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Collateral Benefits of the Family Check-Up in Early Childhood: Primary Caregivers' Social Support and Relationship Satisfaction

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Abstract

This research investigated potential collateral benefits of the Family Check-Up (FCU) intervention, namely, primary caregivers' perceived social support and couple relationship satisfaction. A subsample of 435 low-income families with a 2-year-old child was recruited to participate in a randomized controlled trial assessing preventative effects of the FCU. Longitudinal growth models were used to evaluate intention-to-treat effects of the FCU on increases in primary caregivers' ratings of social support satisfaction with perceived social support and significant-other relationships, and indirect effects on primary caregivers through improvements in children's behavior problems. Support was found for a model in which reductions in child problem behavior from ages 2 to 4 predicted positive change in caregiver-rated social support and relationship satisfaction over a 3-year period. This indirect effects model is discussed with respect to implications for early childhood prevention research focused on improving family functioning.

Keywords

family check-up; family system; child problem behavior; relationship with significant others; perceived social support satisfaction

Early childhood behavior problems have been shown to have detrimental and enduring effects in middle childhood and adolescence (Campbell, Shaw, & Gilliom, 2000; Shaw & Gross, 2008). Several dimensions of parenting have been found to play a central role in the

development of early childhood disruptive problem behaviors (Campbell et al., 2000; Shaw, Gilliom, Ingoldsby, & Nagin, 2003), including both hostile and overcontrolling practices (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Shaw et al., 2003), and infrequent positive and proactive strategies (Gardner, Shaw, Dishion, Burton, & Supplee, 2007). Coercive dynamics can emerge in families when a pattern of escalating aggression between parent and child becomes a routine dynamic for power struggles (Patterson, Reid, & Dishion, 1992). Coercive interaction can reinforce a child's noncompliant and aggressive behavior if it produces a desired response (e.g., removal of demands or punishment), which ultimately reinforces the child to repeat the behavior. Amplification of coercive interactions between parent and child has been shown to facilitate child disruptive problem behaviors among school-age children (Patterson et al., 1992; Snyder, 1995) and toddlers (Martin, 1981; Shaw et al., 1998).

Coercive processes in families have reciprocal influences on parents and children through reinforcement of each other's behaviors (Bell, 1968). An example of reciprocal influences is described by Shaw and Bell (1993), in which emotionally reactive young children evoke harsh parenting practices, thereby stifling children's acquisition of emotion regulation strategies, and further affecting parents' behavior toward their children. This dynamic in families is postulated to leave young children with impaired social skills and failed individuation from parents, leading to difficulties with peer relationships (Scaramella & Leve, 2004) and acrimonious teacher–student relationships.

Coercion theory has informed several behavioral parenting interventions that are effective at reducing growth of child behavior problems (Dishion et al., 2008; Kazdin, 1997; Webster-Stratton & Reid, 2003). Parenting interventions initiated during the toddler period, when oppositional and aggressive behaviors increase as children become more mobile yet lack sufficient concomitant development in cognitive understanding of basic principles (e.g., gravity, electricity), specifically focus on increasing positive behavior support to reduce the frequency of coercive parent–child interactions (Dishion et al., 2008). Given the presumed bidirectional nature of influence in the coercive cycle, early childhood interventions that address and attenuate the harsh parenting styles often elicited by negative emotional reactivity (Shaw, Bell, & Gilliom, 2000) should also promote parent well-being. Developmental research attests to the impact that infant and early childhood behavior problems have on parenting effectiveness, parent well-being, and marital functioning (Crouter & Booth, 2003). Taken together, these findings support the view that toddlers and their parents are interdependent subsystems that affect and are affected by each other (P. Minuchin, 1985). According to family systems theory and coercion theory, changes resulting in improved child functioning will have reverberating effects on other individuals and relationships in the family (S. Minuchin, 1974; Schrepferman & Snyder, 2002). Public health benefits of family-centered interventions may have been underestimated in the past simply because collateral benefits of these interventions for other family members had been overlooked.

Implications of Parenting Interventions for Parent Well-Being

Growing acknowledgment of the effects of children's noncompliant and aggressive behavior on maternal depressive symptoms (Gross, Shaw, Burwell, & Nagin, 2009; Gross, Shaw, Moilanen, Dishion, & Wilson, 2008) has spurred investigation into the possibility of collateral benefits of parenting interventions for parents' adjustment. Shaw, Connell, Dishion, Wilson, and Gardner (2009) found that engagement in the Family Check-Up (FCU), a preventive parent management skills intervention adapted for young children, was directly related to improvements in primary caregiver depression among families with 2- to 3-year-old children. Family interventions engaged in by parents of preterm infants have been

shown to reduce maternal stress and depression over time (Meyer et al., 1994). A meta-analysis of the effectiveness of group-based parenting interventions applied during early childhood identified effects for parental depression and anxiety/stress, self-esteem, and partner relationship satisfaction (Barlow, Coren, & Stewart-Brown, 2002).

