

ATTACHMENT MF 3

This is the attachment marked "**MF 3**" referred to in the witness statement of Mark Feinberg dated 9 July 2015.

IN PRESS: JOURNAL OF FAMILY PSYCHOLOGY**Long-Term Follow-up of a Randomized Trial of Family Foundations: Effects on Children's Emotional, Behavioral, and School Adjustment**

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Abstract

Objective: This study examined long-term effects of a transition to parenthood program, Family Foundations, designed to enhance child outcomes through a strategic focus on supporting the coparenting relationship.

Method: Roughly five to seven years after baseline (pregnancy), parent and teacher reports of internalizing and externalizing problems and school adjustment were collected by mail for 98 children born to couples enrolled in the randomized trial.

Results: Teachers reported significantly lower levels of internalizing problems among intervention children compared to control children and -- consistent with prior findings at age 3 -- lower levels of externalizing problems for intervention group boys. Baseline level of observed couple negative communication moderated intervention effects for parent and teacher report of child adjustment and teacher report of school adjustment and adaptation. Effect sizes ranged from 0.40 to 0.98.

Conclusions: Results indicate that relatively brief preventive programs for couples at the transition to parenthood have the capacity to promote long-term positive benefits for children's adjustment. Although we attended to missing data issues in several ways, high levels of attrition in this long-term follow-up study is a cause for caution.

Keywords: coparenting psychosocial intervention; coparenting; school-age followup; long-term child outcomes; CBCL internalizing behaviors; externalizing behaviors; conduct problems; emotional problems; learning engagement; academic motivation; Family Foundations

Introduction

Although the family is the crucial proximal environment influencing early child development, achieving public health impact through universal, family-focused interventions has been difficult. The transition to parenthood is a critical phase in family development, fraught with strain and stress (Cowan & Cowan, 2000; Heinicke, 2002). How families weather and emerge from the transition may influence the future course of family relationships and parent and child adjustment (Doss, Rhoades, Stanley, & Markman, 2009; Twenge, Campbell, & Foster, 2003). Most prevention programs implemented during this phase have targeted families at risk (Heinicke et al., 1999; Ngu & Florshelm, 2011; Petch, Halford, Creedy, & Gamble, 2012) yet the prevention paradox is that the majority of families affected by relationship, adjustment, and mental health problems emerge from the lower- and moderate-risk strata that comprise the majority of the population (Rose, 1981). No *universal* preventive programs designed to reach all parents expecting a first child have been tested in rigorous research, found to be effective, and made widely available. This gap in effective universal family prevention programs exists despite considerable federal resources spent over the past decade under the federal Healthy Marriage Initiative (HMI).

In fairness, the HMI has focused on enhancing couple relations among low and moderate income groups, for whom social and economic stressors likely undermine interparental relationship quality. Nonetheless, results have been disappointing. Building Strong Families, a large HMI multi-site trial of several transition-to-parenthood programs, found overall null results, with very small positive effects for a high-risk subset of the sample, for leading programs adapted for low and moderate income couples (Wood, Moore, Clarkwest, Killewald, & Monahan, 2012). Controversy surrounds the interpretation of these results: Although analyses indicated null results

across study sites, one site did show some short-term positive effects and another site showed iatrogenic effects. The meaning of the positive site's results were unclear given that the positive site was located in a state with a unique history of support and thus infrastructure for healthy marriage programs. At a follow-up wave, the effects at the positive and negative site had attenuated, but negative results had emerged at an additional site (Wood et al., 2012). More recently, Amato analyzed the BSF data to examine whether intervention impact was greater for higher-risk families (Amato, 2014). Although results did demonstrate risk moderation, the effect size for the roughly highest-risk quarter of the sample was very small (about .1). Attributing the positive results at the single site or for the higher risk portion of the sample to the prevention programs utilized is difficult, however: At all sites, intervention families received both a multi-session program as well as caseworker support, making it difficult to identify the active intervention ingredient (Hawkins et al., 2013; Johnson, 2012, 2013).

However recent findings from BSF do demonstrate risk moderation, such that BSF had a positive impact on relationship quality, but not relationship stability, for the quarter of couples in the sample with the highest levels of risk factors. But this evidence for the benefit of BSF for high-risk couples is slight as the moderated effect size for high-risk couples was very small and only found to be significant because of the very large sample size in that well-funded study (Amato, 2014).

Transition to parenthood programs for universal populations have generally demonstrated some ability to improve individual and family well-being, although effect sizes are on average small and few studies have followed participants for very long after the end of the intervention (Pinquart & Teubert, 2010). Recently, an Australian program for expectant couples demonstrated small-to-moderate positive effects for women's but not men's observed relationship communication behaviors (Halford, Petch, & Creedy, 2010; Petch et al., 2012). For high-risk

women only, but not for low-risk women or men, there were also positive effects on reported couple relationship adjustment and parenting intrusiveness (but not parental sensitivity). Thus, this universal program showed some limited promise, but largely for high-risk women's behavior and even then results were partial and modest.

In contrast, Family Foundations (FF), a universal, preventive program for expectant couples, has demonstrated substantial positive program impacts on a broad array of parent, child, and family relationship domains through child age 3 (Feinberg, Jones, Kan, & Goslin, 2010; Feinberg & Kan, 2008; Feinberg, Kan, & Goslin, 2009). Our approach to prevention around the transition to parenthood has differed from others' by strategically focusing on enhancing the coparenting relationship, based on both theoretical and strategic practical considerations (Feinberg, 2002, 2003). Moreover, although implementation can occur across a range of community contexts, FF was initially designed to be delivered through childbirth education departments--a universal, non-stigmatizing, and sustainable institutional niche (Belsky & Pensky, 1988).

