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Effects of the Oregon Model of Parent Management Training (PMTO) on Marital Adjustment in New Stepfamilies: A Randomized Trial

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Abstract

Effects of intervention with the Oregon model of Parent Management Training (PMTO™) on marital relationship processes and marital satisfaction in recently married biological mother and stepfather couples were examined. Sixty-seven of the 110 participating families were randomly assigned to PMTO, and 43 families to a non-intervention condition. Intervention had reliable positive indirect effects on marital relationship processes 24 months after baseline which in turn were associated with higher marital satisfaction. These indirect effects were mediated by the impact of PMTO on parenting practices 6 months after baseline. Enhanced parenting practices resulting from PMTO prevented escalation of subsequent child behavior problems at school. Consistent with a family systems perspective and research on challenges to marital quality in stepfamilies, improved co-parenting practices were associated with enhanced marital relationship skills and marital satisfaction as well as with prevention of child behavior problems.

Keywords

parent training; marital adjustment; stepfamilies

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The stepfamily is a common family constellation in America (Clarke-Stewart & Brentano, 2006). Prior to 13 years of age, 50% of children in the United States reside in a family comprised of a biological parent and an intimate partner (Stewart, 2007). Remarriage challenges multiple family systems, including the newly established marital relationship (Hetherington, Bridges, & Insabella, 1998), parenting, and child adjustment (Vuchinich, Hetherington, Vuchinich, & Clingempeel, 1991). Each challenge may reverberate throughout the stepfamily system (Margolin, Christenson, & John, 1996). This paper examines the family systems impact of Oregon Model of Parent Management Training (PMTO; Patterson, 2005) on marital relationships in recently constituted stepfamilies by assessing the degree to which changes in parenting practices and child behavior problems produce changes in the marital relationship, and examines the degree to which change in the marital relationship resulting from PMTO produce changes in parenting and child behavior problems.

Establishing and maintaining a satisfying marriage require that couples actively manage a range of issues in the family ecosystem, including the marital relationship, work, household tasks, parenting, and children's needs (Bubolz & Sontag, 1993). As reflected in declines in marital satisfaction (Kurdek, 1999) and substantial divorce rates of remarried couples (Bramlett & Mosher, 2001), these tasks are even more challenging given the complexity and unique issues in their family ecosystem. Models tested in this paper are predicated on the belief that marital quality influences and is reciprocally influenced by multiple facets of the family ecosystem (Falke & Larson, 2007). In both intact and reconstituted families, marital conflict is associated with disrupted parenting and increased child adjustment problems, and child problems and conflict about parenting are associated with increasing marital conflict and dissatisfaction (Jenkins, Simpson, Rasbash, & O'Conner, 2005).

Establishing effective (co)parenting is important in all families, but especially in newly constituted stepfamilies. Stepparents' and biological parents' relationship with children affects marital quality for both husbands and wives. The parenting role for stepfathers is particularly difficult. Studies comparing biological and stepfathers find stepfathers are less involved in discipline and monitoring (Fisher, Leve, O'Leary, & Leve, 2003), display less positive and more negative affect (Fine, Coleman, & Ganong, 1998), set fewer limits (Vuchinich et al., 1991), and employ less effective discipline (Bray, 1988). Problem solving in stepfamilies is more conflicted and less effective (Capaldi, Forgatch, & Crosby, 1994; DeGarmo & Forgatch, 1999). Problems in establishing consistent, cooperative parenting in stepfamilies and their impact on the marital relationship quality is even greater if one or more children display significant adjustment problems (Jenkins et al., 2005).

In their roles as executive agents, parents in stepfamilies need a core set of social-relational skills to develop and maintain satisfying marital relationships and effective co-parenting practices. These skills include clear communication, effective problem solving, positive and supportive social exchange, and the means to resolve conflict (Capaldi et al., 1994; DeGarmo & Forgatch, 1999). As a result of their history, remarried couples may have a low threshold for distress and lack the social skills needed to address the myriad challenges and changes inherent in newly constituted families with children (Brody, Neubaum, & Forehand, 1988). Research indicates a need for preventive interventions to enhance the relationship skills and parenting practices of couples in newly constituted families (Falke & Larson, 2007). Whitton, Nicholson, and Markman's (2008) review of 20 efficacy studies indicates most stepfamily interventions focus on a combination of education about stepfamily issues, enhancing couple communication and problem solving, and parenting and step-parenting practices. However, the efficacy of interventions for stepfamilies is not well established due to an array of methodological shortcomings, including small samples, lack of control groups and randomization, short-term follow-up, and a failure to use standardized outcome measures.

Only two stepfamily intervention studies are methodologically adequate. Forgatch, DeGarmo and Beldavs (2005) reported that a parent training and brief marital enhancement program relative to no treatment led to enhanced parenting practices, and changes in parenting practices in turn mediated changes in child behavior problems. DeGarmo and Forgatch (2007) also reported that this intervention enhanced the involvement and parenting practices of stepfathers which in turn increased children's compliance and decreased children's affect problems. Nicholson and Sanders (1999) found that an intervention to enhance parenting practices in stepfamilies decreased couple's self-reported parenting conflicts and some parent- and clinician-reported measures of child behavior problems.

One single subject design study indicated that enhanced parenting practices resulting from intervention are associated with reduced marital conflict (Dadds, Sanders, Behrens, & James, 1987). Larger studies by Forgatch, Sanders and colleagues have not examined the impact of stepfamily interventions on the marital relationship, nor whether improvements in parenting practices and child adjustment mediate changes in the marital relationship. Intervention studies have also not assessed whether improved marital relationships mediate changes in parenting practices and child behavior problems. As such, the potential family systemic impact of stepfamily interventions has not been fully explored even though PMTO for divorced mothers has been found to result in lasting effects on the family ecosystem, including maternal social support, employment, and economic wellbeing (Forgatch & DeGarmo, 2007). Randomized intervention trials have the potential to provide strong tests of an ecosystem theory of stepfamilies and to provide an experimental test of the causal status of social processes identified in previous research as key to adaptive stepfamily functioning (Coie et al., 1993).

Three hypotheses were addressed. 1. PMTO intervention designed to bolster parenting practices would positively impact marital relationship processes and marital satisfaction in newly constituted stepfamilies with behavior problem children. 2. The impact of PMTO on marital relationship processes and satisfaction would operate through its effect on enhanced parenting practices and reduced child behavior problems. 3. The impact of PMTO on parenting practices and child behavior problems would operate through its effect on martial relationship processes.

Method

Participants

The participants were 110 married biological mother and stepfather families. Families were recruited from a metropolitan area via advertisements in multiple media. To be included, parents had to be married within the previous two years, cohabiting, and have a 5 to 10 year old biological child of the mother. The focal child had to reside in the stepfamily at least 50% of the time, and to display five or more mother-reported conduct problem symptoms during a telephone interview (Parent Daily Report – PDR; Chamberlain & Reid, 1987). If more than two children met these criteria, a coin was flipped unless parents designated a focal child for whom they had greater adjustment concerns.