Research on parental well-being also suggests the possibility that the benefits of parenting interventions for young children extend beyond indices of child behavior problems, and include reductions in parental depression. Other domains of caregiver well-being, such as satisfaction with social support, are related to depression (Grav, Hellzèn, Romild, & Stordal, 2012) yet appear to have direct implications for children's behavior problems (Dodge, Pettit, & Bates, 1994). From a reciprocal influences perspective, caregivers embroiled in coercive dynamics with their child may underutilize their social support system and become isolated, further perpetuating risk for ineffective parenting practices (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). Thus, caregiver social support may be an important dimension of well-being when assessing collateral benefits of a family intervention.

Intervention Implications for Interparental Relationship Quality

Associations have also been found between the quality of the caregivers' relationship and youth problem behavior. Researchers have noted that child problem behavior may affect the quality of partner relationships, including in families with very young children (Leerkes & Crockenberg, 2002). Developmental models have provided evidence that dysfunction in the marital relationship can spill over into parenting practices and lead to greater risk for poor child outcomes (Erel & Burman, 1995; Gerard, Krishnakumar, & Buehler, 2006). Theoretically, toddlers may be even more directly affected by relationship discord, because they are less likely to have access to other behavioral models and are likely to spend a greater amount of time exposed to the discord (Jouriles, Pfiffner, & O'Leary, 1988). Some researchers focus on relationship support as a means to intervene within the family system, and results have demonstrated subsequent adaptive changes in parenting practices, coparenting, couple relationship, and child self-regulatory behaviors in children as young as 1 year old (Feinberg, Kan, & Goslin, 2009). Research on relationship quality provides support for the cumulative effects of parenting interventions on the family system.

Moreover, randomized trials designed to enhance marital satisfaction during periods of transition (e.g., parenthood) have shown success in delaying parental separation and increasing father involvement (P. A. Cowan, Cowan, Pruett, Pruett, & Wong, 2009), both significant protective factors for child behavior problems (Buehler, Anthony, Krishnakumar, & Stone, 1997). Perhaps most compelling are findings that parenting interventions that specifically target the marital relationship *and* parenting practices with expecting families and families with young children (through age 7) have greater and more enduring effects than parenting interventions alone (C. P. Cowan, Cowan, & Heming, 2005; P. A. Cowan et al., 2009; Schulz, Cowan, & Cowan, 2006). Collectively, these studies highlight the importance of the parental relationship on adaptive child behavior outcomes, particularly in early childhood. However, the reciprocal relationship is likely true as well: Interventions that remediate disruptive child behavior may have a positive effect on caregiver well-being and the quality of the caregiver's relationship.

Collateral Benefits of the FCU: Caregivers' Well-Being and Relationship Quality

We examined primary caregivers' perceptions of social support and the quality of significant-other relationships as collateral benefits of a parenting-centered intervention. The FCU intervention model is an ideal context for examining these processes because it (a) has

a strong evidence base for its effectiveness in reducing child behavior problems, (b) targets parenting practices without directly intervening in the interparental relationship, and (c) has been shown to have collateral benefits on other parent outcomes (Shaw et al., 2009).

The FCU is an adaptive and tailored intervention model that targets parenting practices, and it has been implemented with adolescents in public middle schools (e.g., Connell, Dishion, Yasui, & Kavanagh, 2007; Dishion & Kavanagh, 2003; Stormshak et al., 2011) and with young children in at-risk families (e.g., Dishion et al., 2008; Shaw et al., 2009). The FCU models a health maintenance framework and relies on three sessions conducted annually: intake, assessment, and feedback (Dishion & Kavanagh, 2003; Dishion & Stormshak, 2007), a process that is modeled on the Drinker's Check-Up (Miller & Rollnick, 2002). A multimethod approach is used during intake and assessment, including questionnaires, interviews, and behavioral observations, to collect ecologically valid data relevant to the functioning and harmony of the family and their toddler (e.g., parental depression, child behavior problems, parenting skills, parental relationships). The FCU sessions can be conducted at home or during office visits and can include other willing caregivers, depending on the needs of the family.

During the feedback session, results are summarized and reported to caregiver(s), and careful attention is paid to family strengths and areas in which the family could benefit from making changes. Motivational interviewing techniques are used to explore the caregiver's desire for change. Assessment feedback that identifies specific areas in which change would be helpful is paired with a menu of service options, which is presented at the conclusion of the feedback session. Although the menu is tailored to the needs of the family, a typical list may include referrals for specific problems (e.g., developmental delays), age-appropriate brochures that address parenting issues (e.g., limit setting), and parent management services provided to the family by trained parent consultants (Everyday Parenting curriculum; Dishion, Stormshak, & Kavanagh, 2011). It is important to note that a primary caregiver is designated and required to participate at all levels of the intervention, but additional caregivers (e.g., fathers, grandmothers) are also welcomed and encouraged to participate in all phases of the assessment and intervention.