Given the potential reach of FF, and the impact shown to date, the next step is to examine the potential of FF for enhancing child well-being over a longer period of time and across multiple settings. Only by documenting the full extent of prevention outcomes, and thus the full benefit, can appropriate decisions be made about disseminating a program based on cost/benefit analyses. Thus, in this paper, we assess intervention effects on both children's social-emotional and academic adjustment, as reported by parents and teachers at child age six to seven, six years past the end of the intervention.

Risk and opportunity in the transition to parenthood

Parenthood, with changes in roles, relations, routines, responsibilities and identities (Cast, 2004; Levy-Shiff, Dimitrovsky, Shulman, & Har-Even, 1998) represents a paradigmatic life change. The Cowans have argued persuasively that the stresses and vulnerability of even "low

risk” couples have been underestimated: Parents who are married, have fairly good relationships, and are well off in socio-economic terms, experience difficult strains as they enter parenthood and create an “emergent family system” (Cowan & Cowan, 2000); see also (Belsky & Pensky, 1988). Problems in individual emotional health—such as elevated rates of depression among parents of young children (Perren, von Wyl, BÃargin, Simoni, & von Klitzing, 2005)-- is probably reciprocally linked to the deterioration of couple relationship quality in many families (Kurdek, 1999; Shapiro, Gottman, & Carrere, 2000). Even if parents eventually recover good relationship quality and mental health, stressful family processes in these early years may affect children during sensitive developmental periods (Cowan & Cowan, 1992; Sollie & Miller, 1980; Wakschlag & Hans, 1999).

At the same time, theory and research suggests that the transition period is perhaps the best time to intervene because of parents’ particular openness to change (Duvall, 1977; Elliott et al., 2000; Halford, Markman, Kline, & Stanley, 2003; Pryce, Martin, & Skuse, 1995) and malleability of the newly emerging family system. Building strong, positive, cohesive family relationships beginning at the transition to parenthood could have long-term impact on family relations as well as children’s developmental outcomes.

Rationale for the Family Foundations Approach

The Family Foundations preventive intervention supports families during the transition to parenthood, and has been strategically developed as a universal prevention program to be delivered through an existing, institutional niche: childbirth education (CBE) departments (Belsky & Pensky, 1988), which are considered universal, non-stigmatizing settings.

Family Foundations focuses on the coparenting dimension of the couple relationship based on the view that coparenting is malleable, circumscribed, and represents a causal influence on parenting and child outcomes (Feinberg, 2002). Coparenting is one subset or dimension of the overall couple relationship. Thirty years ago, researchers concluded that the strongest familial

predictor of child emotional and behavior problems was interparental discord (Emery & O'Leary, 1982; Hetherington, Cox, & Cox, 1982). Abundant research over the past few decades has illuminated how hostile, dysregulated conflict between parents can disrupt calm, affectionate, competent parenting as well as child well-being (Erel & Burman, 1995; Whiteside & Becker, 2000). Moreover, the influence of couple relations on processes such as infant social referencing and attachment security emerges very early (Dickstein & Parke, 1988; Frosch, Mangelsdorf, & McHale, 2000; Vondra, Hommerding, & Shaw, 1999).

Couple conflict concerning children has been found to have particularly negative impact on children (Davies & Cummings, 1994). We view such conflict over children, as well as difficulties in agreeing on and coordinating childrearing principles and practices as part of the coparenting dimension of couple relations (Feinberg, 2002). Conflict between parents related to childrearing is particularly important for parenting and child outcomes for two reasons: First, such difficulties are more apparent to children as they occur frequently in the midst of parenting interactions, and elicit child involvement in the conflict (as well as feelings of guilt for the conflict) more readily than non-child related conflict. Second, in the early years of parenting, the amount of time and effort required to attend to a child's needs, the number of new tasks and roles that must be adopted, and the subjective importance of parenting for most parents, means that child-related conflicts take on great importance for parental well-being (Feinberg, 2002). Thus, research and theory leads to the conclusion that coparenting is more closely linked to parenting and child outcomes than the overall couple relationship—especially early in childhood (Feinberg, Kan, & Hetherington, 2007; Frosch et al., 2000).

The FF strategy of targeting the coparenting relationship has been successful, at least in the early years of parenting. The program enhanced coparental support and reduced coparental undermining through at least child age 3 years, based on both parent report and video observation

with the same sample that we focus on in the current report (Feinberg et al., 2010; Feinberg & Kan, 2008; Feinberg et al., 2009). In support of our theoretical model, results demonstrated that the program also reduced mothers' and fathers' reported parental stress and enhanced parent self-efficacy, as well as reduced maternal depression, from posttest (about six months after birth) through child age 3 years (Feinberg et al., 2010). We also found that parenting quality improved for those exposed to FF: At one year after birth, FF parents were rated as more warmly affectionate to children than control parents based on video observation; and at three years, FF parents reported that they were less over-reactive and less lax towards their child, and that they used less physical punishment than control parents (Feinberg et al., 2009). Moreover, children in families exposed to FF showed better adjustment than control children: At one year, FF children demonstrated greater capacity for self-soothing (by videotaped observation coding) than control children. At three years, FF children showed greater social competence, and boys showed fewer emotional and behavior problems relative to control children, according to parent report (Feinberg et al., 2010). Mediation analyses showed that program impacts on behavior problems were mediated by earlier impact on coparenting relations between parents (Solmeyer, Feinberg, Coffman, & Jones, 2013).