Participating couples had been married an average of 15.6 months (SD = 12.6). Mothers had been married an average of 2.06 times (SD = .79) and stepfathers an average of 1.54 times (SD = .73). Mean parental age was 31.3 years (SD = 5.4) for mothers and 32.7 years (SD = 6.6) for stepfathers. Approximately 90% of the mothers and stepfathers self-identified as non-Spanish speaking Euro-American. Eleven percent of the mothers and 10% of the stepfathers had less than a high school education, and 36% of the mothers and 32% of the stepfathers had completed high school but had no additional education. The mean gross annual household income was $39,432 (SD = $21,537) and per capita income was $10,047 (SD = $6,642). About 25% of the families lived below the poverty threshold. Sixty-two percent of mothers worked outside the

home (43% for 40 hours or more per week) and 91% of the stepfathers worked outside the home (87% for 40 hours or more per week). The mean number of children under age 18 years in the home was 2.22 (SD = 1.06). The focal children (70% boys and 30% girls) averaged 7.47 years of age (SD = 1.15, range = 5.4 to 9.5).

Design

A randomized experimental design was used, with 61% of the families assigned Parent Management Training-Oregon (PMTO) and the remaining families to a no intervention control. Unequal group assignment provided better power to examine intervention effects (Vinokur, vanRyn, Gramlich, & Price, 1991). Results were examined using an Intention-To-Treat (ITT) analysis based on assessments at baseline, and 6, 12, and 24 months after baseline. Figure 1 provides the study flow chart. Further information is available in Forgatch et al. (2005) and in DeGarmo and Forgatch (2007).

Intervention

The PMTO program is fully manualized (Forgatch & Rains, 1997). It describes specific content for 13 sessions delivered in an individual family format. Each session has detailed agendas, rationales, procedures, and role play and modeling exercises. Parents are provided with skills summaries, home practice tasks, charts, and other resources. The manual is designed to be used flexibly. Interventionists can adapt the timing and application of principles and materials to fit an individual family's needs. The sessions were intended to occur weekly, but accommodated family schedules so both partners could attend. The PMTO program provides learning experiences related to five core parenting practices: skill encouragement, discipline, monitoring, problem solving, and positive involvement. The stepparent program added material to address stepfamily issues (e.g., presenting a united parenting front, and the role of stepparents). Program components are provided in a progressive fashion, beginning with couples' expectations and goals. Family strengths and skills are identified. Parents learn how to provide effective directives and to promote skillful child behavior using contingent positive attention. Parents are provided with non-corporal approaches to discipline, emphasizing a balance between encouragement and punishment. Communication and problem solving skills are described, shaped, and practiced. Monitoring and involvement in child school performance and activities are addressed.

A brief marital enhancement component (Christensen, Jacobson, & Babcock, 1995) was offered to all families in the PMTO condition before initiating parent training; one-fourth of couples declined this component. For these couples, communication and problem solving skills from the marital component were applied to parenting rather than to the marital relationship. The control group received no PMTO or marital enhancement intervention, but was provided a resource guide of family services available in the community. Utilization of those services was not tracked.

The mean number of sessions attended by one or both parents was 11.71 (SD = 4.7). The mean time to termination was 27.42 weeks (SD = 16.2). The mean rate of sessions for those attending 2 or more sessions was one every two weeks. Of the 67 families in the PMTO condition, 11 attended no sessions, 7 attended 1 to 5 sessions, 10 attended 6 to 10 sessions, 22 attended 11 to 15 sessions, and 17 families attended more than 15 sessions (maximum = 27 sessions). For those attending one or more sessions, the mean number of sessions for mothers was 11.6 (SD = 4.7), and for stepfathers was 11.0 (SD = 4.4). The data were analyzed in an intention to treat design including data from all families assigned to PMTO regardless of attendance. This provides an unbiased and conservative test of treatment effects because it includes data from all participants in intervention regardless of attendance, but with a net effect of potentially under-estimating effect sizes (MacKinnon & Lockwood, 2003).

All intervention sessions were videotaped. Three female therapists and one male therapist provided the intervention and received weekly coaching based on observation of their videotaped sessions. A previous report documents the high fidelity of PMTO implementation, and showed high fidelity predicted improvement in parenting practices (Forgatch, Patterson, & DeGarmo, 2005).

Measures

Measures of parenting practices, child externalizing problems, marital relationship processes, and marital satisfaction were collected at baseline prior to intervention, and at 6, 12, and 24 months after baseline. Participants were paid $10 per hour for assessments. Multi-method and -informant constructs were derived from these measures and used to test the hypothesized models.

Parenting practices—Parenting practices were assessed using data derived from 48 minutes of videotaped parent-child interaction. These interactions sampled seven different tasks: (a) refreshments - mother, child and stepfather (5 minutes); (b) problem solving on mother selected issues - mother and child only (7 minutes); (c) problem solving on child selected issues - mother and child only (7 minutes); (d) family cooperation task - mother, child and stepfather (5 minutes); (e) problem solving on couple selected parenting issues - mother and stepfather (7 minutes); (f) problem solving on stepfather selected issues - child and stepfather only (7 minutes); and (g) teaching task - mother and child only (10 minutes). The total of 48 minutes reflects the minimal time to attain adequate sampling reliability for observational measures derived from each task while minimizing participant burden.

Trained observers coded family interaction using the Family and Peer Process code (FPP; Stubbs, Crosby, Forgatch, & Capaldi, 1992) and made global ratings (Forgatch, Knutson, & Mayne, 1992). The FPP codes each member's behavior in real time for content and affect according to the initiator and target of the behavior. The global ratings are completed by coders after each task using well-defined Likert scale items describing the quality, content and characteristics of the interaction, with an emphasis on parenting practices. Approximately 15% of the interactions were randomly selected for blind reliability estimates. The average kappa for FPP coder agreement was .74 for content and .69 for affect. This level of agreement is considered good based on established criteria in observational methodology (Bakeman & Gottman, 1986). Parenting practices were defined as a latent construct at baseline and at 6, 12, and 24 months after baseline using four composite scale indicators at each assessment point: positive parenting and coercive parenting for both the mother and stepfather.

Positive parenting was defined by four coder rating scales: skill encouragement (11 items, alpha > .70), positive involvement (8 items reflecting empathy and affection, alpha > .65), problem solving (13 items including solution quality, alpha > .90), and monitoring (2 items and 3 parent interview items, alpha > .60). Loadings of the four scales on a common factor were greater than .55 for mothers and stepfathers at all assessment points. Three indicators defined coercive parenting: the observed frequency of negative reinforcement (FPP coded coercive exchanges initiated by the parent and terminated by the child), negative reciprocity (parent reciprocation of child aversive behavior, derived from the FPP), and inept discipline (12 coder items reflecting strict or erratic discipline tactics, alpha > .85). Loadings of these indicators on a common factor were greater than .50 for mothers and stepfathers at all assessment points. Measures of positive parenting and of coercive parenting were standardized and averaged separately for mothers and stepfathers to define the parenting construct.

