Spillover to Triadic and Dyadic Systems in Families With Young Children

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Research has evidenced support for the spillover model, which asserts that parents’ marital functioning influences their parenting and coparenting behavior in dyadic (mother-child and father-child) and triadic (mother-father-child) family contexts. However, few studies have simultaneously investigated the spillover model in both parenting and coparenting systems, preventing examination of whether spillover impacts both systems equally or differentially. Further, little research has examined whether quality of the marital system influences children’s behavior toward their parents, as well as their parents’ behavior, in dyadic interactions. 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 aged 3 to 6 years ($n = 149$). Findings indicated that spillover occurs to multiple family systems, but the effects varied according to whose behavior (mother, father, child) was explored. In families of boys and girls, the marital system influenced warmth in triadic interactions, as well as fathers’ responsiveness and children’s responsiveness to mothers in dyadic interactions. Spillover effects were largely equivalent for girls and boys, but spillover to coparenting hostility in triadic interactions was limited to families raising girls. Parent gender also moderated associations between marital functioning and parent–child interactions: Spillover was significantly stronger for fathers’ responsiveness (vs. mothers’ responsiveness) and child responsiveness to mothers (vs. child responsiveness to fathers).

Keywords: spillover hypothesis, parenting, coparenting, child gender, parent–child relations

Understanding the interconnections among the marital relationship and the parent–child relationship is crucial for mapping the network of causal influences that characterize family functioning. Family systems theory approaches this research problem by emphasizing the hierarchical organization of the family system, in which each subsystem has unique properties as well as the potential to influence, and be influenced by, the other subsystems (Cox & Paley, 1997; Minuchin, 1985). Different accounts of the functional associations across subsystems have been offered, including how the marital system impacts parent–child relationships. One such model, the spillover hypothesis, posits that emotions and behavioral patterns that typify the marital relationship will bleed into the parent–child relationship (Enger, 1988), such that the health of the marriage causally influences parent–child relationship quality. Competing models propose that the marital and parent–child subsystems may be dissimilar in quality. For example, the compensatory hypothesis proposes that parents fill unmet needs in their marital relationship through the parent–child relationship (Enger, 1988). However, these alternative models have accumulated little evidence (Erel & Burman, 1995; Krishnakumar & Buehler, 2000).

By contrast, two meta-analytic studies provide support for the spillover hypothesis (Erel & Burman, 1995; Krishnakumar & Buehler, 2000). Several mechanisms have been proposed to account for these empirical findings. For example, parents may misdirect negativity in the marital relationship to their interactions with their children (i.e., scapegoating, detouring), or they may model dysfunctional relationship behaviors to their children, thus creating problematic parent–child interactions.
Spillover may also occur because the stress created by marital problems compromises parenting and coparenting behaviors (see Erel & Burman, 1995; Kitzmann, 2000). In line with this, recent work has identified decreased marital relationship security as one intervening mechanism linking interparental conflict and fathers’ future parenting difficulties (Davies, Sturge-Apple, Woitach, & Cummings, 2009). Finally, the associations between marital and parent–child systems may not reflect direct associations, but rather may be due to third variables affecting both systems (e.g., Davies, Sturge-Apple, & Cummings, 2004).

Despite considerable research documenting relationships between the marital and parent–child systems (Erel & Burman, 1995; Krishnakumar & Buehler, 2000), the conclusions one can draw from this literature are limited in that most of this work has focused on parenting behaviors. While parenting behaviors are a critical component of the parent–child relationship, they cannot fully represent the complexity of a relationship that involves two agentic actors seeking to connect with, and shape, one another, and who may have different (and sometimes competing) goals in their interactions. Previous work has shown that marital discord or conflict affects parents’ negativity (Belsky, Youngblade, Rovine, & Volling, 1991), affective attenuation (Lindahl, Clements, & Markman, 1997), and warmth with their child (Davies, Sturge-Apple, & Cummings, 2004). Importantly, however, few studies have examined how the marital system may impact how children respond to these parenting behaviors, let alone children’s behavior within the parent–child relationship. This represents a considerable gap in the existing literature, as the prevailing ecological approach to understanding the parent–child relationship emphasizes the role both children and parents play in determining the quality of their interactions and relationship (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Maccoby, 1992). There is abundant evidence that the marital system affects broader markers of child adjustment, including their psychosocial adjustment, school performance, and peer relationships (e.g., Davies & Cummings, 1994; Grych & Fincham, 1990). Guided by the emotional security hypothesis (Davies & Cummings, 1994) and the cognitive-contextual perspective (Grych & Fincham, 1993), research has described how children’s cognitive, emotional, and behavioral responses to interparental conflict may be mechanisms of the association between marital conflict and child outcomes (e.g., Buehler, Lange, & Franck, 2007). Investigators have also explored aspects of the parent–child relationship, including children’s representations of the parent–child relationship (e.g., Sturge-Apple, Davies, Winter, Cummings, & Schermerhorn, 2008), as mechanisms in the association between interparental conflict and children’s outcomes.