Early childhood effectiveness studies have documented empirical support for the FCU in terms of reducing emotional distress (Shaw et al., 2009), comorbid problems in young children (Connell et al., 2008), and behavior problems (Dishion et al., 2008). In addition, the FCU is associated with promoting inhibitory control and language development from ages 2 through 4 years (Lunkenheimer et al., 2008). Although several of these studies have examined effective parenting practices as mechanisms of change (e.g., Dishion et al., 2008; Lunkenheimer et al., 2008), much less is known about the implications of the FCU for other members of the family.

P. A. Cowan and Cowan (2002) have called for more research investigating reciprocal links between parent well-being and child behavior problems within the context of randomized intervention trials, to build on evidence for the interdependence of parent-child and interpersonal relationships (P. A. Cowan & Cowan, 2002; Erel & Burman, 1995; Schrepferman & Snyder, 2002). As previously mentioned, Shaw and colleagues (2009) found evidence that the FCU is related to reductions in maternal depressive symptoms, supporting the view that this parenting-focused intervention may improve the lives of other members of the family unit. Although the FCU intervention does not directly target parent well-being or satisfaction in intimate relationships, developmental and intervention research suggests that interventions that improve child behavior may have implications for their caregivers' individual and relationship adjustment, especially among families with young children (e.g., Beach et al., 2008; Gross et al., 2009).

In the present study, direct and collateral effects of the FCU intervention on perceived social support and significant relationship satisfaction were tested. Although these direct and indirect effects had been found in prior research previously summarized, direct effects on social support satisfaction and partner relationship satisfaction were not expected in this work because these issues were not addressed directly as part of the intervention. However, improvements were expected to occur in these domains as a function of improving child behavior. Specifically, it was expected that assignment to the FCU intervention condition would have indirect effects on primary caregiver perceived social support and significant-other relationship quality as a function of improved child behavior problems. Thus, previously reported direct effects on reduced growth in child behavior problems (Dishion et al., 2008) were hypothesized to be associated with increases in satisfaction with perceived social support and quality of significant-other relationships. A simplified conceptual model outlining the overall hypotheses of this study is presented in Figure 1, representing improved parent functioning as an indirect effect of the intervention on child behavior problems.

Method

Participants

The sample used in this study was drawn from a larger sample of 731 participants recruited between 2002 and 2003 from Women, Infants, and Children Nutritional Supplement Services programs in Pittsburgh, Pennsylvania; Eugene, Oregon; and Charlottesville, Virginia. Institutional review board oversight was maintained by the universities at each of the sites (University of Pittsburgh, University of Oregon, and University of Virginia, respectively). Families with a child between age 2 years 0 months and 2 years 11 months who demonstrated socioeconomic, family, and/or child risk factors for future behavior problems were invited to participate. Of the 879 families who met the eligibility requirements, 731 (83.2%) provided consent to participate (88% in Pittsburgh, 84% in Eugene, 76% in Charlottesville) and were randomly assigned to either the treatment or control group prior to the first assessment. Of those initially recruited, 659 (90%) were available at the age 3 assessment, 619 (85%) participated at age 4 assessment, and 621 (85%) at the age 5 assessment. At ages 3, 4 and 5, selective attrition analyses revealed no significant differences in project site; intervention assignment; children's race, ethnicity, or gender; externalizing behaviors; or levels of primary caregiver depression.

The 435 families selected for this sample included those from this ongoing study whose primary caregiver (98.2% biological mothers) reported their relationship satisfaction with a romantic partner on at least two occasions during the four annual assessment waves used in the analyses (child ages 2, 3, 4, 5). The 435 participants used in the analyses did not differ from the larger sample ($N = 731$) in terms of target child age, initial levels of externalizing behavior problems, child gender, or assignment to the intervention group. Significant differences were found between the full sample and the sample analyzed in terms of annual income, $t(724) = -6.49, p < .001$ (lower in the current subsample); child ethnicity, $\chi^2(2, N = 731) = 7.50, p < .01$, with more endorsing Hispanic or Latino ethnicity in the subsample; and parental reports of depression at age 2, $t(727) = 2.69, p < .001$, with higher reported rates of depression among those without a significant other.

Primary caregivers in the 435 participating families across the three study sites reported the target child as belonging to the following ethnic groups: 50.1% Caucasian, 27.9% African American, 13.0% biracial, and 9.0% other groups (e.g., Pacific Islander, American Indian). The primary caregiver reported their ethnicity as 57.8% Caucasian, 28.2% African American, 4.2% biracial, and 9.8% other groups. Target child gender was essentially equal, with 51.4% male and 48.6% female. During the first assessment (age 2), 83.9% of the families reported an annual family income less than \$24,999.

Measures

Annual visits were made to the home (office visits if necessary) of each family recruited for the project. A variety of questionnaires, interviews, videotaped observations, and assessor impressions were collected during each assessment. Data from these assessments also served as an integral aspect of the intervention and were used to present the family with annual feedback regarding their family functioning and developmental norms. During the feedback session, trained parent consultants worked with the family to determine whether or not the family could benefit from additional sessions focused on parent management training in order to improve child outcomes. All the following measures were used between child ages 2 and 5.