Child externalizing behavior problems—Child behavior problems were assessed at baseline, and at 6, 12, and 24 months after baseline using the T-score for total externalizing

scale of the Child Behavior Checklist (Achenbach, 1991) based on mother and stepfather reports, and at baseline, 12 and 24 months after baseline using teacher reports on the Teacher Report Form (Achenbach, 1991). Different teachers served as respondents for at least three of the four assessment points. The externalizing scale includes items reflecting aggressive (argues, teases, hits) and delinquent (lies, steals) behavior. The scale alphas for externalizing problems were all > .90 at all assessment points.

Marital relationship processes—Four indicators assessed marital relationship processes, each derived from observers' ratings of couples' problem solving about parenting. The first indicator, quality and outcome of problem solving, was defined by 8 items (e.g., good solutions were proposed, pros and cons were considered, a plan was developed, seems likely to follow through on one solution). Alpha for this scale was > .90 at all assessments. The second and third indicators were defined by 7 items describing the relationship quality displayed by each partner toward the other during dyadic interaction (e.g., willing to discuss ideas, treats with respect, provides emotional support). The alphas for these scales were > .90 at all assessments. The fourth indicator was a single item global rating of the overall quality of the marital relationship. The factor loadings of all four indicators were > .85 at all assessments. Measures were standardized and used to create indicators for the marital relationship process construct at baseline, and 6, 12, and 24 months after baseline.

Marital satisfaction—Marital satisfaction was measured using the global score of the Dyadic Adjustment Scale (DAS; Spanier, 1976) as reported by mothers and stepfathers. The DAS is a 32 item scale with well established psychometric properties, and reflects a combination of satisfaction, cohesion, consensus, and affection. The DAS was obtained at baseline, and at 6, 12, and 24 months after baseline. The scale alpha at each measurement point in this sample was > .90.

Results

Descriptive statistics were calculated for measures at baseline to characterize the sample of families and children. Mean marital satisfaction was 94.6 for mothers and 99.1 for stepfathers, below the average of 114 reported by Spanier (1976) for married couples. Marital satisfaction was more than 2 standard deviations below the norm for 13% of mothers and 7% of stepfathers. Mean baseline T-scores for child behavior problems reported by mothers (54.2), stepfathers (55.7), and teachers (56.0) were modestly above mean normative levels (Achenbach, 1991). Twenty-five to 40% of the children were reported as having behavior problems at T-scores > 60, and 5% to 10% at T-scores > 70.

The hypotheses were tested using structural equation modeling, applying AMOS 4.0 (Arbuckle & Wothke, 1999). AMOS uses the full information maximum likelihood (FIML) estimation method. 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. This avoids biased parameter estimates which are likely to occur if pair- or list-wise deletion is used to compensate for missing data (Wothke, 2000). FIML identifies population parameters most likely to have generated observed data through iterative logarithms that "audition" different values for unknown parameters. The values that maximize the log likelihood are ultimately chosen as parameter values (Enders, 2005; Shaffer & Graham, 2002).

Changes in Parenting and Marital Processes and in Child Behavior Due to PMTO

A series of growth models were tested to estimate change in positive and coercive parenting, child behavior problems, and marital relationship processes, and marital satisfaction at baseline, and at 6, 12 and 24 months after baseline. Using multi-group models, intercept was

set at baseline and change was estimated as a linear function of time. Model parameters were compared for the PMTO and no intervention groups. Child gender and age were used as predictors of baseline levels of parenting and child externalizing problems, and months since remarriage as a predictor of baseline levels of marital relationship processes and marital satisfaction. All these linear growth models fit the data adequately, with ranges: X^2/df = 0.67 to 1.94, CFI = .916 to .999, RMSEA = .001 to .081. Standard criteria for adequate model fit are X^2/df < 2.00, CFI > .925, and RMSEA < .08 (Arbuckle & Wothke, 1999).

Estimated parameters for the growth models are shown in Table 1, with intervention group contrasts ($Z_{difference}$) (all tests are two-tailed). The most relevant parameter for group comparison is mean slope (shaded in Table 1), indicating average direction and amount of change in each outcome measure over time. The PMTO group showed a significant mean increase in positive parenting (.03, $p < .01$) and a marginally significant decrease in coercive parenting (−0.019, $p < .10$) compared to non-significant change in positive parenting (.01) and a significant increase in coercive parenting (.042, $p < .05$) for the control group. The group difference for change in positive parenting was marginally significant ($Z = -1.79$, $p < .10$) and in coercive parenting was significant ($Z = 2.32$, $p < .05$).

The PMTO group showed a mean increase in positive marital relationship processes (0.74, $p < .01$), but there was no such change in the control group (−0.15), and the group difference in change was significant ($Z = -2.60$, $p < .05$). There was no significant change in maternal marital satisfaction in the PMTO group (−2.7) but a reliable decrease in the control group (−9.6, $p < .05$). This group difference was significant ($Z = -1.97$, $p < .05$). The marital satisfaction of stepfathers in the PMTO group declined significantly (−2.0, $p < .05$) whereas that of stepfathers in the control group did not change (0.1), a marginally significant group difference in change over time ($Z = 1.87$, $p < .10$).

There was no significant change in mother-reported child behavior problems in either the PMTO (−1.6) or the control (−0.4) group. There was a significant decline in stepfathers' reports of child behavior problems in the PMTO group (−1.5, $p < .05$) but no change in the control group (−1.0). Group differences in parent-reported change in child problems were not significant. There was no significant change in teacher-reported child behavior problems (5.0) in the PMTO group, but a significant increase in the control group (19.4, $p < .001$), a significant group difference ($Z = 2.79$, $p < .01$).

Models of the Family Ecological Effects of PMTO

A structural equation model was used to assess the effect of PMTO on marital relationship processes and marital satisfaction, as potentially mediated by changes in parenting practices and child behavior problems. Correlations among indicators in this model are shown in Table 2. Consistent with principles for optimal tests of mediation (Baron & Kenny, 1986), the model was defined so that putative mediators (parenting practices and child problems) of treatment (delivered between baseline and 12 month assessment) effects were represented as occurring temporally after treatment (at 6 month and 12 month assessments, respectively) and temporally before assessment of the outcome variables of marital relationship processes and marital satisfaction at 24 months. The model fit the data adequately and is shown in Figure 2 (indicators for the constructs and the effects of child gender and age on parenting practices are not shown for clarity). All tests are two tailed. Controlling for baseline parenting, PMTO had a significant positive impact on parenting practices at 6 months compared to the control group ($b = .24$, $p < .01$). Improvements in parenting practices at 6 months were linked to fewer child behavior problems at 12 months ($b = -.32$, $p < .01$) after controlling for baseline child problems. The beneficial effects of PMTO on parenting at 6 months and on child behavior problems at 12 months are similar to those reported by Forgatch and DeGarmo (2005) and provided here

preliminary to assessing the hypothesized effects of PMTO on marital relationship processes and marital satisfaction.