Long-term Evaluation of Family Foundations

These results, demonstrating positive impact across time and domains, are promising. However, it is important to fully understand program impacts across a longer period of time in order to estimate the economic benefits of programs prior to widespread dissemination. For example, impact on boys' externalizing at age 3 is a promising sign that the program may have long-term impact on this costly outcome; the economic costs for externalizing behavior become substantial as children age and costs related to special education, treatment services, and, eventually, criminality emerge.

In addition, some outcomes, such as academic adjustment, cannot be measured until children enter school, when teacher report of such outcomes can provide a non-family perspective that is less susceptible to potential demand characteristics and biases. The available research suggests that coparenting relations may both directly and indirectly, through parenting quality, influence children's school success (Cowan, Cowan, & Mehta, 2009).

In addition to the possible direct link between coparenting quality and school adjustment, FF may have long-term indirect effects on children's school adjustment through the program's impact on parenting quality and early child self-regulation and adjustment. As the first important developmental context, the family environment is a key influence on children's development of attentional, emotional, and behavioral regulation [e.g., (McCullum & Ostrosky; NICHD Early Child Care Research Network, 2005; Perlman, Camras, & Pelphrey, 2008) and school adjustment and achievement (NICHD Early Child Care Research Network, 2008) also see (Clark & Ladd, 2000; Cowan, Cowan, Ablow, Johnson, & Measelle, 2005; Hastings & De, 2008; Hastings et al., 2008; NICHD Early Child Care Research Network, 2004, 2008) Attentional capacity and control, a foundational resource for other forms of self-regulation), may be particularly sensitive to the family environment (Fearon & Belsky, 2004; Findji, 1998)--including difficulties in the interparental relationship (Carlson, Jacobvitz, & Sroufe, 1995; Davies, Woitach, Winter, & Cummings, 2008; Towe-Goodman, Stifter, Coccia, Cox, & Investigators, 2009). Thus, FF's impact on enhancing coparenting and parenting quality may enhance multiple dimensions of children's self-regulation that are crucial factors for successful school adjustment.

Moderation of Long-Term Intervention Impact

The moderating role of child gender on the relation of family factors to child adjustment has received substantial attention, but the findings are complex and sometimes inconsistent, with some studies demonstrating no moderating effects, and others demonstrating inconsistent effects

(Buchanan, Maccoby, & Dornbusch, 1991; Floyd, Gilliom, & Costigan, 1998; Floyd & Zmich, 1991; Margolin, Gordis, & John, 2001; McHale, 1995). One study has found that couple relations deteriorate more sharply over the transition to parenthood for parents of girls than boys (Doss et al., 2009), perhaps because fathers tend to be more engaged in parenting and family life when a boy is born. We found intervention effects for several dimensions of child behavior problems for boys but not girls at age 3 years (Feinberg et al., 2010). This result is consistent with findings indicating that boys are at higher risk for social adjustment problems than girls (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Squires, Bricker, & Twombly, 2004; Zahn-Waxler, 1993; Zoccolillo, 1993), with consequently greater potential for detecting effects for boys. It is reasonable to expect continued gender moderation on school-related outcomes as boys demonstrate greater difficulty in school than girls, for example being retained in a grade or entering special education more frequently than girls in early school years).

In addition, we hypothesized that baseline couple interaction quality would moderate intervention effects. In general, preventive intervention effects are frequently found to be stronger when an individual or family demonstrates higher levels of problem behaviors, thus permitting more opportunity for reduction (Burig, 2002; Spoth et al., 2013). It is also possible that families with greater problems are more highly motivated to engage in the program compared to others, leading to stronger intervention effects. We found such results for couple baseline observed hostility with regard to FF effects on parent psychological and physical aggression to the child at age 3 (Kan & Feinberg, In Press), and expect a similar moderation effect for long-term child outcomes. However, it is also possible that effects are greatest for lower risk couples if high-risk couples are unable to make use of the tools and strategies offered by the preventive intervention (Markman & Rhoades, 2012; Wadsworth & Markman, 2012).

Methods

Procedures

The Family Foundations study sample consists of 169 heterosexual couples who were at least age 18, living together, and expecting a first child. Couples were primarily recruited through two childbirth education programs, as well as through media advertisements, fliers, and word of mouth. Couples resided in two cities in Central Pennsylvania. Median family income was \$72,500; average number of parent education was 15.39 (SD=1.75). Average age at time of recruitment was 28.27 (SD=4.96) for mothers and 29.74 (SD=5.63) for fathers. Further details are available elsewhere (Feinberg & Kan, 2008).

In order to evaluate the efficacy of the intervention, respondents were randomly assigned to intervention and control groups by the study coordinators, using a random number table.

The Family Foundations intervention program consisted of eight classes, with four weekly classes conducted during the 2nd or 3rd trimester of pregnancy and four weekly classes conducted within the first months post-partum. Classes focused on emotional self-management, conflict management, problem solving, communication, and mutual support strategies that foster positive joint parenting of an infant. Approximately 80% of couples attended at 3 or more classes prenatally, while 60% of couples attended at least 3 classes post-partum. A male-female facilitator team led each class; the female was a childbirth educator in all cases, and males came from various backgrounds but had experience working with families and leading groups. Respondent engagement and participation were assessed through weekly homework assignments, participant feedback, and facilitator-team's ratings of participant engagement. Control group families were mailed literature on selecting quality child care and developmental stages.