Demographics questionnaire—A demographics questionnaire was completed by primary caregivers during the assessment procedure. This measure included questions concerning the demographic characteristics (e.g., gender, age, income) of the target child and primary caregiver, and questions regarding family structure, income, parental criminal history, and areas of familial stress.

Primary caregiver depression—The Center for Epidemiological Studies on Depression Scale (CES-D; Radloff, 1977) was used to assess depressive symptoms in the primary caregivers as a covariate, given that prior studies have revealed a link between parenting interventions and decreased primary caregiver depressive symptoms (Beach et al., 2008; Shaw & Gross, 2008). This measure of depressive symptoms consists of 20 items and uses a 0 (*less than 1 day*) to 3 (*5–7 days*) Likert scale to assess how often depressive symptoms were experienced during the past week. An overall depressive symptoms score was created using the sum of the items. At the age 2 assessment (measured annually, but only age 3 was used in these analyses), internal consistency in this sample was .76. Given the previously established link between depression and maladaptive child behavior, as well as the correlation of depression with perceived social support and relationship satisfaction, maternal depression was used as a control and not as a main variable of interest in the analyses that follow.

Early childhood problem behavior—The Problem Behavior factor scale from the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980) and the Externalizing scale from the Child Behavior Checklist for Ages 1.5–4 (CBCL; Achenbach & Rescorla, 2001) were administered to primary caregivers. For the ECBI, parents are asked to rate the frequency with which several behaviors occur. They are then asked if each behavior is currently a problem (*yes* or *no*). The sum of the number of behaviors reported as problematic is calculated at each assessment point and is used to indicate the primary caregiver's view of the child's behavior as problematic, henceforth referred to as the *Eyberg problem factor score*.

The CBCL asks parents to rate the validity of several statements regarding potential child behaviors on a 3-point Likert scale (0 = *not true*; 1 = *somewhat true, sometimes true*; and 2 = *very true, often true*). Internal consistency for the items included in the CBCL Externalizing subscale scores were .86, .60, and .60 at the age 2, 3, and 4 assessments, respectively. Both the Eyberg and the CBCL measures were administered to the primary caregivers at the age 2, age 3, and age 4 assessments. It is important to note that the Eyberg problem factor and CBCL Externalizing factor measure two related but conceptually distinct theoretical constructs. The CBCL Externalizing factor assesses parental perceptions of the frequency of the occurrence of externalizing behaviors exhibited by the child. In contrast, the Eyberg problem factor assesses the parent's perception of the child behavior as being

problematic. As an example, one might rate the child's frequency of oppositional behavior as being elevated without necessarily perceiving it as being a problem for the parent.

Relationship satisfaction—The level of satisfaction in a primary caregiver's romantic relationship (e.g., boyfriend/girlfriend, husband/wife) was assessed with the 15-item short form of the Locke-Wallace Marital Adjustment Test (LWMAT; Locke & Wallace, 1959). At each assessment, the primary caregiver was asked to complete this measure regarding their relationship satisfaction with their marital or romantic partner. The LWMAT assesses marital happiness on a 7-point scale with anchors at 1 (*very unhappy*), 4 (*happy*), and 7 (*perfectly happy*). Eight additional items are used to assess the degree to which couples disagree on various topics, such as handling family finances, friends, values, and attitudes toward life, using a 6-point scale with anchors always agree, almost always agree, occasionally agree, frequently disagree, almost always disagree, and *always disagree*. The final five questions assess conflict resolution, engagement in shared interests as a couple, ability to confide in one's partner, and thoughts about ending the relationship. Consistent with extensive prior research using this measure, items were standardized and then averaged such that higher scores indicated greater satisfaction with one's significant other during the past year. Internal consistencies for the positive relationship factor were .70 at age 2, .78 at age 3, .74 at age 4, and .80 at age 5.

Satisfaction with perceived social support—The General Life Satisfaction Questionnaire (Crnic et al., 1983) was used to evaluate satisfaction with perceived social support. Items assessed frequency of support and engagement in pleasant activities (i.e., friendships and work) and levels of satisfaction with each. For purposes of our study, the general life satisfaction score used in analyses was assessed from ages 2 through 5. Internal consistencies for the satisfaction factor were .70 at age 2, .78 at age 3, .74 at age 4, and .80 at age 5.

Results

The growth models presented were tested using AMOS (Arbuckle, 1999). Full information maximum likelihood (FIML) estimation was used to handle missing data. FIML does not delete cases missing from one or more waves of data collection, or cases missing one or more variables within a wave of data collection, and avoids biased parameter estimates likely to occur if pair- or listwise deletion is used to compensate for missing data (Wolthke, 2000). Fit statistics for the models were evaluated using the criteria described in Schumacker and Lomax (2004).

