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Marital Quality Spillover and Young Children's Adjustment: Evidence for Dyadic and Triadic Parenting as Mechanisms

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Abstract

Research has evidenced support for the spillover model, which posits that parents' marital functioning influences child adjustment by eroding parenting and coparenting in dyadic (mother–child and father–child) and triadic (mother–father–child) contexts. However, prior work has not simultaneously investigated dyadic and triadic parenting as mechanisms of spillover. Furthermore, although evidence indicates that the marital system affects child adjustment by influencing parents' behavior, research has not explored whether child behaviors in parent–child interactions also serve as mechanisms. To address these gaps, we examined the spillover model using observational measures of parent and child behavior in parent–child dyadic interactions as well as coparenting in triadic interactions. We also explored parent and child gender differences in spillover effects. Participants were families with children 3 to 6 years of age ($n = 149$; 62% Caucasian). Findings indicated that marital functioning influences child adjustment by disrupting parent–child interactions in dyadic and triadic contexts, although results differed by child/parent gender and outcome examined. First, children's responsiveness to their mothers emerged as a significant mechanism of spillover effects for boys' internalizing and girls' externalizing behavior. Second, for girls and boys, marital functioning was indirectly related to children's internalizing and externalizing behavior through reductions in coparenting warmth. Finally, there was little evidence that parent gender moderated the indirect effect of dyadic parenting, except that child responsiveness to mothers (vs. to fathers) was more strongly related to child adjustment. These findings underscore the need for interventions targeting dyadic and triadic parent–child interactions in the face of marital distress.

Substantial evidence suggests that the health of the marital system influences children's adjustment (Davies & Cummings, 1994). Research examining this link has been guided by family systems theory, which posits that each subsystem within the family has unique

properties as well as the potential to influence and be influenced by the other subsystems (Cox & Paley, 1997). The spillover model explains the interconnections between these subsystems by suggesting that emotions and behaviors of the marital system “spillover” to parent–child interactions, which in turn affects child adjustment (Engfer, 1988). Supporting this, research suggests that marital discord affects children's adjustment by eroding several aspects of dyadic parenting, such as discipline, autonomy, and warmth/acceptance (e.g., Cui & Conger, 2008; Kaczynski, Lindahl, Malik, & Laurenceau, 2006; Schoppe-Sullivan, Schermerhorn, & Cummings, 2007).

Despite support for the role of dyadic parenting as a mechanism of spillover, there are significant gaps in the literature. First, most work has examined marital conflict (e.g., Schoppe-Sullivan et al., 2007). However, other aspects of the marital system may impact child adjustment (e.g., Cui & Conger, 2008) and different aspects of the marital system may affect child adjustment through distinct aspects of parenting (e.g., Sturge-Apple, Davies, & Cummings, 2006). Second, most prior work has examined school-age children (e.g., Kaczynski et al., 2006) or adolescents (e.g., Cui & Conger, 2008). Given links between the marital and parent–child subsystems may vary by child age (e.g., Krishnakumar & Buehler, 2000), the extent to which findings generalize to young children is unknown. Third, most prior work has measured parenting using questionnaires (Schoppe-Sullivan et al., 2007), and when used, observational measures have yielded macroscopic (e.g., Kaczynski et al., 2006), not microscopic, ratings.

Finally, most work on parent–child relationship quality has utilized parents' behaviors toward their child, rather than children's behavior toward their parents, as an indicator of relationship quality. Yet both parents and children play a key role in shaping their interactions and relationship (e.g., Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000), and thus, examining both children's and parents' behaviors more fully captures parent–child relationship quality. We examined two indicators of the parent–child relationship, parent and child responsiveness to one another, as mechanisms linking the marital system and child adjustment. Responsiveness includes the recognition of and appropriate response to a range of social overtures and signals for attention, cooperation, or compliance (i.e., “bids”) made by parent and child to each other (Kochanska & Aksan, 2004). Prior work suggests that marital discord may be related to reduced parental responsiveness, at least among fathers (e.g., Davies, Sturge-Apple, Woitach, & Cummings, 2009; Nelson, O'Brien, Blankson, Calkins, & Keane, 2009; Stroud, Durbin, Wilson, & Mendelsohn, 2011) and may be one mechanism linking the marital system and child adjustment (Sturge-Apple, Davies, Cicchetti, & Manning, 2010; Sturge-Apple et al., 2006). However, research has not examined children's responsiveness to parents as an indicator of parent–child relationship quality, and whether it is also a mechanism of spillover effects.

Moreover, there are reasons to predict that the marital system will influence children's adjustment by disrupting their responsiveness to their parents. First, prior work has shown links between marital satisfaction and children's observed responses to their parents (Kerig, Cowan, & Cowan, 1993), including in the present sample (child responsiveness to mothers only; Stroud et al., 2011). In turn, research has revealed links between parent and child responsiveness to children's later moral and social development, suggesting that this

construct is important for understanding child functioning (Kochanska, Aksan, & Joy, 2007). Second, supporting the emotional security hypothesis (Davies & Cummings, 1994) and the cognitive-contextual perspective (Grych & Fincham, 1993), abundant evidence indicates that children's cognitive, emotional and behavioral responses to interparental conflict are underlying mechanisms of the association between interparental conflict and child adjustment (e.g., Buehler, Lange, & Franck, 2007). However, prior work has not explored whether the marital system influences child adjustment by disrupting parent–child relationship quality, using both parents' and children's behaviors toward each other as an indicators of the health of the parent–child relationship.

coparenting As A Mechanism Linking The Marital System To Children's Adjustment

Consistent with family systems theory, research suggests that marital distress may negatively impact triadic (mother–father–child) interactions by disrupting coparenting (parents' cooperation and involvement as they collaborate to raise their child; Belsky, Crnic, & Gable, 1995). The marital system is related to both the supportive (e.g., interparental warmth) and unsupportive (e.g., interparental hostility) aspects of coparenting (e.g., Lindahl, Clements, & Markman, 1997). In turn, coparenting influences multiple aspects of child adjustment, even when accounting for the contributions of dyadic parenting and marital quality (for a review, see Teubert & Pinquart, 2010). However, few studies have examined coparenting as a mechanism of marital spillover. In exception, Katz and Low (2004) demonstrated that hostile-withdrawn coparenting mediated the link between interparental violence and children's internalizing behavior. Similarly, coparenting conflict mediated the prospective link between marital love (i.e., degree of attachment) and adolescents' risky behavior (Baril, Crouter, & McHale, 2007). Thus, initial work suggests that marital discord may impact children's functioning by eroding coparenting.