However, these distal outcomes provide little evidence that the marital system influences children’s experience of, or behavior in, the parent–child relationship. There is evidence that the marital system influences children’s attachment security with their parents (e.g., Owen & Cox, 1997) and children’s behavior toward their parents during marital conflict discussions (e.g., Gordis, Margolin, & John, 1997), but less work has explored if the marital system influences children’s behavior within parent–child interactions (cf. Keg, Cowan, & Cowan, 1993). Thus, while we have considerable evidence that the marital system affects parents’ behavior within the parent–child relationship as well as various child outcomes, we know less about whether spillover occurs for child behaviors in everyday dyadic parent–child interactions.

To capture the impact of the marital system on both parent and child contributors to the quality of their relationship, we examined the impact of the marital system on responsiveness in the parent–child dyad. Responsiveness is defined by the recognition of, and appropriate response to, the diverse 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). Observational measures of parent and child responsiveness to one another are related to later indicators of child moral development and conscience, suggesting this construct is important for understanding child socialization (Kochanska, Aksan, & Joy, 2007). Several studies have examined links between measures of parents’ responsiveness/sensitivity and marital quality. Most of this research has yielded support for the spillover hypothesis (e.g., Owen & Cox, 1997), but some studies suggest these effects may be limited to fathers (e.g., Nelson, O’Brien, Blankson, Calkins, & Keane, 2009; Davies et al., 2009). However, many have relied on self-reported measures (e.g., Davies et al., 2009; Nelson et al., 2009; Sturge-Apple, Davies, Boker, & Cummings, 2004) or used observational systems that yield macroscopic ratings (e.g., Owen & Cox, 1997; Sturge-Apple, Davies, & Cummings, 2006), and few studies have considered both parents’ and children’s responsiveness in their interactions. In one exception, Kerig and colleagues (1993) showed links between parents’ marital satisfaction on the frequency and type of children’s observed responses to their parents, but the impact on the quality of children’s responsiveness remains unknown. Further, most research examining responsiveness among parents of young children has focused narrowly on parents’ responses to children’s distress (e.g., Sturge-Apple et al., 2004; Davies et al., 2009), rather than interactions characterized by other issues, such as socialization/connection, instruction, encouragement, or discipline. We address these gaps by investigating both children’s and parents’ responsiveness to a diverse set of bids using observational measures of responsiveness quality in children, mothers, and fathers.

**Influence of the Marital System on Coparenting**

Although most research investigating the spillover hypothesis has focused on dyadic interactions, family systems theory also proposes that marital distress negatively impacts triadic interactions by interfering with effective coparenting (Cox, Paley, & Harter, 2001), the quality of parental involvement, and coordination as the parents collaborate to raise their child (Belsky, Crnic, & Gable, 1995). In accord with this, evidence suggests that marital distress affects the supportive (e.g., interparental warmth) and unsupportive
(e.g., conflict and hostility) aspects of coparenting (e.g., Lindahl et al., 1997; McHale, 1995). To fully understand the link between the marital system and parenting, it is imperative to capture multiple aspects of parenting, different components of which may be evident when mothers and fathers interact separately with their child than when all three family members interact together. Moreover, a central tenet of family systems theory is that the whole is more than the sum of its parts (Minuchin, 1985); thus, knowledge about dyadic systems may not represent the nature of triadic family systems (Lindsey & Caldera, 2006). In line with this, research suggests triadic coparenting may be unrelated to dyadic parenting, with research documenting differences in the observed quality and quantity of parents’ behavior in dyadic and triadic settings among children of varied ages (e.g., Johnson, 2001; Lindsey & Caldera, 2006; McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000). This suggests that to fully understand the spillover phenomenon, it is crucial to examine spillover to both systems simultaneously, rather than to piece together a model of the marital system’s effects based on separate studies of triadic and dyadic systems. If studies examining the spillover hypothesis include both dyadic and triadic assessments of parenting behavior, comparisons of spillover effects to these two family systems can be made and the unique spillover effects to each of the subsystems can be ascertained (i.e., spillover to the dyadic system after accounting for the association between the marital and triadic systems). Despite the advantages of including both observational assessments of parenting in dyadic and triadic settings, most research examining the spillover model has focused on only one of these systems. In a notable exception, Lindahl and colleagues (1997) included dyadic (mother-child, father-child) and triadic observational assessments of parents in a small sample of 25 families. Their findings suggested differential effects of marital functioning on parenting behavior in dyadic versus triadic contexts. In this study, the triadic interaction was a discussion of problems in the couple’s relationship with the child present. This may reveal the extent to which parents engage in positive and negative behaviors toward their spouse in the presence of their child, but it is likely less sensitive to coparenting. In the present study, we expand upon this by investigating spillover to the dyadic and triadic systems in a larger sample, using triadic tasks designed to elicit coparenting behaviors.

