, lower levels of older sibling's down regulation at post-test were correlated with greater sibling warmth (r = -.23, p = .035) and less agonism (r = .24, p = .030) and rivalry/competition (r = .35, p = .001). For younger siblings, post-test down regulation was associated only with sibling warmth (r = -.23, p = .035). This suggests that sibling relationship quality at post-test was more closely associated with improved emotion regulation among older, rather than younger, siblings.

Maternal outcomes. We next examined whether participation in the intervention was linked with changes in mothers' reports of her own emotion regulation (H3). A set of 2 (Group) x 2 (Observation) repeated measures MANCOVAs were conducted using mothers' PERSCQ reports of their

emotional dysregulation and reactivity and ERQ reports of cognitive reappraisal and suppression as dependent variables. Mothers in the experimental group displayed significant improvements in regulating their own emotions reporting less emotional dysregulation, $F(1,133) = 17.93$, $p < .001$ (d = .12), and reactivity, $F(1,133) = 11.61$, $p < .001$ (d = .08) at post-test in comparison to the wait list control group. Additionally, mothers in the experimental group also reported increases in their use of cognitive reappraisal, $F(1,133) = 4.91$, $p < .05$ (d = .04). No effects were found for emotional suppression.

A parallel set of repeated measures MANCOVAs examined changes in mothers' reports of their coparenting relationship with their children's other parent as a function of program participation (H4). Compared to the waitlist control group, mothers in the experimental group reported greater gains in collaboration and support in their coparenting relationship, $F(1,133) = 6.18$, $p < .05$ (d = .05).

Discussion

Growing up with a sibling can provide individuals with a source of support that may be under-recognized in its value and untapped in its capacity to promote individual and family well-being across the life course (Volling et al., in press). For young children in particular, prosocial sibling relationships can have substantial developmental significance, stimulating linguistic, cognitive, and socioemotional growth (Howe et al., 2023; Kim et al., 2007; Pike et al., 2005). However, children may not reap these benefits if they lack a supportive sibling relationship. Many parents report a persistent excess of agonism, rivalry, and competition in their children's interactions along with a lack of knowledge and confidence about how to help children improve these relationships (Pickering & Sanders, 2017). Despite these needs, evidence-based resources for improving children's sibling relationships are quite limited (Leijten et al., 2021; Tucker & Finkelhor, 2017). The current study was designed to test a new web-based approach to strengthen young children's sibling relationships by equipping parents with evidence-based knowledge and skills to help their children interact positively and manage disagreements.

As demonstrated in this study, in comparison to a wait list control condition, mothers in the experimental condition were able to implement the components of the preventive intervention program, MFWSB-P, to facilitate greater warmth and less conflict and rivalry/competition among their children. Prosocial sibling engagement at post-test was sustained at least over a 3-month period. These results replicate those of Kennedy and Kramer (2008) and Ravindran et al. (2015) who found similar effects with the in-person version of the program, using home-based observations as well as mothers' and fathers' reports to measure sibling relationship quality. In addition to replicating results obtained with the in-person program, including increased maternal emotion regulation, the current study goes further to show that program participation also fosters mothers' perceptions of a more cooperative and supportive coparenting relationship. We discuss these results below in the context of previous research and theory.

Promoting Sibling-Focused Parenting

Parents play a critical role in supporting the acquisition and performance of prosocial sibling behaviors (Pickering et al., 2023) and, in fact, Cahill et al. (2024) have called for the development of new tools to promote sibling-focused parenting. Evidence to support the need for sibling-focused parenting comes from studies like Bouchard et al. (2019) that found higher rates of sibling bullying and victimization when parents left children and adolescents to resolve conflicts on their own or penalized children for fighting. In contrast, parental coaching of prosocial behaviors was associated with lower rates of sibling victimization, highlighting the importance of parents as teachers of positive interaction skills. Similarly, child-centered parental responses to sibling conflict, such as collaborative problem solving, were more strongly associated with subsequent positive sibling interaction than punitive forms of control or passive non-intervention (Kramer et al., 1999). Thus, as shown in the current study, mothers benefit from evidence-based guidance that enables them to effectively help their children develop the competencies that are likely to enhance their relationship with siblings.