Despite this, questions remain. First, prior work has examined parent-reported marital violence (Katz & Low, 2004) and love (Baril et al., 2007), leaving questions about whether findings generalize to other aspects of the marriage. Second, prior work has not simultaneously examined parenting in dyadic and triadic interactions as spillover mechanisms. However, research indicates that coparenting and dyadic parenting each uniquely contribute to children's adjustment (e.g., Teubert & Pinquart, 2010) and may be differentially related to the marital system (Lindahl et al., 1997; Stroud et al., 2011). This suggests that both dyadic and triadic parenting must be captured to fully understand the ways in which parenting contributes to links between the marital system and child adjustment. Moreover, doing so within the same study permits exploration of the unique influence of these mechanisms (i.e., role of dyadic parenting accounting for the role of coparenting, and vice versa) and comparison of the magnitude.

The Current Study

This study expands upon a prior investigation of the spillover model in this sample (Stroud et al., 2011). In the prior study, we showed that marital functioning was related to dyadic and triadic parenting, supporting the spillover model. In the present study, we extended this work

to examine whether dyadic and triadic parenting are mechanisms linking the marital system to child adjustment. We also addressed several gaps in the literature. First, we assessed parent and child moment-to-moment responsiveness to each other in dyadic parent–child interactions (Kochanska & Aksan, 2004). Second, we explored multiple aspects of each family subsystem, using multiple measures, methods (questionnaires and observational coding), and reporters (self-and other-report). Third, we explored the spillover of the marital system on young children's internalizing and externalizing behavior within the same analysis, permitting an examination of the unique spillover effects to each type of behavior. Finally, given prior work examining parenting as a spillover mechanism has mostly focused on other age groups and early childhood is characterized by substantial interaction time (compared to older samples) but increasing child autonomy (compared to younger children; Gralinski & Kopp, 1993), we examined young children (aged 3–6). Based on prior work (Kaczynski et al., 2006; Katz & Low, 2004), we predicted that dyadic parent–child interactions (parent and child responsiveness) and triadic coparenting would mediate links between marital functioning and child adjustment.

We also explored child and parent gender as potential moderators of spillover effects. Existing work regarding whether child gender moderates the indirect effect of dyadic parenting is mixed (e.g., Sturge-Apple et al., 2006) and whether child gender moderates the indirect effect of triadic coparenting has not been explored. Evidence also suggests that the mediating role of dyadic parenting may vary for mothers versus fathers (e.g., Sturge-Apple et al., 2006) and that fathers' parenting may be more disrupted by marital discord (Krishnakumar & Buehler, 2000), as we found in this sample (Stroud et al., 2011). However, research exploring whether paternal or maternal parenting has stronger effects on child adjustment is mixed (Kaczynski et al., 2006; Sturge-Apple et al., 2006). In this sample, there were stronger links between the marital system and children's responsiveness to mothers than to fathers (Stroud et al., 2011), but whether the mediating effects of child responsiveness vary according to parent gender has not been tested.

Method

Participants and Procedure

Families were recruited from the Chicago area using advertisements (23%), referrals and word of mouth, (36%) and a mailing list (41%) for a study on risk for psychopathology. To be eligible, families had to have a biological child between the ages of 3 and 6.5 years ($M = 54.43$ months, $SD = 10.94$; 91 male, 77 female) and must have cohabitated for that child's lifetime. Parents provided written consent for themselves and their child, and were compensated financially. The study included two laboratory visits: one assessing child adjustment and the second family interactions. Of the 168 families enrolled, 148 families completed the second visit. Those who did versus did not participate in the second visit did not differ on the number of children they were raising or parents' mean age ($ps > .05$; $ns = 11$ who provided demographic data). Total sample sizes varied for some measures due to missing data (Table 1). Couples were raising one to six children ($M = 2.34$, $SD = .99$) and most were married (94.8%). Mothers were 23 to 52 years old ($n = 148$; $M = 36.98$, $SD = 5.18$) and fathers were 23 to 57 years old ($n = 148$; $M = 38.71$, $SD = 6.22$). Mothers' and

fathers' self-reported ethnicity was mostly Caucasian/White (62.2%). Self-reported family income was as follows: 1.2% = less than \$10,000, 12.5% = \$21,000–\$40,000, 12.5% = \$41,000–\$60,000, 23.8% = \$61,000–\$100,000, and 23.8% = greater than \$100,000 (26.2% missing).

Measures

Marital Functioning—Parents participated in five discussions designed to elicit important aspects of the marital relationship, including two conflict discussions. The conflict paradigm has been used in more than 200 studies and elicits couples' experienced and expressed emotions (Foster, Caplan, & Howe, 1997). To identify topics for the discussions, parents rated areas of disagreement on the Dyadic Adjustment Scale (DAS; Spanier, 1976), a 32-item self-report inventory designed to measure severity of relationship discord. The DAS has acceptable reliability and validity (Spanier, 1976). As some participants did not answer all items, the sum is an inaccurate estimation of their satisfaction level. Thus, the mean score was used, if participants completed at least 26 of the 32 items ($\alpha = .94$). Discussion order was (a) *Vacation*: plan a vacation (5 min), (b2) *Conflicts 1 and 2*: discuss one topic identified through each partners' DAS (based on the areas of greatest disagreement) and generate a solution (8min each; order randomized), (c) *Sadness Discussions 1 and 2*: discuss how couple copes when each partner was feeling depressed/sad (5min each; order randomized), and (d) *Best things*: discuss the best aspects of their relationship/partner (5 min; designed as a cool down). During the interactions, children completed other tasks (not included in the present study).