Descriptive statistics and omnibus tests for all variables by treatment group are reported in Table 1. No significant differences were found when comparing the control and treatment groups in terms of the controls (child gender, annual family income, or primary caregiver depression) or the outcome variables assessing perceived social support and relationship satisfaction. Concerning child problem behaviors, no significant differences were found between the treatment and control groups in age 2 and age 3 ratings of problem behaviors for the Eyberg or CBCL scales. Significant differences between the control and treatment groups were found in Eyberg ratings of the behavior as problematic and CBCL ratings of externalizing behaviors at age 4. Consistent with previous reports on this sample (Dishion et al., 2008; Shaw et al., 2009), these differences in child disruptive behaviors, and the perception of these behaviors as problematic, show intervention effects on behavior problems at age 4. Site comparisons suggested the Pittsburgh site exhibited higher rates of maternal depression and of externalizing problem behaviors at age 3 and 4, and lower ratings of relationship satisfaction at child ages 3, 4, and 5. Separate analyses of the structural equation modeling (SEM) models, including a bivariate variable for the Pittsburgh

sample (vs. those in Charlottesville and in Eugene), did not result in significant path coefficients; therefore, this variable is not included in the analyses that follow. No differences in ethnicity were noted when accounting for income, which is included as a covariate in the SEM models that follow.

Bivariate correlations for all variables included in the model from ages 2 through 5 are shown in Table 2. All correlations were in the expected direction. Correlations were found between the control variables (child gender, income, and maternal depression) and at least one outcome variable, and thus the control variables were retained in the final models.

Hypothesis 1: Test of the direct effects of the FCU on caregiver ratings of perceived social support and relationship satisfaction.

Unconditional linear growth models (LGM) were computed to assess growth in primary caregiver ratings of perceived social support and significant-other relationship satisfaction. The unconditional LGM for perceived social support satisfaction fit the data well, in which $\chi^2 = 19.695$, $df = 8$, $p = .012$, CFI = .977, RMSEA = .058, TLI = .971. This model yielded significant intercept (estimate = 40.36, $SE = .32$) and slope (estimate = .17, $SE = .13$) values, and significant residual variance was also found in the intercept (estimate = 28.29, $SE = 3.18$) and slope (estimate = 1.93, $SE = .53$) parameters, suggesting the intercept and slope differ from zero. Similarly, the unconditional LGM for primary caregiver ratings of relationship satisfaction provided a good fit to the data, in which $\chi^2 = 4.749$, $df = 8$, $p = .784$, CFI = 1.000, RMSEA = .000, TLI = 1.011. This model assessing relationship satisfaction ratings yielded significant intercept (estimate = 58.01, $SE = .46$) and slope (estimate = .38, $SE = .19$) values, and significant residual variance in the intercept (estimate = 57.71, $SE = 6.24$) and slope (estimate = 4.91, $SE = 1.05$) parameters. For both the unconditional perceived social support satisfaction and relationship satisfaction, significant means and variances were obtained, suggesting growth over time and individual variation in the growth of both factors over time.

To examine the direct effects of the FCU intervention on primary caregiver ratings of perceived social support satisfaction, the dichotomous variable indicating the participant's random assignment to the treatment group (treatment = 1, control = 0) was included in the model. This model provided a good fit to the data, in which $\chi^2 = 25.369$, $df = 11$, $p = .008$, CFI = .971, RMSEA = .055, TLI = .961. Consistent with the hypothesis of no direct intervention effects, assignment to the treatment condition in terms of growth in the ratings of perceived social support satisfaction was not significant (estimate = .05, $SE = .22$, $z = .02$).

The direct effects of the FCU intervention on growth in scores of relationship satisfaction were then examined using the same dichotomous variable indicating treatment group membership. This model provided a good fit to the data, in which $\chi^2 = 9.498$, $df = 11$, $p = .576$, CFI = 1.000, RMSEA = .000, TLI = 1.005. Also in line with the hypothesis of no direct intervention effects, assignment to the treatment condition in terms of the ratings of relationship satisfaction was not significant (estimate = .34, $SE = .29$, $z = .08$). Given the nonsignificant direct effects of the treatment on growth in perceived social support and relationship satisfaction, models that included proposed control variables (gender of the target child, annual family income, and primary caregiver depression) were not examined.

Hypothesis 2: Test of the indirect FCU effects on perceived social support and relationship satisfaction through reductions in child problem behaviors.

To test the effects of the FCU on increasing perceived social support and significant-other relationship satisfaction through the direct effects of the intervention on reducing child

problem behaviors, two separate growth models were examined for each outcome. The child's gender, family income, and primary caregiver depression at the age 2 assessment were controlled for in all the growth models that follow, and, for ease of interpretation, only significant relationships between these variables and other study variables are shown in the figures.