Data were collected in five waves, beginning with a baseline or pretest wave during pregnancy. These baseline data were collected during home visits that included parent

questionnaires and videotaped family interaction. After the baseline visit, couples were randomized into either intervention or control conditions (see Figure 1). At child age 6-8 months, posttest (wave 2) data were collected via mailed questionnaires. Additional data were collected in home visits at child age 1 year (wave 3) and 3 years (wave 4). This report focuses on wave 5 data collected at early school (age 5 to 7.5), with mailed questionnaires to parents and (with parent consent) teachers. Parents and teachers were each paid \$25 for completing the wave 5 measures. Initial data collection at pretest occurred from 2003-2005, with subsequent data in waves 2-4 collected in years corresponding to the child's age at follow-up. Data for the school-age follow-up were collected in 2009-2010.

The school-age follow-up, the focus of this study, was not originally included in the design of the study and was not externally funded. Consequently, unlike prior waves, we did not continue to contact participants with newsletters and birthday cards as a way to monitor address changes and maintain a relationship with the families after wave 4.

Participants

Six of the 169 enrolled study families were deemed ineligible because of severe child medical problems (N=4) or multiple births (N=2). Of the remaining 163 families, 60% (N=98) provided school-age parent and/or teacher data pertaining to the child's behavior and development. Within the age window for wave 5, teacher surveys were completed for 77 study children (39 intervention condition; 38 control) while parent surveys were completed for 78 subjects (41 intervention; 37 control). Mean child age when parents completed the survey was 6.17 years (SD=0.63). Sixty-one percent of children were male. Age and gender did not vary by condition status. In 8 of the participating families, parents were no longer living together when we last assessed residential status at child age 3 years; these cases were evenly split by condition.

We investigated whether differential attrition existed across intervention condition using logistic regression models predicting whether families participated at wave 5. Several demographic and key study variables were included as predictors in this model including family income, child gender, parental education, economic strain, marital status, frequency of psychological violence, and father report of couple conflict. From this analysis only one variable was found to significantly predict likelihood to participate differentially across condition: higher income was associated with significantly ($p < 0.05$) higher likelihood of wave 5 participation in the control group. Income was included as a control variable in all outcome models to help reduce confounding based on group differences. Concerns for missing data are discussed below.

Measures

Child Outcomes. The Strengths and Difficulties Questionnaire (SDQ) is a behavioral screening questionnaire developed by (Goodman, 1997) used to measure child adjustment. Among study children, a parent (in almost all cases, the biological mother) completed the SDQ. Given evidence from prior studies regarding the impact of coparenting quality on children's behavior problems, we focused on the subscales for Conduct Problems ($\alpha = 0.60$) and Emotional Problems ($\alpha = 0.59$). We note that internal consistency for the SDQ scales are consistent with averages reported in a recent review of 26 studies (Stone, 2010).

Teachers completed a version of the Child Behavior Checklist (CBCL) for Ages 1.5-5 (Achenbach & Rescorla, 2000), adapted for this project to be used in schools for early grades. We report outcomes using summed CBCL item scores for two broad CBCL sub-scales: Internalizing behavior (36 items, $\alpha = 0.82$) and Externalizing behavior (24 items, $\alpha = 0.92$). Teachers also rated study children on two school-related measures as indicators of school adaptation: Learning Engagement and Academic Motivation. Learning Engagement (Bierman et al., 2008) contains 9 items ($\alpha = 0.95$) and employs a 6-point Likert scale to assess child behaviors, personal

characteristics, academic aptitude, and performance within the classroom. For example, the teacher is asked to indicate how much he/she feels the “child appears happy and engaged at school” and if the “child is able and willing to follow teacher instructions.” The Motivation subscale of the Academic Competence Evaluation Scales (Diperna & Elliot, 1999) contains 11 items ($\alpha=0.96$) and employs a 5-point Likert scale to assess a student’s approach, persistence, and level of interest regarding academic subjects.

Model predictors. Control variables included child age at wave 5, baseline parental education (highest grade completed by either mother or father), marital status (0=cohabiting, 1=married), and baseline family income (measured in \$10,000 increments). Separate indicator variables (0,1) were included for whether intervention group and whether the child was male. To assess prenatal couple hostility without relying on parent report (to minimize reporter bias), we coded hostility from videotaped couple interactions at baseline. Couples engaged in two six-minute periods of taking turns talking about their own individual difficulties during the previous day; couples then engaged in a 12-minute couple conflict discussion in which they discussed topics they had rated as conflictual and tried to come to a resolution. Trained coders, blind to condition, used a 5-point Likert scale to rate degree of contempt, hostility, and demandingness separately for both mother and father behavior across the interaction sequences (reliability: ICCs were .63 for mother and .88 for father behaviors). Each partner’s scores were averaged to create a couple-level negative communication score; Cronbach’s alpha for the six items was .84 (Feinberg et al., 2009). Due to positive skewness, a logarithmic transformation was used to adjust the distribution of this variable.