After the discussions, each parent completed the Structural Analysis of Social Behavior (SASB) Intrex-short form (Benjamin, 2000), a 32-item self-report measure assessing participants' perceptions of their own and their partner's interaction behavior. It assesses affiliation (hostile to friendly), interdependence (autonomous to enmeshed), and whether the behavior is self- or other-focused. Participants rated how they treated (eight items) and reacted to (eight items) their partner, and how their partner treated (eight items) and reacted to (eight items) them on a 1 (*not true at all*) to 100 (*very true*) scale. Adequate reliability and validity have been shown (Benjamin, 2000). Data were reduced using the SASB computer program (Benjamin, 2000), which generates one affiliation and one autonomy vector for each partner on each surface (self vs. other), yielding four scales. Only the affiliation vectors were used, as the autonomy vectors did not load significantly on the marital functioning latent variable. Given high intercorrelations between the affiliation vectors on each surface ($r_s = .75-.86$), we created two composites (self-rated [$\alpha = .84$] and partner-rated [$\alpha = .87$] affiliation) by taking the mean of standardized vector scores for the two surfaces.

Finally, parents completed the Marital Satisfaction Inventory–Revised (MSI–R; Snyder & Aikman, 1999), a 150-item true–false measure of marital adjustment. The 22-item global marital distress scale was used ($\alpha = .94$). The MSI–R has shown good psychometric properties.

Each partner's DAS, self- and partner-rated SASB intrex affiliation composites, and the global marital distress scores were the indicators of the marital functioning latent variable.

Parent–Child Relationship—Parent and child responsiveness were assessed using tasks drawn or adapted from previous research (Egeland et al., 1995; Kochanska & Aksan, 1995) and selected to capture positive and negative aspects of parent–child interaction, including instruction, discipline, and play. Each parent participated in three 4- to 6-min tasks ($M = 11.84$ total, $SD = 1.19$; mother vs. father first randomized). The mother–child and father–child tasks were selected so that those used in each dyad were comparable while ensuring that each task was novel and interesting for the child. Mother–child tasks were as follows: (a) *Magnet puzzle*: collaborate to make a design from geometric shapes, (b) *Prohibited toys*: mother tries to prohibit child from touching appealing toys, and (c) *Team drawing*: collaborate to draw a picture. Father–child tasks were as follows: (a) *Marble maze*: play with a marble maze using blocks, (b) *Prohibited toys*: similar to mother's task but with different stimuli, and (c) *Etch-a-Sketch maze*: father helps child draw an Etch-a-Sketch line in a maze. Parents were separated during the dyadic tasks; when one parent completed the interaction, the other parent completed questionnaires.

Coding: Parent–child interaction tasks were videotaped and coded using a scheme developed by Kochanska and Aksan (2004) and adapted for use with early childhood-aged children (Wilson & Durbin, 2013). This scheme identifies bids directed by parent and child toward their partner and rates the quality of responsiveness to these bids (microscopic ratings); coders also make a global rating of the overall quality of responsiveness by parent and child across the duration of each task (macroscopic ratings). Separate coders rated the tasks for child bids/parent responsiveness and parent bids/child responsiveness, and the mother–child and father–child interactions within the same family. Two independent raters coded 25% of the tasks to assess reliability. Coders were blind to all data, and completed extensive training.

Microscopic parent and child responsiveness: For the child bid/parent responsiveness ratings, coders made two passes per task. First, child bids to the parent (an overture or signal with the potential for response) were identified, and each was coded as one of three mutually exclusive codes: (a) social (attempts to engage partner in social interaction; e.g., attempts at conversation), (b) influence (commands and attempts to guide the partner or the activity), or (c) negative/distress (indicators of negative mood; e.g., whining). Second, they rated the quality of the parent's response to each bid (maximum of eight bids and responses per 60-s interval), using a 1 (*poor*) to 4 (*exceptional*) responsiveness scale. Ratings were tailored to each bid type and integrated multiple dimensions of responsive parenting (e.g., promptness, engagement, sincerity, following child lead or attention, and the appropriateness of the parent's response).

Parent bid/child responsiveness was also coded in two passes. First, each discrete parent bid was identified and coded as one of three mutually exclusive codes: (a) social (similar to the child code), (b) influence (similar to the child code), or (c) mood-regulating bid (attempts to improve the child's negative mood; e.g., soothing). Second, the quality of the child's response to each bid was coded using a 1 (*poor*) to 4 (*exceptional*) scale. Ratings considered the qualitative aspects of the child's behavior (e.g., promptness, eagerness, wholeheartedness of response) and were tailored to each bid type and the developmental stage of the sample.

Macroscopic parent and child responsiveness: Coders rated the overall quality of the parent's or child's responsiveness across the task on a scale from 1 (*highly unresponsive*) to 7 (*highly responsive*; with no 4 rating), based on sensitivity, acceptance-rejection, and cooperation.

Data reduction: Composite microscopic responsiveness variables for each category (e.g., social, influence) were calculated by summing parent or child responsiveness ratings to bids in each category and dividing by the total number of bids in that category. Composite macroscopic parent and child responsiveness variables were calculated by averaging the macroscopic ratings from each task. Average parent responsiveness to their child's social (intraclass correlation coefficient [ICC] = .75), influence (ICC = .67), and negative/distress bids (ICC = .41),¹ and global (macroscopic) responsiveness (ICC = .82) were the indicators of parent responsiveness. Average child responsiveness to their parent's social (ICC = .82) and influence (ICC = .58) bids, and average macroscopic rating (ICC = .84), were the indicators of child responsiveness (Figure 1). Child responsiveness to their parents' mood-regulating bids did not load significantly on the latent variable and was not used.

Triadic Functioning—The triadic interaction tasks were adapted from previous research (Egeland et al., 1995; Robinson & Eyberg, 1981) or developed for this study. They included cooperation, play, and compliance tasks designed to tap free play, child compliance, and instructional contexts. Each triad completed four 4- to 6-min tasks ($M = 18.70$ total, $SD = 2.43$): (a) *Board game*: the family played a dexterity game together, (b) *Things with tails*: parents used strategies to help their child name “things that have tails,” (c) *Ball toss*: the family tried to toss small bouncy balls into buckets around the room, and (d) *Clean up*: parents were told to prompt their child to independently clean up all the toys used in the previous tasks.