As also shown in Figure 2, observed parenting practices at baseline were concurrently related to constructive marital relationship processes ($b = .54$, $p < .01$) which in turn were related to concurrent marital satisfaction ($b = .50$, $p < .001$). There was no direct relationship between parenting practices and marital satisfaction or between child problems and marital relationship processes at baseline. Child behavior problems were reliably related to concurrent marital satisfaction ($b = -.31$, $p < .05$) at baseline. Marital duration was negatively related to marital satisfaction at baseline ($r = -.34$, $p < .05$).

The key hypothesis in this model concerns the impact of PMTO on marital relationship processes and marital satisfaction, either directly or indirectly as mediated via changes in parenting and child behavior problems. As shown in Figure 2, PMTO did not have a direct effect on marital relationship processes ($b = .05$, n.s.) or on marital satisfaction ($b = -.11$, n.s.) at 24 months, controlling for effects of baseline parenting practices. PMTO did have an indirect effect on marital relationship processes at 24 months via change in parenting practices at 6 months ($b = .43$, $p < .01$), and marital relationship processes in turn were reliably related to marital satisfaction at 24 months ($b = .67$, $p < .001$). Potential mediation effects were assessed by testing models in which the path from parenting to marital relationship processes was set to 0. This alternate model fit the data less well and resulted in non-significant direct paths from PMTO to marital relationship processes and marital satisfaction at 24 months. After controlling for the relation of child problems to marital satisfaction at baseline and for continuity in marital satisfaction ($b = .69$, $p < .001$) and in marital relationship processes ($b = .26$, $p < .05$), child behavior problems at the 12 month follow-up were not reliably related to marital relationship processes ($b = .02$, n.s.) or to marital satisfaction ($b = .19$, n.s.) at 24 months. When a model was tested constraining the path from parenting at 6 month follow-up to marital relationship processes at 24 month follow-up to 0, the relation of child behavior problems at 12 months to marital relationship processes and marital satisfaction at 24 months remained non significant.

A complementary model was also fit to the data, assessing whether changes in marital processes engendered by PMTO mediated changes in parenting and child behavior problems. In this model, in addition to their baseline levels, constructs for marital processes and satisfaction at 6 months, parenting practices at 12 months, and child problems at 24 months were used. The timing of the assessments of constructs in this model was selected so putative mediators (marital relationship processes and marital satisfaction) of treatment effects were represented as occurring temporally after treatment (at the 6 month assessment) and before assessment of the outcome parenting practices at 12 months and child behavior problems at 24 months. The model showed adequate fit to the data: $X^2/df = 1.40$, CFI = .923, RMSEA = .049. The path from treatment assignment to marital relationship processes at 6 months was not significant ($b = .13$, $p = .08$) nor were paths from marital relationship processes at 6 months to parenting practices at 12 months ($b = -.08$, $p = .56$) or to child problems at 24 months ($b = -.12$, $p = .34$). A path from marital satisfaction at 6 months was not reliably related to parenting practices at 12 months ($b = .06$, $p = .73$), nor was a path from marital satisfaction at 6 months to child behavior problems at 24 months ($b = .03$, $p = .83$). Paths from assigned treatment to parenting practices at 12 months ($b = .24$, $p = .038$) and from parenting at 12 months to child behavior problems at 24 months ($b = -.40$, $p = .006$) were significant in this model.

Discussion

This paper assessed the hypothesis that the PMTO intervention results in beneficial effects on marital relationship processes and marital satisfaction, and examined whether those effects were direct or mediated indirectly by changes in parenting practices and child behavior

problems. The results indicated PMTO had a beneficial indirect effect on marital relationship processes as a byproduct of enhancing parenting practices. More generally, PMTO had positive effects across multiple domains of the family ecosystem; it enhanced marital relationship processes, improved parenting practices, and prevented deterioration in maternal marital satisfaction and increases in teacher-reported child behavior problems. The modest size of these effects is consistent with a preventive intervention seeking to foster positive adaptation and prevent the accumulation of conflict, dissatisfaction and discord across multiple relationship domains in recently constituted, at-risk stepfamilies. The relevance and importance of such preventive effects were apparent in growth of child school behavior problems and in coercive parenting, and decreases in maternal marital satisfaction in the control group.

PMTO had a positive impact on mothers' and stepfathers' parenting practices, and these improved practices in turn were associated with fewer child externalizing behavior problems. These findings extend previous reports of the beneficial effects of PMTO for stepfamilies using this sample (Forgatch et al., 2005). The beneficial indirect effects of PMTO on marital relationship processes via enhancement of parenting practices is consistent with other reports documenting the broad effects of PMTO beyond parenting (Forgatch & DeGarmo, 2007). The current analyses document beneficial effects of PMTO extend to enhancing the marital relationship.

This report also provides experimental support for the hypothesis that changes in one domain of the family ecosystem impacts other domains (Margolin et al., 1996). The impact of changes in parenting practices on martial relationship processes imply that a common set of core social relationship skills are relevant to multiple relationships within the family system. Core relationship skills, such as engendering positive support and cooperation, problem solving, conflict resolution and the ability to de-escalate coercive exchanges, that are critical to effective parenting (Forgatch & DeGarmo, 2002) are also keys to establishing and sustaining a positive marital relationship (Christensen et al., 1998). As parents collaboratively learn and apply these core skills in their efforts to co-parent, it appears they are also able to use these skills to create and sustain a constructive marital relationship. PMTO intervention with recently separated single mothers has similarly revealed collateral effects such that improved parenting benefited child outcomes, which in turn mediated the effect of intervention on maternal depression (DeGarmo et al., 2004). Data from that study also showed that intervention benefits to parenting yielded improvements in mothers' standard of living and reductions in her police arrests nine years later, relative to the control group. Thus, preventive interventions which bolster parenting practices can have positive effects that reverberate throughout the family system and accumulate over time.

One other potential family systemic effect was tentatively observed. Child behavior problems can have a powerful effect on marital satisfaction (Wymbs, Pelham, Molina, Gnagy, & Wilson, 2008), and this contemporaneous association was observed at baseline in this study. The association of child behavior problems on marital satisfaction was no longer apparent at 12 to 24 months after baseline, and this diminished effect may have resulted from the reduction in child school behavior problems generated by improved parenting practices due to intervention. However, this effect remains tentative in the absence of a formal statistical test of group differences in the parameters of paths from child problems to marital satisfaction.

The complementary model, hypothesizing that change in parenting practices and child behavior problems resulting from intervention would be mediated by changes in marital relationship processes was not supported. Although the PMTO intervention is likely to enhance core relationship processes which secondarily promote constructive marital problem solving and support and which reduce marital conflict, the primary focus of the PMTO intervention is on parenting practices. In so far as constructive relationship processes are similar across parenting

and marital relationship domains, it is likely that interventions which focus more directly on the marital relationship in newly constituted stepfamilies may also result in enhanced parenting practices. A strong test of marital processes as the mediator of change in parenting practices and child behavior problems would require interventions that more powerfully and directly target marital processes (Halford, Markman, & Stanley, 2008).