We used the first model to test the effects of the intervention through the FCU effect of reduced primary caregiver perception of behaviors as problematic, as indicated by Eyberg problem scores, and this is presented in Figure 2. This model fit the data well, in which $\chi^2 = 93.972$, $df = 48$, $p = .000$, CFI = .950, RMSEA = .047, TLI = .931. As reported elsewhere (Dishion et al., 2008), assignment to the treatment condition was related to reductions in the Eyberg problem score over time (slope; estimate = -1.04 , $SE = .38$, $z = -1.19$). Reductions on the Eyberg problem score from ages 2 through 4 (slope) predicted increased perceived social support satisfaction from ages 2 to 5 (estimate = $-.20$, $SE = .06$, $z = -.39$) after accounting for variance associated with child gender and age 2 reports of income and primary caregiver depression. A Sobel test was used to determine the significance of the indirect effect of the intervention on increasing perceived social support satisfaction ratings via the interventions effects on the Eyberg problem score. The indirect effect was significant (Sobel test = 2.12, $p < .05$). In addition to these main effects, a significant negative path was found for the relationship between income at child age 2 and the slope for the Eyberg problem score (estimate = $-.30$, $SE = .09$, $z = -.23$). Significant paths were found for the relationship of primary caregiver depression at child age 2, and the intercepts for the Eyberg problem score (estimate = $.12$, $SE = .03$, $z = .28$) and the intercept for perceived social support satisfaction (estimate = $-.24$, $SE = .03$, $z = -.46$).

We used the second model (also in Figure 2) to test the effects of the intervention on growth in perceived social support satisfaction through the FCU effect of reduced child externalizing problems as rated by the primary caregiver using the CBCL Externalizing scale. This model provided a good fit to the data, in which $\chi^2 = 85.449$, $df = 40$, $p = .000$, CFI = .960, RMSEA = .051, TLI = .933. As expected, assignment to the treatment condition was related to reductions in the CBCL externalizing problem score over time (slope; estimate = -1.07 , $SE = .35$, $z = -.22$). Reductions in externalizing behaviors from ages 2 through 4 (slope) predicted increased perceived social support satisfaction from ages 2 to 5 (estimate = $-.22$, $SE = .09$, $z = -.38$) after accounting for variance associated with child gender and age 2 reports of income and primary caregiver depression. The Sobel test of the indirect effect was significant (Sobel test = 1.91, $p < .05$). In terms of control variables, significant paths were found between primary caregiver depression at child age 2, and the intercepts for CBCL Externalizing and perceived social support satisfaction (estimate = $.14$, $SE = .04$, $z = .23$, and estimate = $-.03$, $SE = .01$, $z = -.48$, respectively), and the slope of perceived social support satisfaction (estimate = $.03$, $SE = .01$, $z = .18$). Income predicted CBCL externalizing growth (slope; estimate = $-.21$, $SE = .09$, $z = -.18$).

A similar approach with two separate growth models was used to test the indirect effects of the FCU on the slope of satisfaction in relationships with significant others through the intervention's direct effects on reducing child problem behaviors. The model testing the effects of the intervention on relationship satisfaction ratings through effects on the slope of the Eyberg problem factor is presented in Figure 3. The second model assessing the same indirect relationship using the CBCL Externalizing factor is also displayed in Figure 3.

The model for the Eyberg problem factor fit the data well, in which $\chi^2 = 69.108$, $df = 50$, $p = .038$, CFI = .975, RMSEA = .030, TLI = .966. Again, assignment to the treatment condition was related to reductions in the Eyberg problem score over time (slope; estimate = -1.08 , $SE = .38$, $z = -.20$). Negative slope in Eyberg problem scores predicted increased

relationship satisfaction ratings from ages 2 to 5 (estimate = $-.19$, $SE = .08$, $95\% CI = [-.23, -.15]$) after accounting for the three covariates. The Sobel test of the indirect effect was significant (Sobel test = 1.82 , $p < .05$). Significant paths were also found for the relationship between primary caregiver depression at child age 2 and the intercepts for the Eyberg problem factor and relationship satisfaction ratings (estimate = $.13$, $SE = .03$, $95\% CI = [.08, .18]$, and estimate = $-.19$, $SE = .03$, $95\% CI = [-.25, -.13]$, respectively). Income ratings at age 2 were also related to growth in Eyberg problem scores (estimate = $-.29$, $SE = .09$, $95\% CI = [-.47, -.11]$).

The final model (also depicted in Figure 2) using the CBCL Externalizing provided a good fit to the data, in which $\chi^2 = 61.524$, $df = 50$, $p = .127$, CFI = .988, RMSEA = .023, TLI = .984. Assignment to the treatment condition was related to reductions in the CBCL Externalizing score over time (slope; estimate = -1.05 , $SE = .35$, $95\% CI = [-1.75, -.35]$). Negative slope of CBCL Externalizing scores predicted increased relationship satisfaction from ages 2 through 5 (slope; estimate = $-.22$, $SE = .11$, $95\% CI = [-.44, .00]$) after accounting for all three covariates. The Sobel test of the indirect effect was significant (Sobel test = 2.02 , $p < .05$). Significant paths were found for the relationship between primary caregiver depression at child age 2 and both intercepts for the CBCL Externalizing and relationship satisfaction (estimate = $.16$, $SE = .03$, $95\% CI = [.10, .22]$, and estimate = $-.19$, $SE = .03$, $95\% CI = [-.26, -.12]$, respectively).