Coding: Triadic tasks were videotaped and coded using a system developed for this study. Based on all behaviors observed in a task, coders rated the quality of each coparenting construct using a 0 (*never demonstrated the variable*) to 3 (*exhibited multiple instance of the variable*) scale. Anchors were described for each variable that indicated a specific number of occurrences and behavioral examples for each scale code. The constructs rated were as follows: (a) *Shared enjoyment*: extent to which parents showed joint enjoyment of the task or child (e.g., laughing together; ICC = .86), (b) *Warmth*: amount and intensity of warmth/positive affect directed toward the spouse (e.g., statements of warmth, appreciation or affection, or physical signs of affection; ICC = .79), (c) *Hostility*: amount and intensity of negative affect/hostility directed toward the spouse (e.g., facial expressions, verbalizations with negative tone/content; ICC = .93), and (d) *Disagreement*: extent to which each parent opposed the other's actions with the child (e.g., engaging in a strategy that directly competed with the other parent's interaction with the child; ICC = .80). All coders underwent extensive

¹The ICCs for child negative/distress and parent influence bids were low, as these bids occurred infrequently. Analyses were repeated without each indicator, and few results changed. However, the path from marital functioning to fathers' responsiveness weakened (critical ratios [CRs] = 1.94) when child negative/distress bids was removed, and the paths from marital functioning to externalizing (CRs = 1.90) and from triadic hostility to internalizing (CRs = -1.81) and externalizing (CRs = -1.76) were not significant for boys when influence bids was removed.

training and were blind to all dyadic and marital functioning data; two independent raters coded 25% of the tasks to assess reliability.

Data reduction: Scores for each coparenting variable were averaged across all four tasks. A principle axis factor analysis with varimax rotation was conducted to identify a smaller number of dimensions. Two factors emerged. Ratings of hostility/negative affect and disagreement loaded on factor 1 (Eigenvalue=2.13; % variance accounted for = 30.46%). Shared enjoyment and warmth/positive affect loaded on Factor 2 (Eigenvalue= 1.70; 24.25%). Thus, we estimated a measurement model with two latent variables, Warmth ($\alpha = .78$; reverse scored) and Hostility ($\alpha = .80$; reverse scored), each indicated by the ratings that loaded on each factor.

Internalizing and Externalizing Behavior—Mothers and fathers reported on children's adjustment using the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000). The CBCL is a parent-report measure that consists of 113 items rated on a 3-point Likert scale ranging from 0 (*not true*) to 2 (*very true or often true*). To form the indicators on the internalizing behavior latent variable (mothers: $\alpha = .83$; fathers: $\alpha = .70$), the mean of the items from the Anxious= Depressed, Withdrawn=Depressed, and Somatic Complaints subscales was calculated separately for mothers and fathers. To form the indicators on the externalizing behavior latent variable (mothers: $\alpha = .87$; fathers: $\alpha = .83$), the mean of the items from the Rule Breaking Behavior and Aggressive Behavior subscales was calculated separately for mothers and fathers. The CBCL has shown good psychometric properties.

Results

See Table 1 for descriptives and intercorrelations. Structural equation modeling with maximum likelihood estimation was conducted using AMOS (Arbuckle & Wothke, 1999). Means and intercepts were estimated to account for missing data. Model fit was assessed with (a) chi-square, (b) comparative fit index ($> .95$ reflects good fit; Hu & Bentler, 1998), and (c) the root mean squared error of approximation (RMSEA; $< .06$ good fit; $< .08$ adequate fit) and its 90% confidence intervals (small ranges indicate RMSEA accurately reflects fit; Hu & Bentler, 1998).

First, separate measurement models were examined to create latent variables. All manifest indicators had significant loadings on their respective latent variables, with standardized coefficients in the moderate to high range (boys: $M=.78$, $SD=.11$; range = .55-.94; girls: $M = .77$, $SD = .10$; range = .46-.97). Full results available upon request. Second, we estimated a spillover model by including (a) indirect paths from marital functioning to each of the parenting latent variables and from each of the parenting latent variables to the internalizing and externalizing latent variables, and (b) direct paths from marital functioning to the internalizing and externalizing latent variables (Figure 1). To account for interdependence, we included covariances between particular latent factors to account for overlap across systems that involved the same person(s) (e.g., children were involved in the mother-child, the father-child dyad, and the triad; Kenny, Kashy, & Cook, 2006). Covariances were included between the disturbances of (a) identical indicators of marital functioning from each partner (e.g., mothers' DAS and fathers' DAS scores; Covariances 1-4), (b) identical

indicators of child responsiveness to mothers and to fathers (Covariances 5-7), (c) the latent variables of the dyadic system and the triadic system (Covariances 8-15), (d) mother and child responsiveness to each other (Covariance 16), and (e) fathers and child responsiveness to each other (Covariance 17).²

Preliminary Analyses

To examine child gender differences, we conducted multiple-group models using child gender as the grouping variable. For each model, we set equality constraints on the model parameters (requiring them to be equivalent for girls and boys) and then compared the model with equality constraints to a model in which the relevant parameters were free to vary by evaluating the χ^2 at each step (Table 2). First, we examined Model 1 in which all indicators and paths were free to vary across child gender. Fit indices were adequate. Second, we estimated Model 2 in which only the indicator loadings were constrained to equality. Fit indices were adequate, and not significantly different than Model 1, suggesting loadings were equivalent across child gender ($p > .05$). Third, retaining the constraints on the indicator loadings, we estimated a series of models in which one path was constrained to equality in each model (Model 3a-t). Fit indices were adequate. Models 3b, 3h, 3k, 3n, 3q, and 3s each differed significantly from Model 2 ($p < .05$), suggesting that the following paths differed significantly for girls and boys: (a) marital functioning to triadic hostility (Path 2), (b) warmth to each internalizing (Path 8) and externalizing (Path 14) behavior, (c) child responsiveness to mothers and each internalizing (Path 11) and externalizing (Path 17) behavior, and (d) the direct path from marital functioning to externalizing behavior (Path 19). In subsequent analyses, these paths were freely estimated and the indicators and other paths were constrained to equality (Model 4).