Findings in this study are consistent with previous longitudinal research, and indicate the importance of the marital relationship in newly constituted stepfamilies. Marital satisfaction at baseline was low and, as often reported, marital satisfaction at baseline was negatively correlated with the duration of the remarriage. Maternal marital satisfaction in the control group but not in the PMTO group declined significantly. Change in stepfathers' marital satisfaction paints a slightly different picture with marginally reliable declines in the PMTO group and no change in the control group. The reasons for this differential effect on marital satisfaction is unclear, especially considering the reliable improvement in marital relationship processes resulting from PMTO. Speculatively, an intervention which more explicitly focuses on marital processes may be needed for stepfathers who have less direct investment and commitment to parenting practices related to their newly acquired stepchildren.

The current study has several limitations. The sample size was small, reducing statistical power. The participants were primarily Euro-American, with some range restriction on social and economic status. Couples self-selected into the study based on publication of its availability in the community. As such, generalization of the results to more diverse samples or under other engagement circumstances is not known. The marital enhancement component received by some intervention families reduces the clarity with which changes in marital processes can be attributed to the parenting intervention. Given its application as a preventive intervention to an at-risk sample of stepfamilies, the degree to which the effects of PMTO on marital processes would be replicated in a clinical sample of families with greater marital distress and child problems remains to be established. However, a recent analysis of the data from this study indicates that coercive parenting is most powerfully reduced for parents who are high relative to those low on antisocial characteristics (Wachlarowicz, 2010). Previous research on PMTO with non-clinical, at-risk samples of single mothers indicates substantial effects on youth delinquency and arrests 8 to 9 years after intervention (Forgatch, Patterson, DeGarmo, & Beldavs, 2009). These findings suggest the promise of application of PMTO in clinical settings, and such promise is open to empirical test. Finally, the cascade of changes in parenting, marital process and satisfaction, and child behavior problems resulting from PMTO, and the timing and order of those changes are not fully addressed in the mediator models tested in this report. The timing and ordering of the constructs in models used in this report were selected to optimally test mediation, but are not exhaustive in testing the cascade of changes engendered by PMTO.

This study is also characterized by substantial strengths which increase confidence in the results. An intention to treat randomized trial longitudinal design was used, providing strong causal inferences without bias due to selective attrition. Treatment condition was masked from observers who provided data defining parenting practices and marital relationship process constructs, reducing bias due to knowledge of treatment condition. Most constructs were defined by multiple methods and/or informants, reducing measurement error. There was minimal overlap between the methods used to define adjacent constructs in tests of the hypothesized models, reducing shared method variance as an alternate explanation of observed relationships among constructs. Meditational models representing family ecological processes were strongly tested by temporally locating putative mediators after the source of change and before the effects generated by the mediating processes. Finally, this is the only group design intervention study of stepfather families using ITT analysis that provides follow up data.

Implications for Practice

PMTO has been established as an efficacious and effective treatment for child externalizing disorders in previous research (e.g., Ogden & Amlund-Hagen, 2008). These results indicate that, in addition to the beneficial impact on child adjustment and parenting practices, PMTO may have broader effects on marital relationship processes as mediated enhanced parenting practices which are the primary focus of the intervention. This suggests enhancement of relationship skills in one domain in the family ecosystem may have beneficial effects on other domains, and relatively more focused, brief interventions may be sufficient to have generalized effects in the family ecosystem. The cross-domain family effects observed in this study indicate the promise resulting from identification of core processes key to adaptive functioning across multiple roles and relationships. Once identified, these core processes can be more directly and efficiently targeted for change. Specifically, PMTO may be an efficient intervention to promote change in social relationship skills which affect the quality of relationships throughout the family ecosystem. A similar cross-domain effect may result from marital interventions which similarly focus on core relationship skills. Practitioners may not need to apply multiple intervention modules to address each facet of the family ecosystem. Given the need to strike a balance between the demands of managed care and the use of evidenced-based treatment in practice, PMTO may provide a viable solution to impacting multiple family domains in an efficient manner. Additional refinements to PMTO may be useful in attaining more powerful (and perhaps direct) effects on marital processes and satisfaction. But parents in general and even more so in stepfamilies may be less receptive to interventions focusing explicitly or extensively on their marital relationship, and may be more open to interventions focusing on learning how to effectively socialize and manage their children. Parents may also experience external pressures from teachers and other agents to address child problems. Starting with or even focusing primarily on parenting practices may be a useful means to engender engagement in treatment and to enhance a core set of skills needed to create and sustain nurturing relationships among all family members. These findings may be particularly relevant to stepfamilies in that they face a myriad of challenges and accommodations in establishing and coordinating co-parenting roles while simultaneously creating a supportive and caring marital relationship. This study also demonstrates that concerted efforts to develop positive relationships with and to communicate the integral role of stepfathers can successfully result in their sustained engagement and participation in family-based intervention, and a primary focus on parenting may facilitate their involvement (Forgatch et al., 2005).

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References

Achenbach, TM. Manual for the Child Behavior Checklist/4–18 and the 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry; 1991.

Arbuckle, J.; Worthke, W. Amos 4.0 user’s guide. Chicago, IL: SmallWaters Corporation; 1999.

Bakeman, R.; Gottman, JM. Observing interaction: An introduction to sequential analysis. New York: Cambridge University Press; 1986.

Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology 1986;51:1173–1182. [PubMed: 3806354]

Bray, JH. Children’s development during early remarriage. In: Hetherington, EM.; Aresteh, JD., editors. Impact of divorce, single parenting, and step parenting on children. Hillsdale, New Jersey: Erlbaum; 1988. p. 279-299.

Brody GH, Neubaum E, Forehand R. Serial marriage: A heuristic analysis of emerging family form. Psychological Bulletin 1988;103:211–222. [PubMed: 3283815]

Bubolz, MM.; Sontag, MS. Human ecology theory. In: Pauline, G., editor. Sourcebook of family theory and methods: A contextual approach. New York: Plenum; 1993. p. 419-443.

Capaldi DM, Forgatch MS, Crosby L. Affective expression in family problem solving discussions with adolescent boys. Journal of Adolescent Research 1994;9:28–49.

Chamberlain PC, Reid JB. Parent observation and report of child symptoms. Behavioral Assessment 1987;9:97–109.

Christensen, A.; Jacobson, NS.; Babcock, JC. Integrative behavioral couple therapy. In: Jacobson, NS.; Gurman, AS., editors. Clinical handbook of marital therapy. New York: Guilford; 1995. p. 31-64.

Clarke-Stewart, A.; Brentano, C. Divorce: Causes and consequences. New Haven: Yale University Press; 2006.

Coie JD, Watt NF, West SG, Hawkins JD, Asarnow JR, Markman HJ, et al. The science of prevention: A conceptual framework and some directions for a national research program. American Psychologist 1993;48:1013–1022. [PubMed: 8256874]

Dadds MR, Sanders MR, Behrens BC, James JE. Marital discord and child behavior problems: A description of family interactions during treatment. Journal of Clinical Child Psychology 1987;16:192–203.