The Current Study

We sought to extend previous research in a number of ways. First, we examined the influence of the marital system on both dyadic (parent–child) and triadic systems (mother–father–child), permitting a comparison of spillover effects to these systems as well as an examination of the unique spillover effects to each system. Second, we explored the impact of the marital system on both parent and child moment-to-moment responsiveness to each other in dyadic interactions, using a previously validated micro- and macroscopic coding system (Kochanska & Aksan, 2004). Third, in line with recommendations to consider both positive and negative aspects of coparenting (McHale, 1997) and family relationships (e.g., Cui & Conger, 2008), we explored associations with multiple positive and negative aspects of each system, using multiple measures, methods (self-report and observational coding), and reporters (self- and other-report) as indicators of family functioning.

Based on family systems theory and previous research, we predicted that adaptive marital functioning would be related to both higher quality parental responsiveness (Figure 1, Paths 3

![Figure 1. Hypothesized model. Covariances 1–17 not shown. AF-s = self-reported affiliation; MSI = Marital Satisfaction Index, Revised; DAS = Dyadic Adjustment Scale; global = macroscopic responsiveness; social = microscopic responsiveness to social bids; influence = microscopic responsiveness to influence bids; mood = microscopic responsiveness to negative/distress bids.](image-url)
and 4) and children’s responsiveness to fathers and mothers (Paths 5 and 6). Given evidence consistent with spillover to the triad (e.g., McHale, 1995), we predicted associations between adaptive marital functioning and high triadic warmth (Path 2) and low triadic hostility (Path 1).

We also explored several potential moderators of spillover effects. First, we tested whether effects of marital quality on parent and child responsiveness varied for mothers versus fathers. Some evidence indicates that the association between marital discord and parenting (assessed via self-report and observation) is stronger for fathers (Krishnakumar & Buehler, 2000), including subsequent work investigating (self-reported) parent responsiveness specifically (Davies et al., 2009; Nelson et al., 2009). However, an earlier meta-analysis did not (when only studies that used different raters for marital and parent–child relationship quality were included; Erel & Burman, 1995). Given that our study used observational assessments of dyadic interactions as well as self- and partner-reports of marital quality, we anticipated that we might find weaker moderating effects of parent gender than those in Krishnakumar and Buehler’s (2000) meta-analysis. In terms of children’s responsiveness to their parents, the one prior study that investigated children’s responses to their parents obtained different effects as a function of parent gender (Kerig et al., 1993), compelling further investigation of parent gender as a moderator of the link between marital discord and child responsiveness.

Second, we examined child gender as a moderator of the degree to which marital quality was associated with dyadic and triadic interaction qualities. One meta-analysis of the marital conflict-parenting link found it was stronger for girls (Krishnakumar & Buehler, 2000), while another found no evidence for moderation among higher quality studies (Erel & Burman, 1995). Some studies indicate that spillover effects may be specific to boys for certain types of parenting practices, such as self-reported parental responsiveness (Sturge-Apple et al., 2004) or hostile-competitive coparenting in families with infants (McHale, 1995). Thus, there is some evidence that spillover effects to dyadic and triadic parenting may be moderated by child gender. As only one study has explored spillover effects to children’s responsiveness, we did not have strong predictions about moderation for these effects. Thus, these analyses were exploratory.

Method

Participants and Procedure

Families were recruited from the Chicago area using a mailing list (41%), referrals and word-of-mouth (36%), and radio and Internet advertisements (23%) for a study on children’s risk for psychopathology. Families were eligible if they had a biological child between the ages of 3 and 6.5 years ($M = 54.43$ months; $SD = 10.94$; 91 males; 77 females) and had cohabitated for the duration of that child’s lifetime. Most couples were married (94.8%) and were raising one to six children ($M = 2.34$; $SD = .99$). The study included two laboratory visits, one assessing child temperament and the second assessing family interactions. Of the 168 families enrolled, 148 families completed the family assessment.\(^1\) Ns varied for some measures due to missing data (see Table 1).