Applying family systems theory to sibling-focused parenting. Raising multiple children is challenging as parents must not only coordinate their efforts to nurture each child but must also support the developing relationships among their children. Family systems theory (Minuchin, 1974) is one of the few theories that directly addresses the ways in which the parental and sibling subsystems affect one another, and how these mutual influences change as children, and their families, develop. These mutual influences were evident in the current study as we found that equipping mothers (as members of the parental subsystem) with skills and strategies for promoting siblings' prosocial behaviors not only improved children's sibling relationship quality, they also enhanced aspects of mothers' personal well-being (e.g., emotion regulation) and perceptions of coparenting collaboration and support. This illustration of how family subsystems may interact to promote positive outcomes for its members is in line with Wojciak and Gamboni's (2020) call for family systems theorists and practitioners to better leverage the value of sibling relationships in family assessment and treatment. Wojciak and Gamboni (2020) noted that family systems theory has not significantly advanced since Minuchin's seminal contributions in terms of understanding how sibling relationships affect, and are affected by, variations in family functioning. In fact, Wojciak and Gamboni called for the inclusion of the sibling subsystem "in all matters that might bring families into the therapy room" (p. 146-147), an approach that may have utility for promoting sibling-focused parenting (Cahill et al., 2024).

Maternal Emotion Regulation

The use of adaptive sibling-focused parenting strategies can be impeded by parents' experiences of stress, which can elicit negative emotional arousal (Dix, 1991). Indeed, Cahill et al. (2024) found that experiences of parenting stress were linked with less "positive guidance" (p. 92) of siblings, leaving parents less able to coach children in problem solving or to praise them for getting along well. In the current study, mothers' participation in MFWSB-P was linked with gains in their own abilities to regulate the negative emotions that may arise while parenting siblings. Improvements were identified for both

emotional reactivity and dysregulation; additionally, mothers reported increased use of cognitive reappraisal as a general coping strategy.

The program effects on maternal emotion regulation may have occurred due to several factors. First, as mothers taught their children new strategies for managing conflict and agonism, they may have incorporated some of these approaches into their own behavioral repertoire, perhaps also increasing their sense of self-efficacy for managing stressful parenting moments. Second, the program's emphasis on emotion coaching (Gottman et al., 1997) may have helped mothers to become more accepting and less rejecting or dismissing of their children's emotional expressions during intense sibling interactions (e.g., by learning to coach siblings to regulate intense emotions, communicate openly, and use collaborative problem solving to manage conflicts). Their greater acceptance of negative affect may have helped mothers persist in their use of effective parenting strategies even when emotionally overstimulated. Similarly, the program's emphasis on reflective parenting (Fonagy et al., 1991; Slade, 2005) may have helped mothers to be more intentional in defining and working towards their goals for their children's sibling relationship while also becoming more attuned to their children's mental states and emotions. These practices may have enabled mothers to respond more empathically and effectively during emotion-laden sibling interactions. Third, mothers' greater endorsement of the general emotion regulation strategy of cognitive reappraisal may reflect a change in their understanding of sibling strife, perhaps moving towards an understanding of children's conflict as experiences that enable children to learn to express and defend their unique points of view or as opportunities for developing conflict management skills (Shantz & Hartup, 1989). Reappraisals such as these may help mothers to feel less over-stimulated and better equipped to respond when sibling conflicts arise. Finally, given improvements in children's sibling interactions through the program, it is also possible that mothers were simply faced with fewer stressful parenting moments. They may have felt more able to regulate their emotions because they encountered fewer emotion-laden interactions with their children.