DeGarmo, DS.; Forgatch, MS. Contexts as predictors of changing parenting practices in diverse family structures. In: Hetherington, EM., editor. Coping with divorce, single parenting and remarriage: A risk and resiliency perspective. Mahwah, New Jersey: Laurence Erlbaum Associates; 1999. p. 227-252.

DeGarmo DS, Forgatch MS. Efficacy of parent training for stepfathers: From playful spectator and polite stranger to effective stepfathering. Parenting: Science and Practice 2007;7:1–25.

Enders, CK. Estimates by maximum likelihood. In: Everett, B.; Howell, DC., editors. Encyclopedia of behavioral statistics. West Sussex, UK: Wiley; 2005. p. 1164-1170.

Falke SI, Larson JH. Premarital predictors of remarital quality: Implications for clinicians. Contemporary Family Therapy 2007;29:9–23.

Fine MA, Coleman M, Ganong LH. Consistency in perception in step parenting role among step parents, parents and stepchildren. Journal of Social and Personal Relationships 1998;15:810–828.

Fisher PA, Leve LD, O'Leary CC, Leve C. Parent monitoring of children's behavior: Variations across stepmother, stepfather and two parent biological families. Family Relations 2003;52:45–52.

Forgatch, MS.; DeGarmo, DS. Extending and testing the social interaction learning model with divorce samples. In: Reid, JB.; Patterson, GR.; Snyder, J., editors. Antisocial behavior in children and adolescents: A developmental analysis and model for intervention. Washington, D.C: American Psychological Association; 2002. p. 235-256.

Forgatch MS, DeGarmo DS. Accelerating recovery from poverty: Prevention effects for recently separated stepmothers. Journal of Early and Intensive Behavioral Intervention. 2007

Forgatch MS, DeGarmo DS, Beldavs ZG. An efficacious theory-based intervention for stepfamilies. Behavior Therapy 2005;36:357–365. [PubMed: 16718303]

Forgatch, MS.; Knutson, N.; Mayne, T. Coder impressions of ODS lab tasks. Oregon Social Learning Center; Eugene, OR: 1992.

Forgatch MS, Patterson GR, DeGarmo DS. Evaluating fidelity: Predictive validity for a measure of competent adherence to the Oregon model of parent management training (PMTO). Behavior Therapy 2005;36:3–13. [PubMed: 16718302]

Forgatch MS, Patterson GR, DeGarmo DS, Beldavs ZG. Testing the Oregon delinquency model with 9-year follow-up of the Oregon divorce study. Development and Psychopathology 2009;21:637–660. [PubMed: 19338702]

Forgatch, MS.; Rains, L. MAPS: Marriage and parenting in stepfamilies [Parent Training Manual.]. Oregon Social Learning Center; Eugene, OR: 1997.

Halford WK, Markman HJ, Stanley S. Strengthening couples' relationships with education: Social policy and public health perspectives. Journal of Family Psychology 2008;22:497–505. [PubMed: 18729664]

Hetherington EM, Bridges M, Insabella GM. What matters? What does not? Five perspectives on the association between marital transitions and children's adjustment. American Psychologist 1998;53:167–184. [PubMed: 9491746]

Jenkins J, Simpson A, Dunn J, Rashbash J, O'Conner TG. Mutual influence of marital conflict and children's behavior problems: Shared and nonshared family risks. Child Development 2005;76:24–39. [PubMed: 15693755]

Kurdek LA. The nature and predictors of trajectories of change in marital quality for husbands and wives over the first 10 year of marriage. Developmental Psychology 1999;35:1283–1293. [PubMed: 10493654]

Margolin G, Christenson A, John RS. The continuance and spillover of everyday tensions in distressed and nondistressed families. Journal of Family Psychology 1996;10:304–321.

Nicholson J, Sanders M. Randomized controlled trial of behavioral family intervention for the treatment of child behavior problems in stepfamilies. Journal of Divorce & Remarriage 1999;30:1–23.

Ogden T, Amlund-Hagen K. Treatment effectiveness of Parent Management Training in Norway: A randomized control trial of children with conduct problems. Journal of Consulting and Clinical Psychology 2008;76:607–621. [PubMed: 18665689]

Patterson GR. The next generation of PMT models. Behavior Therapist 2005;28(2):32.

Shaffer JL, Graham JW. Missing data: Our view of the state of the art. Psychological Methods 2002;7:147–177. [PubMed: 12090408]

Spanier G. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and the Family 1976;38:15–28.

Stewart, DS. Brave new stepfamilies. Thousand Oaks, CA: Sage Publications; 2007.

Stubbs, J.; Crosby, L.; Forgatch, MS.; Capaldi, DM. Family and peer process code: A synthesis of three Oregon Social learning Center behavior codes. [Training Manual.]. Oregon Social Learning Center; Eugene, OR: 1992.

Vinokur AD, vanRyn M, Gramlich EM, Price RH. Long-term follow-up and benefit cost analysis of the JOBS program: A preventive intervention for the unemployed. Journal of Applied Psychology 1991;76:213–219. [PubMed: 1905293]

Vuchinich S, Hetherington EM, Vuchinich RA, Clingempeel WG. Parent-child interaction and gender differences in early adolescents' adaptation to stepfamilies. Developmental Psychology 1991;27:618–626.

Wachlarowicz, M. Unpublished Master's Thesis. Wichita State University; Wichita, Kansas: 2010. The moderating effects of parental antisocial characteristics on a parent management training intervention.

Whitton, SW.; Nicholson, JM.; Markman, HJ. Research on intervention for stepfamily couples: The state of the field. In: Pryor, J., editor. The international handbook of stepfamilies: Policy and practice in legal, research, and clinical environments. Hoboken, New Jersey: John Wiley & Sons; 2008. p. 455-484.

Wothke, W. Longitudinal and multi-group modeling with missing data. In: Little, TD.; Shnabel, KU.; Baumert, J., editors. Modeling longitudinal and multi-level Data: Practical issues, applied approaches, and specific examples. Mahwah, NJ: Erlbaum; 2000. p. 219-240.

Wymbs BT, Pelham WE, Molina BSG, Gnagy EM, Wilson TK, Greenhouse JB. Rate and predictors of divorce among parents of youth with ADHD. Journal of Consulting and Clinical Psychology 2008;76:735–744. [PubMed: 18837591]