Discussion

This investigation adds to an increasing body of findings about the FCU and other parent-training interventions (DeGarmo, Patterson, & Forgatch, 2004; Webster-Stratton & Reid, 2003) to suggest collateral benefits of a preventive intervention designed to decrease disruptive child behavior (Lunkenheimer et al., 2008; Shaw et al., 2009; Shelleby et al., 2012). When the FCU is used to address the mechanisms underlying coercion theory (Patterson, 1982), acrimonious parent-child interaction is reduced, whereas positive behavior support is increased and parenting practices improve. However, the analyses presented in this article suggest the effects of this intervention extend beyond the parent-child dyadic relationship to the quality of interpersonal relationships primary caregivers have with significant others. These results provide support for the reverberating effects across subsystems proposed by family systems theory (S. Minuchin, 1974), perhaps as a result of generalizing the learned parenting skills to other relationships.

Study results do not suggest that the FCU has a direct impact on primary caregivers' quality of perceived social support or significant-other relationship adjustment. Instead, reductions in child behavior problems functioned as an indirect pathway linking the FCU and primary caregivers' perceived social support and significant-other relationship quality. It is not surprising that a behavioral intervention focused on parenting practices would have little direct impact on primary caregivers' perceived social support or significant-other relationship satisfaction, because these areas were not directly targeted in the parenting-focused intervention. However, in the context of increasing primary caregivers' repertoire of parenting strategies for improving child behaviors through enhanced parent-child interactions, thus reducing overall levels of family stress, primary caregivers understandably might experience improvements in both perceived social support and significant-other relationship quality. These effects might be more pronounced in the toddler and the preschool years, when children are more dependent on parents, and improvements in the quality of parent-child relationships might be "felt" more than in later age periods. It is also possible that the acquisition of new ways to relate to children spill over into other perceived social relationships, such as those with close friends, coworkers, and significant partners, thereby reducing child behavior problems and increasing satisfaction in other relationships. However, the precise mechanisms underlying the results of our study remain open for future researchers to examine.

Methodologically, the study findings were obtained as part of a randomized trial with a large, high-risk, ethnically diverse community sample. Other parenting intervention studies with very young children have reported similar effects with respect to increasing relationship and perceived social support satisfaction. For example, using a preventative framework, P. A. Cowan and colleagues (2009) provided post hoc evidence that fathers' participation in individual or couples' groups targeting familial relationships and parenting practices stabilized child problem behaviors over time more effectively than did participation in low-dose educational comparison groups. Similarly, targeting the relationship between primary caregivers in middle-class, well-educated families has shown promise for improving coparenting, parenting, satisfaction in other close relationships, and child self-soothing behaviors (Feinberg et al., 2009). However, it is important to distinguish between the targets of parenting interventions and the theoretical orientations that drive them. In line with family systems theory, the Cowans' work (P. A. Cowan et al., 2009) targets father involvement. Although parenting strategies may be discussed in the group therapy portion of their intervention, the primary focus is the relationship between the parents. Similarly, Feinberg's Family Foundations program (Feinberg et al., 2009) for the transition to parenthood is designed to enhance the coparenting relationship and is theoretically derived from a family systems perspective. As previously noted, the focus of the FCU (Dishion & Kavanagh, 2003) is on improved parenting practices, in particular, reducing coercive parent-child dynamics by improving positive behavior support. Interestingly, these interventions were derived from different theoretical perspectives yet arrive at the same general conclusion: Interventions targeting specific family characteristics are associated with positive collateral effects that involve other family members.

Limitations and Future Directions

Several limitations restrict the generalizability of the findings presented in this report. As is unfortunately typical in psychological research focused on parenting, this investigation is constrained to the perceptions of one participant in the caregiver dyad (most often mothers). In fact, all variables analyzed in these analyses were obtained from a single reporting agent—the primary caregiver. Regarding findings specific to relationship satisfaction, the analyses presented here are not specific to the relationship between the biological parents of the child. The ratings provided by the caregiver at each assessment point in terms of satisfaction with significant relationships could involve the other biological parent or a relationship with a romantic or domestic partner other than the child's other biological parent. Similarly, the primary caregiver could report about different relationships at each of the four assessment points measured. Future research should examine the mechanisms through which the results presented here function (i.e., generalization of positive reinforcement techniques, stress). Assessing these findings using multiple informants would also enhance these results.

Our study provides information that may be useful for developing and implementing effective intervention and prevention strategies focused on improving family functioning. To date, many behavioral interventions focus on reducing child behavior problems without addressing the broader implications of these interventions for other members of the family. These results suggest that reductions in maladaptive child behavior problems and perceptions of the child's behavior may have positive collateral effects on the quality of relationships the primary caregiver has with other adults within and outside of the nuclear family.

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Note. The dotted line denotes the theorized nonsignificant path.

Figure 1.

Conceptual model testing indirect family check-up (FCU) effects on increased caregiver satisfaction ratings through reductions in problematic child behaviors.

Figure 2.
 Indirect family check-up (FCU) effects on perceive social support ratings through reductions in Eyberg problem and Child Behavior Checklist (CBCL) externalizing scale ratings.