Child Emotion Regulation

Gottman et al.'s (1997) model of meta-emotion predicts that as mothers learn to effectively respond to their children's emotional expressions during affect-laden sibling interactions, children's abilities to regulate their own emotions will also likely improve. Accordingly, Ravindran et al. (2015) found robust program effects on children's emotion regulation in their investigation of the in-person MFWSB that was directed primarily to children. In contrast, in the current study of the parent-focused online program, program effects for children's emotion regulation reached only marginal levels of significance, and only for older children. Consistent with Ravindran et al., however, within group analyses of the current experimental group revealed that higher post-test levels of emotion regulation for older siblings were linked with more positive and less negative forms of sibling interaction. For younger siblings, improved emotion regulation at post-test was associated only with greater sibling warmth. The less robust program effects on child emotion regulation found in the current study may have occurred for two reasons. First, the content of the online program was directed towards parents; contrary to the in-person version, children were not direct participants in the program. Child engagement, in which professional program facilitators actively teach children competencies in self-control, emotion understanding, and emotion regulation with guided practice, may be necessary to achieve change in children's regulatory behaviors. Second, parents may need greater assistance to teach their children emotion regulation competencies than the asynchronous online program provides. The incorporation of more intensive parental coaching from the program leaders, as well as the design of online modules for children, should be considered in future iterations of the program.

Coparenting Effectiveness

Very few studies have examined coparenting processes as they pertain specifically to raising siblings (see DeMartini & Hazen, 2020 for an exception). This is surprising given that the demands on parents when caring for multiple children—and moderating the relationships among them—are quite

different from when they care for a single child. In line with family systems theory, how parents share the tasks of promoting positive engagement, manage animosity and conflicts, and foster a sense of connectedness among their children can set the stage for the development of sibling relationships high in support, understanding, caregiving, teaching, and other prosocial behaviors. In the current study, mothers' perceptions of coparenting cooperation and support increased following their participation in the program. The mechanisms underlying this effect are not clear, especially given the low number of couples in our study. One possible explanation that should be explored in future research is that, following family systems theory's concept of interdependence (Minuchin, 1974), mothers' use of the socioemotional competencies taught in the program with their children had a positive effect on other subsystems in the family, such as the co-parenting subsystem. Greater use of competencies such as perspective-taking and conflict management with one's partner could be expected to foster greater co-parenting cooperation and support (Schoppe-Sullivan et al., 2023). Future research, that includes both parents, is warranted to further examine how the coparenting subsystem may operate when raising siblings.

Limitations

It is important to recognize the limitations of the current study. As a self-directed, asynchronous online program, there is always concern that parents may not prioritize sufficient time to devote to the program. This was particularly evident as fathers were less likely than mothers to participate in the program, which is a significant limitation of the current study. Davison et al. (2017) found that many fathers do not participate in child health research because they have not been specifically invited to join by the researchers. To encourage paternal engagement, we sent a personal invitation to all partners of parents who enrolled in the study, if their names and emails were provided by the participating parent. Despite this outreach, few fathers completed the program. Given the challenges of raising multiple children, especially during a pandemic (Laufer & Schecory-Bitton, 2023), parents may have felt that only

one parent could devote time to the program. With mothers generally assuming greater responsibility for caring for children, they may have been more willing to complete the program. Whereas low rates of father engagement are not unique to this study (Schulz et al., 2023), this is not optimal as, following systems theory (Minuchin, 1974), equipping all members of a family with the resources they most need to support positive sibling engagement is expected to have the greatest benefits. Future improvements to the program, such as the addition personalized online coaching sessions with both parents, may better address families' needs while also encouraging greater paternal participation. Additionally, the creation of dedicated group sessions for fathers may also boost their engagement; fathers may find value in sharing strategies with other dads who also aim to encourage positive interactions among their children.

An additional limitation of this study was that participation of families from under-represented minority groups was low. It will be important to work with families from minoritized backgrounds to ensure that the program is designed in such a way that meets their needs and encourages their participation. Additionally, including families in which parents represent a broad range of educational backgrounds will be important to evaluate whether the program can adequately serve diverse families. Although the program was designed for those who read at a sixth-grade level, and an audio option was available, more could be done to ensure the program is attractive to audiences with fewer years of education.

Another limitation of the current study was its reliance on parental report for measures of their own and their children's behaviors and emotion regulation. Given the tender ages of the children and the restrictions imposed by the pandemic that necessitated an online format, it was difficult to assess child and parent behaviors firsthand. Future studies should optimally include direct observations of parents instructing their children to use the socioemotional competences, both to learn how parents apply the competencies to real interaction as well as to obtain another measure of program fidelity.

Similarly, it would be advantageous to directly assess sibling interaction, for example, by asking families to submit video-recordings of sibling conversation or play. Gathering reports from the children themselves about their sibling relationships and their experiences with the program would also provide important complementary measures of program effectiveness.