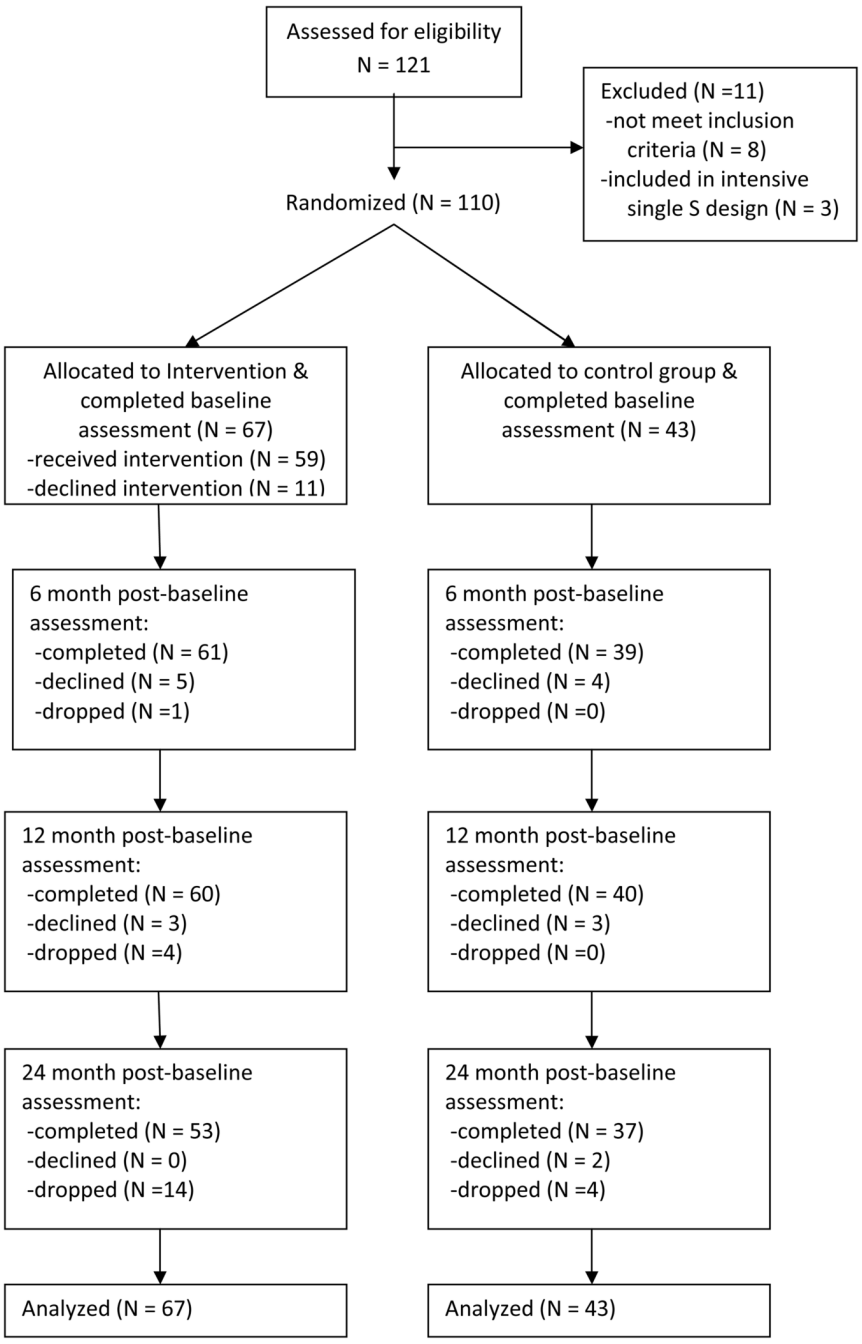

Figure 1.
Study Flow Chart

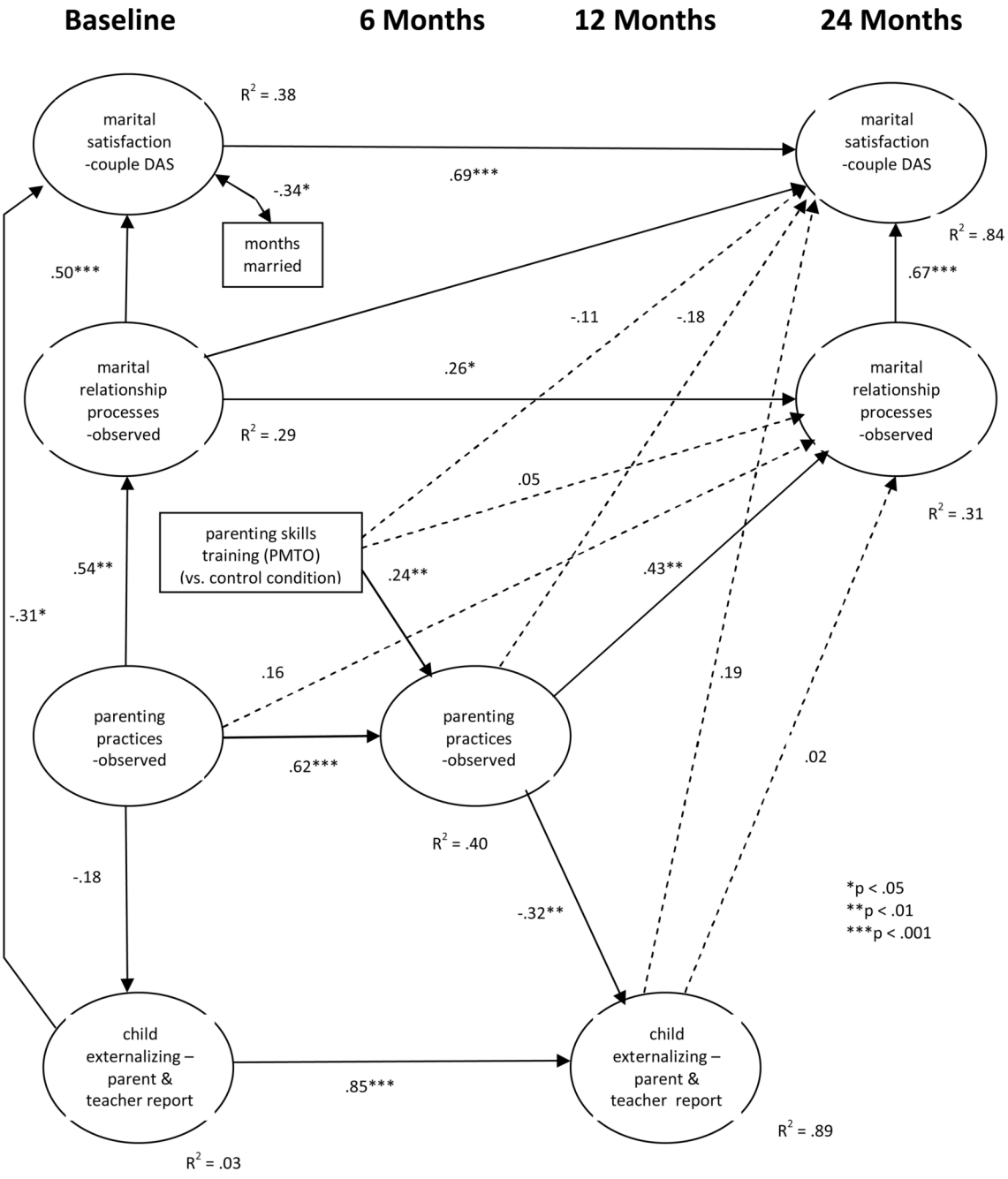

Figure 2. Changes in Marital, Parenting and Child Functioning Produced by PMTO

$X^2_{(110,330)} = 463.77$, $p < .01$; $X^2/df = 1.41$; CFI = .91; RMSEA = .053 (excluding non significant paths shown by dashed arrows)

Note: See text for indicators defining each construct. The model also included the effects of child ageandchild gender on parenting practicesat 12 months, but these effects were all non significant, and are not shown for clarity.