Fourth, we estimated a series of models with various covariances constrained to equality across child gender (see Table 2; Models 5a-e). Fit indices were adequate. Models 5a and 5b indicated that the covariances between the indicators on the marital functioning latent variable (Covariances 1-4), the indicators on the child responsiveness latent variables (Covariances 5-7), and the dyadic and triadic latent variables (8-15) were equivalent across child gender. However, Model 5c was significantly different than Model 5b ($p < .05$). Examining the covariances one at a time indicated Covariance 16 (between mothers' responsiveness and child responsiveness to mothers) did not differ as a function of gender (Model 5d; $p > .05$), but Covariance 17 (between fathers' responsiveness and child responsiveness to fathers) did (Model 5e; $p < .05$; girls: $r = .40$, $p < .05$; boys: $r = -.17$, $p > .05$). Thus, in the final model (Model 5d), all covariances were constrained to equality, except Covariance 17. Few covariances were significant, except those between the disturbances on triadic warmth with each of the disturbances on the parent responsiveness latent variables ($r_s = -.21$ and $-.19$; $p_s > .05$). On the indicators, Covariances 1 to 3 were significant ($r_s = -.41$ to $-.74$; $p_s < .05$), but 4 to 7 were not. Full results are available upon request.

²When a covariance was added on the disturbances of the indicators on the externalizing and internalizing latent variables, results did not change.

Does Parents' Marital Functioning Influence Children's Adjustment via Parenting in Dyadic and Triadic Contexts?

To establish mediation, there must be a significant direct association between the predictor and the outcome variable. However, to establish an intervening mechanism, direct paths between the predictor and outcome variables need not be significant (MacKinnon et al., 2002). That is, even if marital functioning is not directly related to children's level of adjustment, marital functioning may be indirectly related to child adjustment via parenting (e.g., Davies et al., 2009). Thus, to examine whether parenting may serve as a mediating or an intervening variable, we estimated the magnitude of the direct paths between marital functioning and children's adjustment by constraining the indirect paths to zero. The direct paths from marital functioning to children's adjustment were not significant (internalizing: $b = .17$ for boys; $.16$ for girls; $[-.10]$, critical ratios [CRs] = 1.46; $ps > .05$; externalizing: $b = .25$ $[-.14]$, CR = 1.54; $p > .05$ for boys), except for the path from marital functioning to externalizing problems for girls ($b = .39$ $[-.16]$, CR = 2.36; $p < .05$).

Next, we examined whether (a) parenting served as an intervening mechanism between marital functioning with each internalizing (boys and girls) and externalizing (boys only) behavior, and (b) parenting mediated the link between marital functioning and externalizing behavior for girls. To do so, we examined the final model (Model 5d) that included the direct paths between marital functioning and child adjustment, and the indirect paths from marital functioning to the proposed intervening=mediating variables and from the intervening=mediating variables to child adjustment (Figure 1). Results of the final model are presented in Figure 2.³

Consistent with the spillover model, marital functioning was related to child adjustment via dyadic and triadic parenting. First, more adaptive marital functioning was related to greater triadic warmth (CRs = -3.08 , $ps < .05$), which in turn was related to lower levels of boys' and girls' internalizing (CRs = 3.18 , $ps < .05$) and externalizing (CR = -3.08 , $ps < .05$) behavior. Follow-up tests (MacKinnon et al., 2002) indicated that the indirect effects were significant ($z' = -2.22$ for internalizing; $z' = -2.26$ for externalizing), with triadic warmth accounting for 18% of the total effect mediated for boys' internalizing, 27% for boys' externalizing, and 26% for each girls' externalizing and internalizing. Second, more adaptive marital functioning was related to greater levels of child responsiveness to their mothers (CRs = 2.30 , $ps < .05$), which in turn was related to greater levels of boys' internalizing (CR = -2.42 , $p < .05$, but not girls: CR = 1.28 , $p > .05$) and lower levels of girls' externalizing (CR = 2.43 , $p < .05$, but not boys: CR = $-.78$, $p > .05$). The indirect effects were significant (boys' internalizing: $z' = -1.76$; girls externalizing: $z' = 1.76$), with child responsiveness accounting for 39% of the total effect mediated for boys' internalizing and 17% for girls' externalizing.

³We examined whether number of children the family was raising and mother and father age affected the results by conducting separate analyses that included each variable as a measured variable, and adding causal paths between the variable and each latent variables. The inclusion of these variables did not change the significance of the mediators=intervening mechanisms, but the path from marital functioning to fathers' responsiveness and the direct paths to internalizing behavior were no longer significant. In addition, in the analyses with mothers' and fathers' age, triadic hostility was no longer related to boys' internalizing, and in the analysis with fathers' age, the direct paths to girls' externalizing was not significant.

However, marital functioning was not related to child adjustment through all aspects of dyadic and triadic parenting. First, although more adaptive marital functioning was related to greater father responsiveness ($CRs=1.96, ps = .05$), father responsiveness was unrelated to child internalizing ($CRs = .21, ps > .05$) and externalizing ($CRs = 1.18, ps > .05$) behavior. Second, among families where the participating child was a girl, more adaptive marital functioning was related to lower levels of triadic hostility ($CR = 2.34, p < .05$), but hostility was not related to girls' internalizing ($CR = -.34, p > .05$) or externalizing ($CR = 1.41, p > .05$) behavior. In contrast, among families where the participating child was a boy, marital functioning was unrelated to hostility ($CR = -.67, p > .05$); but lower levels of hostility were related to greater internalizing ($CR = -2.76, p < .05$) and externalizing ($CR = -2.49, p < .05$) behavior. Third, greater maternal responsiveness was related to lower internalizing ($CRs = 2.41, ps < .05$) and externalizing ($CRs = 2.60, ps < .05$), but marital functioning was unrelated to maternal responsiveness ($CRs= 1.04, ps > .05$). Fourth, child responsiveness to fathers was related to externalizing ($CR = 2.21, ps < .05$), but not internalizing ($CRs = .50, ps > .05$) behavior, and marital functioning was unrelated to child responsiveness to fathers ($CRs = .83, ps > .05$).