Analysis

Linear regression models were used to separately model each wave 5 outcome. For each outcome, we examined main effects for differences between intervention conditions as well as

whether child gender or couples' baseline negative communication moderated condition effects. Main effects for the intervention condition are reported below only if the interaction coefficients were found to be non-significant ($p > .05$). Where significant interactions were detected, post-hoc tests were performed to assess group effect by gender or couples' baseline negative communication, as appropriate. We also assessed whether child gender moderated the Negative Communication X intervention condition effect (using tests of 3-way interaction terms). Tests of these higher-level interactions were non-significant, and thus were not included in final models.

In order to reduce influence of outliers, we truncated several outcome measures (all teacher-report measures): CBCL Internalizing (1 case) and Externalizing (3 cases); Academic Motivation (5 cases). Truncation levels were determined through examination of univariate box-plots showing thresholds for extreme values. Almost all outcome measures also were positively skewed. Accordingly, we used Huber-White sandwich techniques to obtain robust standard errors (Satorra, 1994). In order to check the sensitivity of results to distributional characteristics, we ran alternative models for a sub-sample of our outcomes using a log-transformed version of the outcome. In all cases, significance results were the same in these sets of alternative models indicating analyses were not sensitive to whether or not we used transformations. Therefore, we present results below based on analyses of non-transformed dependent variables.

Missing data were a concern given attrition that occurred in the sample through wave 5. The vast majority of missing values occurred at the last measurement period, where up to four years had elapsed between waves and new reporters (i.e., teachers) were asked to participate. Thus, we determined analyses on complete data as more appropriate for this study. However, in order to assess the risk that missing data may bias results and also whether increased power may result through increased sample size, we carried out alternative analyses based on multiple imputation procedures. Missing data models were implemented separately by intervention condition and

included several key background variables (including family income, parent age, and marital status) and baseline characteristics (covariates such as parent depression levels and argumentative styles). Coefficients from regression models on 60 imputed data sets were then combined using standard methods (Sinharay, Stern, & Russell, 2001). The results from these models agreed with the results on the complete data in 14 of the 18 statistical tests (six outcomes tested as main effects, as moderated by child gender, and as moderated by Negative Communication style), assessed in terms of statistical significance at $p < .05$. One of the cases where differences were found involved a test for a main effect: A significant effect in complete case analysis (main effect for CBCL Internalizing) was non-significant using models with missing data accommodation. Given that results were similar, we present results below based on complete cases to avoid potential unobserved factors influencing MI results (Spratt et al., 2010).

Results

Descriptive statistics and scale properties are presented in Table 1. Results on tests of intervention main effects and intervention condition X child gender effects are provided in Table 2.

We found no evidence of significant intervention group main effects on Conduct problems nor Emotional problems as reported by parents on the SDQ, nor on Academic Motivation or Learning Engagement as reported by teachers. Tests of group differences moderated by child gender for these outcomes were also non-significant. Group differences were evident through analyses of the CBCL measures, however. Tests of main effects for intervention condition on the teacher-reported CBCL indicated that intervention group children had significantly lower Internalizing scores ($p < .05$). From analyses of the CBCL Externalizing scores, we found evidence of significant condition X child gender interaction ($p < .05$). A post-hoc probe of the interactions revealed significantly lower scores among intervention boys in contrast to control boys ($p < .05$). Effect sizes are provided in Table 2, representing group differences in model adjusted outcome

means (where a significant condition X child gender interaction was present, this effect size represents the difference between intervention conditions among male children).

Moderation by pre-intervention observed parental communication style

Overall, parent observed Negative Communication was found to be a consistent moderator of intervention effects across outcomes indicating a stronger pattern of intervention impact among families with higher levels of relationship distress at baseline (Table 3). The Negative Communication X intervention condition coefficient was negative in the model for the SDQ Emotional Problems scale ($p < .05$). This same result was found in both models for the teacher-reported CBCL scales.

Figure 2 provides examples of the nature of the linear interaction between intervention condition and Negative Communication, using the SDQ Emotional Problems scale. The figures show that as levels of pre-test Negative Communication increase, Emotional Problems scores increase linearly for control group participants but decline for those in the intervention group. Inspection of plots for other outcomes showed similar patterns. For the SDQ emotional problems model plotted in Figure 2, post-estimation tests indicated that both slopes were significantly different from zero ($b = 2.68$ for the control group; $b = -1.68$ for the intervention group; both $p < .01$). For illustrative purposes we also provide effect sizes calculated from differences in model adjusted group means based on a higher level (75th percentile) of pre-intervention Negative Communication (Table 3).

Discussion

In summary, we found a moderate-sized intervention effect about six years after the end of the 8-session program on teacher's report of children's internalizing symptoms for the whole sample. In addition, we found evidence of a large intervention effect on boys' externalizing problems by teacher report. Finally, we found that the program buffered the risk conferred by

hostile couple conflict during pregnancy on almost all parent and teacher reported outcomes—including internalizing, externalizing, and school adjustment indices. These results support the strategy of intervening at the transition to parenthood, and indicate that an approach focused on enhancing the coparenting relationship can have positive long-term impact on children—especially for those children at higher risk due to their parents’ history of prenatal couple conflict.

The finding of beneficial program impact on teacher report of boys’ but not girls’ externalizing problems may be due to differences between boys’ and girls’ development of externalizing in early childhood. However, we only found one instance of gender moderation, and this result was not replicated across measures or reporters and thus must be interpreted with caution. On the other hand, this finding is consistent with gender moderation results obtained for children’s externalizing at age 3 by mother report (Moody, Brynildsen, Osgood, & Feinberg, published online 2010).