Table 1

Growth Model Parameters: Change Over Time for PMTO and No Treatment Groups

Change Index		PMTO	NTC	$Z_{difference}$
	Parenting Practices			
Positive Parenting (mom & stepdad)	Mean intercept	1.50 (p < .001)	1.47 (p< .001)	−0.53
	Mean Slope	0.03 (p < .01)	0.01 (n.s.)	−1.79
	Variance Intercept	0.13 (p < .01)	0.13 (p < .10)	0.01
	Variance Slope	0.02 (p < .10)	0.02 (p < .10)	0.02
Coercive Parenting (mom & stepdad)	Mean Intercept	0.290 (p < 001)	0.241 (p < .001)	−0.82
	Mean Slope	−0.019 (p < .10)	0.042 (p < .05)	2.32
	Variance Intercept	0.001 (p < .05)	0.004 (p < .01)	1.96
	Variance slope	0.001 (n.s.)	0.001 (p < .10)	0.98
	Marital Domain			
Marital Relationship Processes (mom & stepdad)	Mean Intercept	3.69 (p < .001)	3.63 (p < .001)	−0.30
	Mean Slope	0.74 (p < .01)	−0.15 (n.s.)	−2.60
	Variance Intercept	0.27 (p < .001)	0.17 (p < .05)	−0.90
	Variance Slope	0.07 (p < .05)	0.02 (n.s.)	−0.50
Marital Satisfaction (mom)	Mean Intercept	100.7 (p < .001)	92.8 (p < .001)	−1.98
	Mean Slope	− 2.7 (n.s.)	−9.6 (p < .05)	−1.97
	Variance Intercept	125.7 (p < .001)	133.9 (p < .001)	0.14
	Variance Slope	3.5 (p < .05)	1.4 (n.s.)	−0.45
Marital Satisfaction (stepdad)	Mean Intercept	105.0 (p < .001)	99.8 (p < .001)	−1.37
	Mean slope	−2.0 (p < .01)	0.1 (n.s.)	1.87
	Variance Intercept	86.5 (p < .001)	89.7 (p < .001)	0.10
	Variance Slope	1.0 (n.s.)	2.2 (n.s.)	0.51
	Child Externalizing Problems			
Child Behavior Checklist (mom)	Mean Intercept	43.2 (p < .001)	49.4 (p < .001)	0.78
	Mean Slope	−1.6 (n.s.)	−0.4 (n.s.)	0.75
	Variance Intercept	54.6 (p< .001)	52.0 (p < .001)	−0.14
	Variance Slope	1.7 (p < .05)	0.9 (n.s.)	−0.48
Child Behavior Checklist (stepdad)	Mean Intercept	56.1 (p < .001)	53.5 (p < .001)	−0.77
	Mean Slope	−1.5 (p < .05)	−1.0 (n.s.)	−0.55
	Variance Intercept	71.4 (p < .001)	75.5 (p < .001)	0.61
	Variance Slope	1.2 (n.s.)	1.1 (n.s.)	−0.02
Child Behavior Checklist (teacher)	Mean Intercept	51.4 (p < .001)	43.7 (p < .001)	−0.60
	Mean Slope	5.0 (n.s.)	19.4 (p < .001)	2.79
	Variance Intercept	63.9 (p < .001)	81.8 (p < .001)	2.03
	Variance Slope	1.3 (n.s.)	3.4 (n.s.)	0.73

Note: All parenting practicesand child externalizing growth models includedchild age and child sex as covariates, and all marital domain growth models included time since remarriage as a covariate.

Table 2

Correlations among Indicators for the Model Assessing Changes in Marital, Parenting and Child Functioning Produced by PMTO

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1. W1 M coercive parenting																										
2. W1 M positive parenting	−30																									
3. W1 SD coercive parenting	33	−18																								
4. W1 SD positive parenting	−15	35	−18																							
5. W3 M coercive parenting	15	−20	14	−11																						
6. W3 M positive parenting	−04	42	−10	28	−33																					
7. W3 SD coercive parenting	15	−12	19	−21	41	−32																				
8. W3 SD positive parenting	−02	28	−01	47	−16	67	−35																			
9. W1 couple probl. solving	−13	30	−09	34	−25	19	−12	−01																		
10. W1 M positive rel. skills	−24	24	−08	36	−26	14	−19	−03	73																	
11. W1 SD positive rel. skills	−18	17	−06	41	−17	09	−13	09	73	85																
12. W1 couple rel. quality	−16	26	−07	36	−23	31	−24	15	79	86	87															
13. W5 couple probl. solving	−05	24	−19	29	−14	30	−09	42	33	23	24	36														
14. W5 M positive rel. skills	01	22	−22	17	−21	33	−19	36	20	26	24	33	75													
15. W5 SD positive rel. skills	04	23	−25	18	−19	28	−18	41	23	18	25	28	77	91												
16. W5 couple rel. quality	−06	26	−19	15	−21	29	−18	39	24	28	30	36	82	90	89											
17. W1 M dyadic satisfaction	−06	13	−06	18	−18	15	−05	06	36	44	39	41	27	33	28	31										
18. W1 SD dyadic satisfaction	−03	09	−08	21	−06	02	02	14	27	36	38	31	26	29	30	34	56									

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
19. W5 M dyadic satisfaction	−07	21	01	15	−11	20	−10	13	19	24	18	20	36	51	43	44	66	19								
20. W5 SD dyadic satisfaction	00	12	−13	07	−06	13	07	10	13	07	05	05	32	45	39	39	30	49	48							
21. W1 M child externalizing	03	−10	06	−15	20	−26	13	−21	−09	−10	−01	−04	−03	−07	−04	−03	−24	−11	−30	−13						
22. W1 SD child externalizing	15	−08	02	−11	14	02	20	−01	−05	−23	−19	−15	−05	−13	−04	−15	−07	−13	−17	01	48					
23. W1 T child externalizing	30	−08	13	−20	16	−03	19	−15	−07	−11	−13	−07	−05	−12	−11	−14	−16	−17	−13	−07	26	25				
24. W4 M child externalizing	−02	−12	01	−11	21	36	21	−32	−16	−07	−08	−11	−01	−11	−13	−11	−30	−15	−30	−08	69	44	21			
25. W5 SD child externalizing	05	−12	10	−14	31	−21	24	−23	−07	−13	−14	−15	−18	−28	−18	−25	−17	−14	−25	−16	48	76	35	51		
26. W5 T child externalizing	32	−27	09	−40	14	−14	25	−13	−17	−30	−32	−27	00	−11	−02	−11	00	−05	−01	14	06	34	58	02	32	

Note: All correlations are shown without a decimal point, pairwise Ns for correlations range from 67 to 106. W1 = baseline, W3 = 6months, W4 = 12 months, and W5 = 24 months after baseline.

For minimum N = 67: $r > .24$ for $p < .05$; $r > .32$ for $p < .01$ (all two tailed)