Finally, in the model including both direct and indirect effects, the direct effect of marital functioning on girls' externalizing behavior was no longer significant ($CR=1.58, p > .05$), further supporting the mediating roles of triadic warmth and children's responsiveness to their mothers. In contrast, the other direct paths became significant when the indirect effects were included: more adaptive marital functioning was related to lower levels of girls' and boys' internalizing behavior ($CR = 2.14, ps < .05$) and lower levels of externalizing behavior for boys ($CR = 2.045, p < .05$). This pattern reflects inconsistent mediation (i.e., suppression) where the total effect of marital functioning on child adjustment is positive (i.e., more adaptive marital functioning is associated with better adjustment), but the sum of the indirect effects is negative (e.g., the indirect effect of triadic warmth is negative), thereby strengthening the direct effect (MacKinnon, Fairchild, & Fritz, 2007). This suggests that when you account for the opposite magnitude of the indirect effects in the model, the direct effect between marital functioning and child adjustment becomes stronger, rather than weaker, as in a model with consistent mediation.⁴

Does Parent Gender Moderate Spillover Effects in the Dyadic System?

To test for moderation, corresponding paths for mothers and fathers were constrained to equality in Models 6a-f (see Table 1), and these models were compared with the final model (Model 5d) in which paths were free to vary across parent gender (but constrained to equality across child gender). All fit indices were adequate. Most spillover effects were equivalent for mothers and fathers. However, Models 6d (Paths 11 and 12 constrained) and Model 6f (Paths 17 and 18 constrained) were each significantly different from Model 5d ($ps < .05$). Specifically, the links between children's responsiveness with each parent and their

⁴For example, for boys' internalizing, the total effect ($\Sigma a\beta + \tau' = > -.13$) and the direct effect ($\tau = .17$) are opposing signs, resulting in inconsistent mediation. This occurs because the negative indirect effects account for 57% of the total effect whereas the positive indirect effects account for only 10%. In contrast, when the total and direct effects are the same direction, the direct effect is larger than the total effect. For example, for girls' externalizing, $\Sigma a\beta + \tau' = .32$ and τ is .39; thus, the direct effect is reduced when the indirect effects are included.

internalizing and externalizing problems were significantly stronger for mothers versus to fathers.

Supplementary Analyses

We examined a reverse effects model in which the latent variables remained the same, but path direction was reversed. All paths were constrained to equality, except that between externalizing behavior and triadic hostility, which differed across child gender, $\chi^2(809) = 1486.089$. Model fit was good (CFI=.96, RMSEA=.071), CI [.065, .077] $P_{close} = .000$. Few paths were significant. Child adjustment was significantly associated with children's responsiveness to mothers (internalizing: $\beta s = .40$; externalizing: $\beta s = .88$). Externalizing behavior was significantly related to children's responsiveness to their fathers (girls: $\beta = .31$; boys: $\beta = .33$) and to triadic hostility (girls: $\beta = .40$). Full results available upon request.

Discussion

Guided by the spillover model, the present study examined the role of dyadic and triadic parenting as mechanisms of links between parents' marital functioning and child adjustment. Overall, findings supported the spillover model, but results differed by child gender and outcome examined. First, children's responsiveness to their mothers emerged as a mechanism of spillover effects for boys' internalizing and girls' externalizing behavior. Second, triadic warmth emerged as mechanism of spillover effects for girls' and boys' internalizing and externalizing behavior. Third, several aspects of dyadic and triadic parenting were unrelated to marital functioning but were related to child adjustment. Finally, parent gender did not moderate the indirect effect of dyadic parenting, except that child responsiveness to mothers was more strongly associated with child adjustment than child responsiveness to fathers.

The Role of Parent–Child Responsiveness

Expanding upon prior work focusing primarily on parents' behavior as an indicator of parent–child relationship quality (e.g., Cui & Conger, 2008), our findings suggest that marital functioning influences children's adjustment by eroding children's responsiveness to their mothers, but not mothers' responsiveness to their children. Although research has identified aspects of children's cognitive, affective, and behavioral responses to marital conflict as mechanisms through which the marital system affects children's functioning (Buehler et al., 2007), the present study suggests that marital distress also affects child adjustment by reducing the quality of children's responsiveness to their mothers in everyday interactions. Notably, this finding emerged after accounting for the effects of parents' responsiveness and coparenting, highlighting the unique role that children's responsiveness to mothers plays within the family system. Of interest, differences emerged in the role of the child responsiveness in the mother–child versus father–child dyad, such that higher quality children's responsiveness to both parents was related to lower levels of externalizing problems (with the exception of the mother–son dyad), but only child responsiveness to mothers was related to the marital system. Consistent with this, prior work showed that during triadic interactions, adolescents' aggressive responses to mothers following interparental conflict more strongly predicted increases in future aggressive behavior, as

compared to their responses to fathers (Davis, Hops, Albert, & Sheeber, 1998). Together, this suggests that children's responses to their mothers may be more strongly tied to the marital system than their responses to their fathers, a result that remains to be clarified in future research.

In contrast to prior work (e.g., Sturge-Apple et al., 2010; Sturge-Apple et al., 2006), parents' responsiveness was not a mechanism of spillover effects. Our results were consistent with earlier work (e.g., Davies et al., 2009), in showing that marital functioning was related to fathers' responsiveness (but not mothers'; see Stroud et al., 2011, for a discussion of this finding), but mothers' responsiveness (but not fathers') was related to child adjustment. This suggests that although mothers may be able to contain emotions and insecurities generated in the marriage (e.g., Davies et al., 2009), when their parenting is compromised by other factors (e.g., Nelson et al., 2009), child adjustment may be more strongly linked to mothers' responsiveness. This finding adds to a mixed literature regarding the relative influence of mothers' versus fathers' parenting. Meta-analyses suggest that maternal and paternal parenting are similarly linked with children's internalizing problems (e.g., McLeod, Weisz, & Wood, 2007), but consistent with the present study, mothers' parenting may be more strongly related to externalizing behavior (Rothbaum & Weisz, 1994). Given the mixed findings as well as the likelihood that many factors affect the relative influence of paternal versus maternal parenting, future work examining the differential contributions of fathers' versus mothers' parenting to child adjustment is needed.

The Role of Coparenting

The current findings add to a small literature demonstrating that disruptions in triadic coparenting may be one way that the marital system influences child adjustment (Baril et al., 2007; Katz & Low, 2004). Parents' marital functioning was positively related to the degree of positive affect, warmth, and enjoyment in the triad, which in turn was related to children's adjustment. Together with evidence that parents' behavior differs in dyadic and triadic settings (Lindahl et al., 1997), this suggests that future work should continue to assess parenting in both contexts to understand how the health of marriage shapes children's adjustment via parenting.