Finally, the development, design, and implementation of MFWSB-P were rooted in research targeting sibling relationships in Western cultures. Interestingly, English-speaking families who resided beyond the US experienced treatment gains similar to the US subsample. As sibling relationship dynamics differ dramatically across cultures (Zukow-Goldring, 2002), future efforts should consider how the program may need to be adapted to ensure relevancy and fit for a particular culture. Once tailored to meet the needs of families in a particular culture, assuming digital access, online programs like this have unique potential to help families living in communities that lack sufficient psychological and family support services.

Implications for Practice

Experimental interventions, such as the one tested in this study, have the potential to advance both practice and our theoretical understanding of sibling relationships as dynamic family subsystems that change across development and contribute to individual and family functioning and growth. The results of the current study suggest that, with instruction, parents can effectively teach their children a complex set of social and emotional competencies, creating benefits for both their children (e.g., enhanced sibling warmth and decreased agonism and rivalry) and themselves (e.g., enhanced emotion regulation and a more cooperative coparenting relationship). Improvements in sibling relationship quality were sustained over a 3-month period, with gains in sibling warmth showing the most persistent effects. Thus, we now have greater evidence that sibling relationship quality can be strengthened by helping children to develop competencies in cooperative play and communication, emotion regulation, self-control, conflict management, as well as other social and emotional skills. Family educators and

practitioners are encouraged to focus upon these socioemotional competencies as they work with families with young children who are concerned about nurturing positive sibling relationships.

Parallel findings between the digital and in-person versions of the program support the potential value of an online delivery mechanism. The online platform offers a variety of unique advantages unavailable in traditional in-person programs, for example, by providing flexibility through the self-paced lessons. While offering families greater convenience, the online format also expands access. In this case, English-speaking families from around the world were able to participate, thereby creating a more culturally diverse sample than typically represented in family science. While this diversity added a unique richness to the sample, we acknowledge that the program's design was based on research results obtained from US parents and children. We caution future researchers and practitioners to carefully evaluate how the content and implementation of preventive intervention programs, as well as assessment tools, may need to be modified to respect the specific cultural contexts in which families live.

As more of our family practice models move to the digital arena, we must also be cognizant of how difficult it can be for families to implement asynchronous, self-directed programs like this one. Hybrid approaches, in which parents have full access to online program materials in addition to consistent personal contacts with program facilitators through video chats and email, may produce more beneficial effects. Additionally, the design of additional modules for children would likely produce stronger effects on sibling relationship quality and child emotion regulation.

In summary, the results of the current study enhance our theoretical and practical understanding of how children's sibling relationships may be responsive to change. According to Cowan and Cowan (2002), intervention designs are the "gold standard for testing causal hypotheses" (p. 731), potentially going beyond the demonstration of program efficacy to illuminate the processes by which children's adaptation and well-being can be promoted, in ways that correlational research cannot. The

randomized control design enabled us to identify a set of socioemotional competencies that produced greater warmth, and less agonism and rivalry/competition, in children's sibling relationships. Teaching children to engage in prosocial interaction through play and conversation, to learn to take one another's perspectives, expand their emotional vocabularies and regulate emotional behaviors, manage conflicts, and inhibit impulsive responding worked together to strengthen sibling relationship quality. Furthermore, through the experience of teaching their children these competencies, mothers increased their own abilities to manage stressful emotions related to parenting siblings. Although we cannot conclude that these are the only, or even the primary, mechanisms by which siblings' relationships may improve, these processes may be important elements of a theoretical framework aimed at understanding variations in sibling relationship quality (Kramer, 2010).