It is not clear if the lack of similar findings for parent report is due to the different measures reported on by parents and teachers (we utilized a shorter measure with parents to minimize burden) or because parents were not as sensitive to intervention impact at this stage. However, we note that the teachers were blind to condition, while the parents were not blind as they were aware of their family’s original assignment to the program or control condition. Thus, teacher report is a less potentially biased source of data. Further, the results by teacher report of significant impact on all children’s internalizing and boys’ externalizing mirror the results obtained at three years earlier when parents reported on child adjustment using a version of the same CBCL measure. The consistency in the pattern of results over time with the same measure, but across raters, suggests that the failure to find impact by parent report at this wave of data collection is due to the use of a different, briefer, perhaps less sensitive measure.

The second set of moderation results indicate that the program is more beneficial for children's school-age adjustment among families in which parents expressed relatively more hostility towards each other during a videotaped couple interaction during pregnancy than other couples. These moderation results demonstrate a consistent pattern of significant risk moderation on five out of six study outcomes; these findings thus show consistency across both measures and parent- and teacher-report. Given the intervention's focus on improving couple interaction styles and conflict resolution, (Feinberg, 2002) these findings suggest that the intervention is beneficial for children's long-term well-being when parents show moderate to high levels of couple conflict before birth. As found in other explorations of risk moderation in the context of prevention, when parents show very low levels of hostile conflict, the program has little room to improve outcomes. In this case, we expect that the program has either helped couples minimize conflict, or has helped couples to develop positive coparenting strategies to buffer the emerging family processes from the effect of negative couple interaction. Future research should further examine pathways to these moderation results.

Although these moderation results may lead one to consider implementing the program in a targeted manner, several considerations must be noted. First, it is possible that it would be expensive, unwieldy, or difficult to screen couples accurately at the transition. Second, it is possible that groups comprised of couples who have relatively high levels of mutual hostility would become iatrogenic; or at least one would expect that positive modeling provided by better adjusted couples may be missing from the group experience. Third, our prior work showed positive program effects on other outcomes such as parental stress and depression that were not moderated by prenatal level of risk. Further research and development would be helpful before practitioners adopt a screening and targeted implementation approach. Moreover, the main effects of the

program on internalizing and boys' externalizing indicate that the program is beneficial in some respects for children from lower risk families as well.

The limitations of this study should be noted. The results are based on the sample of participants who responded to follow-up data collection invitations that were sent out three years after the last planned data collection period. Although effects are consistent with the data collected at the last time point (e.g., impact on externalizing for boys only), the reduced sample is a limitation. Moreover, although the sample had a wide range of income and education, the sample was not representative and, as with many couple-oriented programs, attracted more educated and middle class participants than those with lower levels of income and education. Such a bias may have reduced in particular the numbers of children who showed problem behaviors, and thus may have limited our ability to detect intervention effects in general, and perhaps particularly for girls' externalizing (CBCL). Results are based on models of parent- and teacher-report data. Unfortunately, the children were assessed by teachers on the younger version of the CBCL measure. We did not collect father-report on the CBCL for the school-age follow-up. It is possible that results from father-report measures would indicate different results.

Although results of this study await future replication, the findings do suggest that a coparenting-focused transition to parenthood program of modest dosage can have long-term effects—particularly for families with higher levels of prenatal couple relationship risk. This is consistent with our earlier work in which we found some stronger effects for participants with lower levels of education (Feinberg & Kan, 2008), representing a higher level of risk. These results are in contrast to the overall message from the Building Strong Families findings, part of the federal government's Healthy Marriage Initiative (Wood, McConnell, Moore, Clarkwest, & Hsueh, 2010), as discussed in the Introduction. The overall null findings from that study, with small and time-limited effects at one of the study sites but iatrogenic effects at two other sites,

might lead to the conclusion that couple-focused transition-to-parenthood interventions do not benefit lower risk families. However recent findings from BSF do demonstrate risk moderation, such that BSF had a positive impact on relationship quality, but not relationship stability, for the quarter of couples in the sample with the highest levels of risk factors. But this evidence for the benefit of BSF for high-risk couples is slight as the moderated effect size for high-risk couples was very small and only found to be significant because of the very large sample size in that well-funded study (Amato, 2014). Similarly, the Australian study of a transition to parenthood program also found benefits for high-risk participants; but here the positive findings were also small, and no benefits were found for men (Petch et al., 2012).

Further insight into potential impact of such programs will be gained as we are currently testing adapted versions of the Family Foundations model with teen parents and with high-risk expectant parents receiving home visiting services. Moreover, the findings reported here that Family Foundations especially benefited children whose parents displayed prenatal relationship conflict indicate that multiple indicators of risk should be considered in prevention targeting, including demographic and family functioning.

In summary, the results of this study suggest that policymakers and practitioners should explore options for supporting parents through the transition to parenthood. This long-term follow-up study of the effects of a couple-focused, transition-to-parenting program indicates substantial positive impact on children's internalizing and boys' externalizing problems by teacher report. Moreover, children born to couples who experienced relatively higher levels of conflict during pregnancy appeared to especially benefit, with results showing not only greater program impact on internalizing and externalizing for such children, but also for school functioning. Although these moderation results may tempt practitioners and policymakers to advocate administering the

program only to couples screened as high on couple conflict, we believe that such an approach is not warranted.