The role of coparenting as a spillover mechanism was specific to triadic warmth; in contrast to prior work (Baril et al., 2007; Katz & Low, 2004), the level of negative affect and disagreement observed in the triadic interactions was not a mediator of spillover effects. In conjunction with prior work (McHale, 1995), this suggests that across infancy and early childhood, coparenting warmth and coparenting hostility may be independent factors that play unique roles in the family. Moreover, these findings underscore the importance of focusing both on the presence of negative coparenting practices and the absence of positive ones, to understand how marital distress permeates the family system (McHale, 1995). Future work should also consider positive and negative coparenting practices as mediators and moderators of spillover effects. For example, instead of serving as a mechanism, it may be that triadic hostility exacerbates dyadic spillover effects (e.g., Jia, Kotila, & Schoppe-Sullivan, 2012). In addition, higher levels of triadic hostility were related to marital functioning among families of girls but not boys. This highlights the need to consider other

factors, such as aspects of parents (e.g., psychopathology, personality, and attachment style; Belsky et al., 1995) and children (e.g., temperament; Cook, Schoppe-Sullivan, Buckley, & Davis, 2009) that contribute to the development of triadic hostility, particularly in families with boys.

Strengths and Limitations

This study had several strengths. We explored parenting in both dyadic and triadic contexts as mechanisms of spillover effects using multiple measures, methods (including observations of parents and children interacting), and reporters. In addition, both parent and child responsiveness in their dyadic interactions were examined. However, the cross-sectional design limits conclusions about causality. In addition, children's functioning may influence the marital system by disrupting the parent–child relationship and coparenting (e.g., Wymbs, 2011). Although there was little evidence for child effects on parent responsiveness, coparenting and the marital system, results of the reverse effects model suggest that child adjustment influences children's responsiveness to their parents. This highlights the need for future longitudinal research that examines bidirectional effects between the marital system and child adjustment. Moreover, our sample was mostly composed of married, White, heterosexual couples with young children, and findings may not generalize to other types of families or children of different ages. Finally, future work should use additional measures of family subsystems (e.g., observational measures of marital quality, microscopic coding of triadic interactions).

Conclusion

Our findings suggest that the marital system affects child adjustment by eroding aspects dyadic and triadic parent–child interactions. This suggests that intervention and prevention efforts should target dyadic and triadic parent–child interactions in the context of marital distress. Specifically, in the mother–child dyad, our findings highlight the need for interventions focusing on children's behavior within the mother–child relationship, rather than exclusively targeting mothers' behavior. Our findings also suggest that interventions should aim to increase the level of warmth, shared enjoyment, and positive affect expressed in triadic interactions. Finally, given the many ways the family influences children's functioning, our findings underscore the importance of improving the health of the family to promote young children's well-being.

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Figure 1.

Hypothesized model. Note: Covariances 1–17 and indicators not shown. Paths 19 and 20 are direct paths and curved only for ease of presentation. Indicators were as follows: Marital Functioning: DAS-mother report, DAS-father report, MSI-mother report, MSI-father report, mother self-reported affiliation, father self-reported affiliation, mother other-reported affiliation, father other-reported affiliation; Triadic Low Hostility: disagreement, hostility; Triadic Low Warmth: shared enjoyment, warmth; Mom and Dad Responsiveness: microscopic responsiveness to social, influence and negative/distress bids and macroscopic responsiveness; Child Responsiveness to Mother and Father: microscopic responsiveness to social and influence bids, macroscopic responsiveness; Low Internalizing Symptoms: mother-reported internalizing, father-reported internalizing. Low Externalizing Symptoms: mother-reported externalizing, father-reported externalizing.

Figure 2.

Model 5d. *Note:* Standardized path coefficients are presented (boys/girls). Covariances 1–17 and indicators not shown. Paths 19 and 20 are direct paths and curved only for ease of presentation. * $p < .05$.

Table 1
Intercorrelations Among and Descriptive Statistics for the Variables Included in the Models

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. DAS	—																
2. MSI-R	.79**	—															
3. Affiliation Self-Rated	.60**	.59**	—														
4. Affiliation Other-Rated	.57**	.59**	.66**	—													
5. Disagreement (r)	.04	.00	-.01	.04	—												
6. Hostility (r)	.11	.08	.04	.10	.58**	—											
7. Warmth (r)	-.14*	-.13*	-.12	-.22**	-.10	.09	—										
8. Enjoyment (r)	-.12*	-.11	-.17**	-.26**	-.15**	.07	.62**	—									
9. Child Resp-Global	.19*	.25**	.10	.13*	-.01	-.02	-.11	-.06	—								
10. Child Resp-Social	.15*	.15*	.10	.08	-.06	-.06	-.08	.04	.74**	—							
11. Child Resp-Inf	.10	.15*	.06	.08	.00	-.03	-.13*	-.02	.72**	.49**	—						
12. Parent Resp-Global	.18**	.22*	.21**	.17**	.09	.13*	-.17**	-.24**	.14*	.05	.14*	—					
13. Parent Resp-Social	.05	.07	.06	.05	.10	.11	-.12	-.17**	-.01	-.05	.06	.77**	—				
14. Parent Resp-Influence	.06	.00	.12*	.00	.09	.10	-.07	-.16**	-.01	.03	.04	.51**	.54**	—			
15. Parent Resp-Mood	.14*	.09	.16*	.16*	.10	.03	-.21**	-.31**	.12	.07	.10	.54**	.45**	.38**	—		
16. Externalizing (r)	.22**	.26**	.15*	.11	-.03	.06	.09	.06	.16*	.18**	.15*	.18**	.18**	-.06	.14	—	
17. Internalizing (r)	.08	.11	.09	.05	-.13*	-.07	.06	-.04	-.03	-.14*	-.03	.01	.07	-.03	.10	.59**	—
<i>n</i>	279	246	282	282	143	143	143	143	285	285	285	285	285	280	240	249	249
<i>M</i>	3.40	3.71	.00	.00	2.74	2.85	.82	.66	4.33	4.67	5.50	4.41	5.18	5.26	4.65	.78	.86
<i>SD</i>	.63	1.36	.93	.95	.32	.25	.45	.50	.87	.53	.54	.83	.50	.90	1.16	.20	.14

Note: *N* = 149 families (149 mothers, 149 fathers, 149 children). For the parent indicators (1–1; 12–17), both mothers and fathers received scores, and for the child responsiveness indicators (9–11), children received 1 score per parent. For the triadic indicators (5–8) each family received one score. DAS = Dyadic Adjustment Scale; MSI-R = Marital Satisfaction Index-Revised global scale; r = reversed; Resp = Responsiveness; Global = macroscopic responsiveness; Social, Influence, Mood = microscopic responsiveness to social, influence and negative/distress bids (respectively).