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Table 1

Demographic characteristics (*N* = 135)

Demographic Characteristic	Experimental Mean	Experimental *SD*	Waitlist Control Mean	Waitlist Control *SD*
Maternal Age (yr)	38.72	4.48	39.27	4.32
Age of Spouse (yr)	40.34	5.21	41.19	5.05
Older Sibling Age (mo)	87.51	12.65	88.39	12.89
Younger Sibling Age (mo)	60.43	11.65	63.59	12.84
Number of Children in Family	2.61	0.88	2.80	0.93

Demographic Characteristic	Experimental %	Waitlist Control %
Marital Status		
Married	95.3	87.8
Race/Ethnicity		
White, non-Hispanic	73.3	89.8
Maternal Education		
Bachelor's degree or higher	91.9	93.9
Live in USA	76.7	79.6%
English Exclusively Spoken at Home	79.1%	83.7%
Sibling Sex Constellation (older/younger)		
Male/Male	29.1	30.6
Male/Female	30.2	18.4
Female/Male	15.1	38.8
Female/Female	25.6	12.2
Sibling Sex Constellation		
Same-sexed	54.7	42.9
Mixed-sexed	45.3	57.1
Siblings Biologically Related	96.5	91.8
Number of Children in Family		
Two	58.1	44.9
Three	27.9	38.8
Four	9.3	10.2
Five	3.5	4.1

Table 2

Descriptive Statistics for the Measures of Sibling Relationship Quality, Child Behavior Difficulties, Child and Parent Emotion Regulation, and Coparenting Quality for the Wait-list Control (n = 49) and Experimental (n = 86) Groups

	Experimental Group				Waitlist Control Group			
	Pretest		Posttest		Pretest		Posttest	
Variable	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Sibling Relationship								
Warmth	2.92	0.64	3.33	0.59	2.84	0.45	2.79	0.46
Agonism	3.51	0.58	2.83	0.57	3.64	0.55	3.48	0.53
Rivalry	3.40	0.80	2.88	0.73	3.49	0.86	3.54	0.75
Child Emotion Regulation								
Older Child	32.79	8.00	30.38	7.91	33.19	9.97	32.87	7.96
Younger Child	33.28	7.95	32.13	8.27	36.00	9.42	34.55	9.31
Mothers' Emotion Regulation								
Reactivity	3.69	0.71	3.25	0.74	3.74	0.60	3.75	0.59
Dysregulation	3.14	0.62	2.55	0.62	3.34	0.57	3.27	0.65
Reappraisal	4.80	1.18	5.16	0.96	4.60	0.95	4.64	0.99
Suppression	2.78	1.10	2.78	1.23	2.86	1.05	2.75	1.09
Coparenting Quality								
Collaboration/ Support	4.73	1.18	4.93	1.19	4.67	1.13	4.55	1.13

Table 3

Correlations among Sibling Relationship Quality and Child and Maternal Dependent Variables at Pre- and Posttest (N = 135)

	1	2	3	4	5	6	7	8	9	10
1. Sibling Warmth	**.70*** **	-.47**	-.49**	-.37**	-.44**	.32**	-.14	-.18*	-.20*	.34**
2. Sibling Agonism	-.48**	**.72*** **	.68**	.53**	.52**	-.33**	.06	.35**	-.28**	-.34**
3. Sibling Rivalry	-.30**	.56**	**.68*** **	.44**	.43**	-.34**	-.02	.43**	.19*	-.27**
4. M Reactivity	-.23**	.38**	.21*	**.54*** **	.66**	-.46**	.04	.34**	.18*	-.25**
5. M Dysregulation	-.24**	.38**	.22*	.62**	**.71*** **	.57**	.11	.30**	.17*	-.38**
6. M Reappraisal	.31**	-.26**	-.02	-.38**	-.30**	**.63*** **	.07	-.30**	-.13	.17**
7. M Suppression	-.14	.07	.19*	-.09	.17*	-.01	**.71*** **	-.02	-.13	-.36**
8. OS Down Regulation	-.06	.39**	.36**	.21*	.07	-.13	.05	**.99*** **	.39**	-.15
9. YS Down Regulation	-.07	.31**	.17	.13	.07	-.09	-.08	.39**	**.99*** **	-.14
10. Collaborative Coparenting	.19*	-.24**	-.20*	-.09	-.22*	.25	-.19*	-.07	-.12	**.85*** **

Note. OS = Older Siblings, YS = Younger Siblings. Intercorrelations among pretest measures are below the diagonal, intercorrelations among posttest measures are above the diagonal; intercorrelations between pre- and posttest measures of the same variables are reported on the diagonal.

* $p < .05$, ** $p < .01$, ***$p < .001$