Table 1
Measure psychometrics and sample descriptive information

Variable	Reporter	# items	Alpha	Control		Intervention	
				Mean	SD	Mean	SD
Negative Communication	Observer	6	0.85	0.60	0.37	0.60	0.25
Learning Engagement	Teacher	9	0.95	5.37	0.69	5.32	0.80
Academic Motivation	Teacher	11	0.96	37.27	6.42	36.29	8.18
SDQ Conduct Problems	Parent	5	0.60	5.78	1.20	5.79	1.04
SDQ Emotional Problems	Parent	5	0.59	6.15	1.49	6.12	1.32
CBCL Internalizing	Teacher	36	0.82	3.85	4.57	3.18	4.16
CBCL Externalizing	Teacher	24	0.92	3.17	5.23	2.98	4.68

Notes: Strength and Difficulties Questionnaire (SDQ) has a 3-point Likert scale; Learning Engagement and Academic Motivation are rated on a 6- and 5-point ordinal scale, respectively.

Table 2
Regression Coefficients, 95% Confidence Intervals, and Effect Sizes (Cohen's D) for Main and Gender-Moderated Models

Variable	Intervention Condition	Condition X Male	Effect size
Parent Report			
SDQ Conduct Problems	-0.29 (-0.93, 0.37)		
SDQ Emotional Problems	-0.16 (-0.88, 0.55)		
Teacher Report			
CBCL Internalizing	-1.93* (-3.54, -0.31)		0.55
CBCL Externalizing	-1.22 (-3.58, 1.14)	5.28* (0.97, 9.59)	0.75
Learning Engagement	0.06 (-0.28, 0.41)		
Academic Motivation	0.50 (-2.78, 3.77)		

Notes: +p<0.10; *p<0.05; **p<0.01. male = 1; female = 0. Where a significant child gender interaction was found, Cohen's D is calculated for intervention effect among boys.

Table 3
Regression Coefficients, 95% Confidence Intervals, and Effect Sizes for Moderation of Program Impact by Baseline Observed Couple Negative Communication

Variable	Intervention Condition	Negative Communication	Condition X Negative Communication	Effect size at 75th Percentile of Negative Communication
Parent Report				
SDQ Conduct Problems	-0.42 (-1.11, 0.28)	1.81* (0.28, 3.35)	-1.80 (-3.99, 0.39)	
SDQ Emotional Problems	-0.42 (-1.13, 0.28)	2.25*** (1.22, 3.28)	-3.36** (-5.44, -1.28)	0.56
Teacher Report				
CBCL Internalizing	-2.35** (-3.96, -0.73)	8.92*** (5.05, 12.80)	-8.78** (-14.81, -2.75)	0.98
CBCL Externalizing	-1.77 (-3.96, -0.73)	7.90* (0.63, 15.18)	-11.74* (-20.42, -2.52)	0.63
Learning Engagement	0.13 (-0.20, 0.47)	-0.80* (-1.41, -0.07)	1.51** (0.39, 2.62)	0.41
Academic Motivation	0.92 (-2.34, 4.18)	-9.70*** (-14.55, -4.85)	16.35** (5.21, 27.50)	0.40

Notes: +p<0.10; *p<0.05; **p<0.01; ***p<0.001.