Figure 3. Indirect family check-up (FCU) effects on relationship satisfaction ratings through reductions in Eyberg problem ratings and Child Behavior Checklist (CBCL) externalizing scale ratings.

Table 1

Descriptive Statistics for Predictor and Outcome Variables by Intervention Status

Variables	Control group (<i>n</i> = 218)	Treatment group (<i>n</i> = 217)	Omnibus test
Target child gender	50.7% male	49.5% male	$\chi^2(df=1) = 0.02, ns$
Age 2 Income	4.23 (2.21)	4.08 (2.04)	$t(428) = 0.76, ns$
Age 2 Caregiver Depression	15.40 (10.48)	16.36 (9.92)	$t(432) = -0.98, ns$
Age 2 Eyberg Problem Score	14.13 (6.17)	14.14 (6.60)	$t(432) = -0.01, ns$
Age 3 Eyberg Problem Score	14.45 (7.82)	13.88 (7.74)	$t(420) = 0.76, ns$
Age 4 Eyberg Problem Score	15.29 (8.25)	13.32 (8.38)	$t(410) = 2.40^*$
Age 2 CBCL Externalizing Behavior	20.22 (7.20)	20.50 (7.43)	$t(432) = -0.41, ns$
Age 3 CBCL Externalizing Behavior	17.60 (8.47)	17.05 (8.05)	$t(420) = 0.69, ns$
Age 4 CBCL Externalizing Behavior	16.62 (8.53)	14.58 (8.44)	$t(412) = 2.45^*$
Age 2 Perceived Social Support	40.61 (6.60)	40.32 (7.15)	$t(432) = 0.44, ns$
Age 3 Perceived Social Support	41.01 (7.31)	39.85 (8.00)	$t(419) = 1.55, ns$
Age 4 Perceived Social Support	41.12 (7.29)	40.19 (7.16)	$t(412) = 1.22, ns$
Age 5 Perceived Social Support	40.78 (7.73)	41.34 (7.70)	$t(385) = -0.71, ns$
Age 2 Relationship Satisfaction	58.87 (9.04)	56.91 (9.65)	$t(327) = 1.90, ns$
Age 3 Relationship Satisfaction	58.32 (8.45)	58.99 (9.20)	$t(350) = -0.72, ns$
Age 4 Relationship Satisfaction	59.37 (9.17)	58.99 (8.85)	$t(341) = 0.39, ns$
Age 5 Relationship Satisfaction	59.22 (9.64)	59.84 (8.54)	$t(324) = -0.61, ns$

Note. CBCL = Child Behavior Checklist; *ns* = nonsignificant.

** $p < .01$. *** $p < .001$.

* $p < .05$.

Table 2

Correlations for Predictor and Outcome Variables by Intervention Status

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. TC Gender	—																
2. Age 2 Income	.04	—															
3. Age 2 Depression	-.01	-.14**	—														
4. Age 2 ECBI	-.09	.04	.17**	—													
5. Age 3 ECBI	-.12*	-.11*	.20**	.40**	—												
6. Age 4 ECBI	-.04	-.15*	.16**	.30**	.62**	—											
7. Age 2 CBCL Ext	-.05	-.03	.18**	.37**	.44**	.34**	—										
8. Age 3 CBCL Ext	-.08	-.15**	.23**	.30**	.68**	.51**	.61**	—									
9. Age 4 CBCL Ext	-.08	-.13**	.20**	.23**	.51**	.70**	.51**	.70**	—								
10. Age 2 PSS	-.05	.01	-.38**	-.09*	-.16**	-.12**	-.20**	-.22**	-.21**	—							
11. Age 3 PSS	.01	.04	-.26**	-.04	-.21**	-.20**	-.19**	-.28**	-.23**	.54**	—						
12. Age 4 PSS	-.14**	.07	-.29**	-.03	-.11*	-.18**	-.06**	-.16**	-.19**	.45**	.61**	—					
13. Age 5 PSS	-.11	.04	-.28**	-.06	-.15**	-.24**	-.09*	-.14*	-.21**	.40**	.51**	.56**	—				
14. Age 2 RS	.01	.08	-.24**	-.11	-.31**	-.26**	-.22**	-.28**	-.27**	.36**	.29**	.26**	.21**	—			
15. Age 3 RS	-.03	.00	-.15**	-.15**	-.31**	-.26**	-.25**	-.28**	-.25**	.24**	.34**	.26**	.24**	.61**	—		
16. Age 4 RS	-.04	.05	-.22**	-.13*	-.27**	-.25**	-.14**	-.27**	-.25**	.18**	.21**	.29**	.26**	.59**	.57**	—	
17. Age 5 RS	.00	.02	-.21*	-.12*	-.30**	-.30**	-.18**	-.30**	-.29**	.17**	.37**	.34**	.46**	.39**	.47**	.60**	—

Note. All ages correspond to the age of the target child. CBCL = Child Behavior Checklist; ECBI = Eyberg Child Behavior Inventory; PSS = perceived social support; RS = relationship satisfaction; TC = Target Child.

*** $p < .001$.

* $p < .05$.

** $p < .01$.