* $p < .05$.

** $p < .01$.

Table 2

Overall Fit Indices and Model Comparisons

Model	Overall Fit Indices					Model Comparison			
	χ^2	df	χ^2/df	CFI	RMSEA [95% CI]		χ^2	df	p
Tests of Moderation By Child Gender									
1. Free to Vary Model	1527.620	764	2.000	.944	.078 [.072, .083]				
2. Indicators Constrained	1545.775	776	1.992	.943	.077 [.072, .083]	1 v. 2	18.16	12	0.11
3a. Path 1 Constrained	1545.897	777	1.99	.943	.077 [.072, .083]	2 v. 3a	.122	1	.73
3b. Path 2 Constrained	1550.917	777	1.996	.943	.077 [.072, .083]	2 v.3b	5.142	1	.02
3c. Path 3 Constrained	1548.046	777	1.992	.943	.077 [.072, .083]	2 v. 3c	2.271	1	.13
3d. Path 4 Constrained	1545.846	777	1.990	.943	.077 [.072, .083]	2 v. 3d	.071	1	.79
3e. Path 5 Constrained	1546.882	777	1.991	.943	.077 [.072, .083]	2 v. 3e	1.107	1	.31
3f. Path 6 Constrained	1545.918	777	1.990	.943	.077 [.072, .083]	2 v. 3f	.143	1	.71
3g. Path 7 Constrained	1546.054	777	1.990	.943	.077 [.072, .083]	2 v. 3g	.279	1	.60
3h. Path 8 Constrained	1550.593	777	1.996	.943	.077 [.072, .083]	2 v.3h	4.818	1	.03
3i. Path 9 Constrained	1546.139	777	1.990	.943	.077 [.072, .083]	2 v. 3i	.364	1	.55
3j. Path 10 Constrained	1545.776	777	1.989	.943	.077 [.072, .083]	2 v. 3j	.001	1	.98
3k. Path 11 Constrained	1550.718	777	1.996	.943	.077 [.072, .083]	2 v. 3k	4.943	1	.03
3l. Path 12 Constrained	1546.595	777	1.990	.943	.077 [.072, .083]	2 v. 3l	.820	1	.37
3m. Path 13 Constrained	1549.408	777	1.994	.943	.077 [.072, .083]	2 v. 3m	3.633	1	.06
3n. Path 14 Constrained	1556.426	777	2.003	.943	.078 [.072, .083]	2 v.3n	10.651	1	.00
3o. Path 15 Constrained	1548.661	777	1.993	.942	.078 [.072, .083]	2 v. 3o	2.886	1	.09
3p. Path 16 Constrained	1546.401	777	1.990	.943	.077 [.072, .083]	2 v. 3p	.626	1	.43
3q. Path 17 Constrained	1552.657	777	1.998	.943	.078 [.072, .083]	2 v. 3q	6.882	1	.00
3r. Path 18 Constrained	1546.477	777	1.990	.943	.077 [.072, .083]	2 v. 3r	.702	1	.40
3s. Path 19 Constrained	1550.031	777	1.995	.943	.077 [.072, .083]	2 v. 3s	4.256	1	.04
3t. Path 20 Constrained	1548.582	777	1.993	.943	.077 [.072, .083]	2 v. 3t	2.807	1	.09
4. Constrain All Paths Except 2, 8, 11, 14, 17, 19	1558.745	790	1.973	.943	.077 [.071, .082]	2 v. 4	12.970	14	.53
5a. Covariances 1–7 Constrained	1563.091	797	1.961	.943	.076 [.071, .082]	4 v. 5a	4.346	7	.74
5b. Covariances 8–15 Constrained	1570.802	805	1.951	.943	.076 [.070, .081]	5a v. 5b	7.711	8	.46
5c. Covariances 15–16 Constrained	1579.340	807	1.957	.943	.076 [.070, .081]	5b v. 5c	8.538	2	.01

Model	Overall Fit Indices					Model Comparison			
	χ^2	df	χ^2/df	CFI	RMSEA [95% CI]		χ^2	df	p
5d. Covariance 16 Constrained	1570.920	806	1.949	.943	.076 [.070, .081]	5d v. 5b	.118	1	.73
5e. Covariance 17 Constrained	1579.232	806	1.959	.943	.076 [.070, .082]	5e v. 5b	8.430	1	.00
Tests of Moderation by Parent Gender									
6a. Paths 3 and 4 Constrained to Equality	1571.161	807	1.947	.944	.076 [.070, .081]	v 5d	.241	1	.62
6b. Paths 5 and 6 Constrained to Equality	1572.930	807	1.949	.943	.076 [.070, .081]	v 5d	2.010	1	.16
6c. Paths 9 and 10 Constrained to Equality	1573.117	807	1.949	.943	.076 [.070, .081]	v 5d	2.197	1	.14
6d. Paths 11 and 12 Constrained to Equality	1577.799	808	1.953	.943	.076 [.070, .081]	v 5d	6.879	2	.03
6e. Paths 15 and 16 Constrained to Equality	1572.127	807	1.948	.943	.076 [.070, .081]	v 5d	1.207	1	.27
6f. Paths 17 and 18 Constrained to Equality	1580.541	808	1.956	.943	.076 [.070, .081]	v 5d	9.621	2	.01

Note. Path numbers are shown in Figure 1. All models are significant ($p = .000$). All RMSEA P -close values = .000. In the final model (Model 5d), all of the indicators, paths and covariances were constrained to equality across child gender except Paths 2, 8, 11, 14, 17, 19, and Covariance 17. The final model (Model 5d) was used to test moderation by parent gender (Models 6a–f), paths were constrained to equality across parent gender. CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; χ^2 = chi-square difference between the models; df = degrees of freedom difference between the models.