Figure 1

Family Foundations CONSORT Flow Diagram

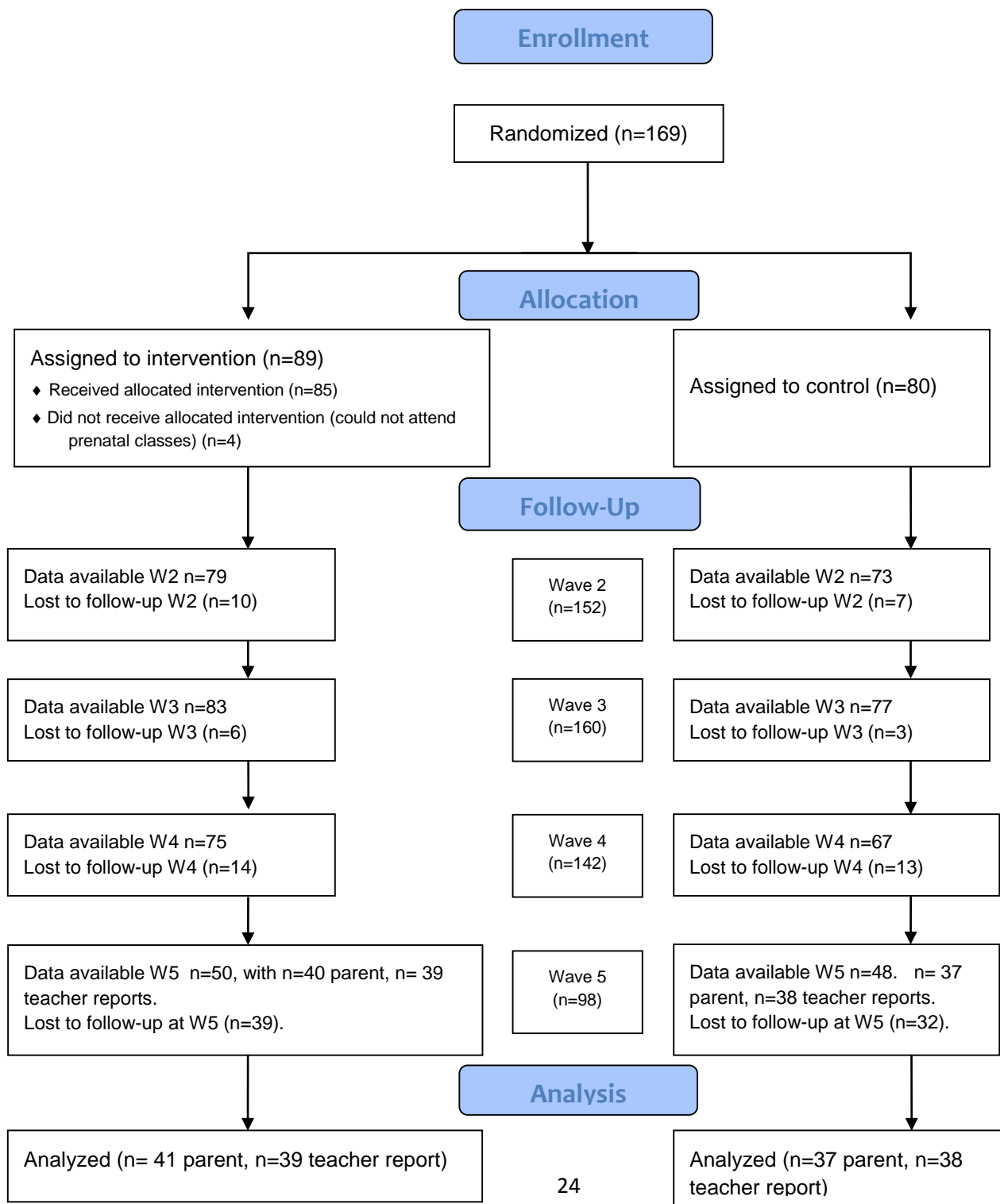
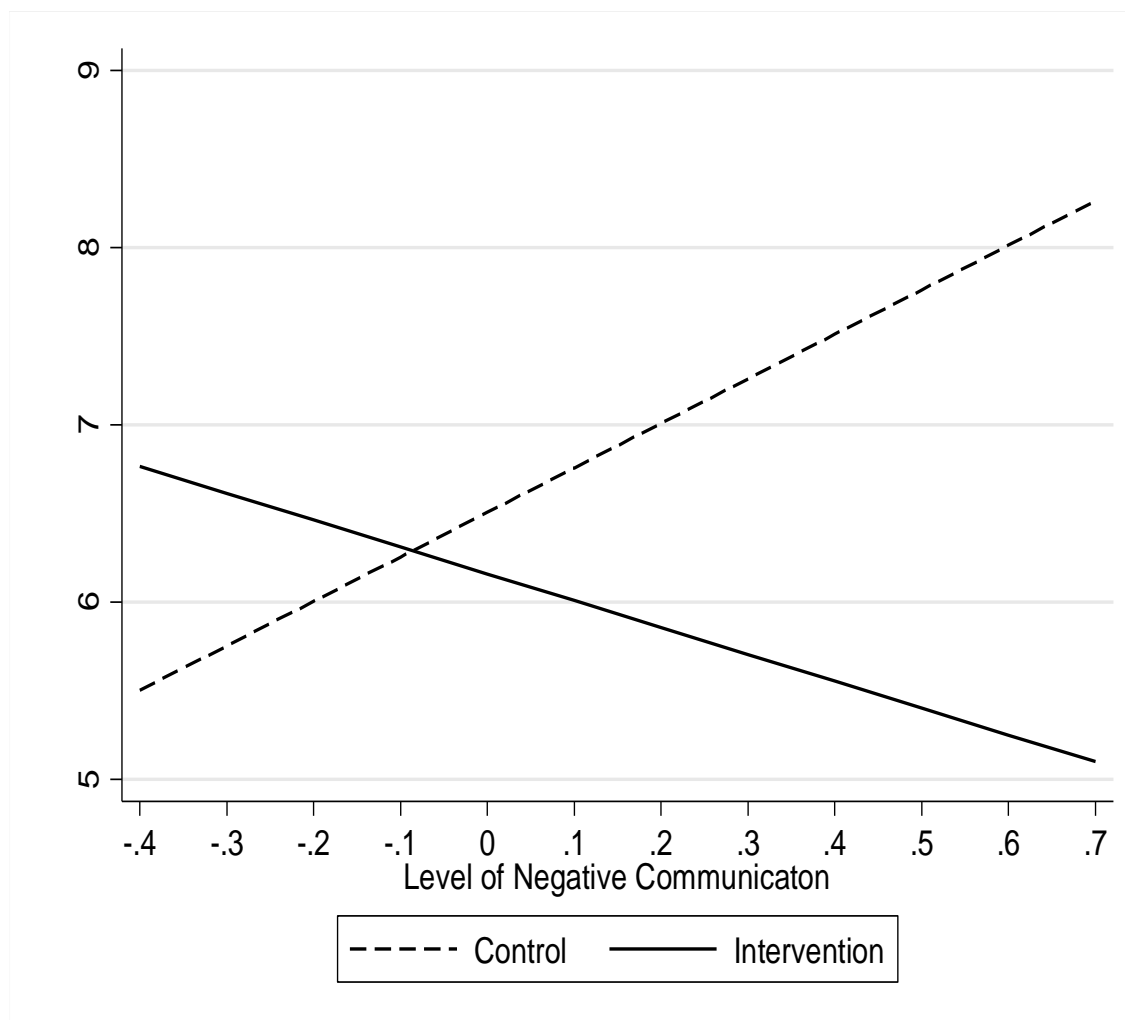


Figure 2

Intervention Condition X Baseline Couple Negative Communication Predicting Parent-Reported SDQ Emotional Problems



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