 Mothers were 23 to 52 years old ($n = 148$; $M = 36.98$; $SD = 5.18$) and fathers were 23 to 57 years old ($n = 148$; $M = 38.71$; $SD = 6.22$). Self-reported ethnicity was Caucasian/White, 62.2% mothers and fathers; Hispanic/Latina(o), 9.5% mothers and 8.8% fathers; Black/African American, 7.4% mothers and fathers; Asian, 6.1% mothers and 2.7% fathers; Native American, 1.4% mothers and fathers; bi-/multiracial .7% mothers and 1.4% fathers; and other, 1.4% mothers and 5.4% fathers (16.9% mothers and 18.9% fathers missing).\(^2\) For couples where both partners reported ethnicity, 80.7% reported the same ethnicity and 19.3% reported different ethnicity. Self-reported family income was 1.2%, < $10,000; 12.5%, $21,000–$40,000; 12.5%, $41,000–$60,000; 23.8%, $61,000–$100,000; and 23.8%, > $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 over 200 studies and elicits naturalistic levels of couples’ expressed and experienced emotions (Foster, Caplan, & Howe, 1997). Parents rated areas of disagreement in their relationship on the Dyadic Adjustment Scale (DAS; Spanier, 1976), a 32-item self-report inventory designed to measure severity of relationship discord. The mean score was used ($\alpha = .94$ for mothers, .95 for fathers).\(^3\) Task order was (a) vacation: plan a vacation together (5 min; designed as a warm-up); (b) conflicts 1 and 2: discuss one topic identified through each partners’ DAS (based on the greatest areas of disagreement) and generate a solution (8 min each; order randomized); (c) sadness discussions 1 and 2: discuss how they coped as a couple when each partner was feeling depressed/sad (5 min each; order randomized); (d) best things: discuss the best aspects of their relationship/their partner (5 min; designed as a cooldown).

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.

\(^1\) Of the 20 families who did not participate in the second visit, 11 provided some demographic data. Those who did versus did not participate in the family assessment did not differ on the number of children they were raising or parents’ mean age ($ps > .05$).

\(^2\) The percentages for ethnicity do not sum to 100% because participants were allowed to select more than one category.

\(^3\) As some participants did not answer all DAS items, the sum is inaccurate estimation of their level of marital satisfaction. Therefore, we took the mean of all items, if participants completed at least 26 of the 32 items.
Table 1
Intercorrelations Among and Descriptive Statistics for the Variables Included in the Models

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**Note.** Total N = 149 families (149 mothers, 149 fathers, 149 children). For the parent indicators, both mothers and fathers received scores, and for the child responsiveness indicators (9–11), children received 1 score per parent. DAS = Dyadic Adjustment Scale; MSI-R global = Marital Satisfaction Index-Revised global scale; AF = affiliation; Disagree = disagreement; rev = reverse coded; P = parent; C = child; Global = macroscopic responsiveness; Social = microscopic responsiveness to social bids; Inf = microscopic responsiveness to influence bids; mood = microscopic responsiveness to negative/distress bids.

* p < .05.  ** p < .01.
items) their partner, and how their partner treated (eight items) and reacted to (eight items) them or a 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 spouse on each surface (self vs. other), yielding four scales. The autonomy vectors were not used, as they did not load significantly on the marital functioning latent variable. Given high intercorrelations between the affiliation vectors on each surface (rs = .75 – .86), we created two composites (self-rated [α = .84] and partner-rated [α = .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 (α = .94). The MSI-R has shown good psychometric properties.

The DAS mean, self- and partner-rated SASH intex affiliation composites, and the MSI-R global distress scores were the indicators of the marital functioning latent variable (see Figure 1).

Parent-child relationship functioning. Parent and child responsiveness were assessed using tasks designed to elicit positive and negative aspects of their relationship. Tasks were selected to capture typical parent–child interaction domains, including instruction, discipline, and play, and were drawn or adapted from previous research (Egeland et al., 1995; Kochanska & Aksan, 1995). Each parent participated in three 4- to 6-min tasks (M = 11.84 total, SD = 1.19; mother vs. father first randomized). Parent-child tasks were (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, with each drawing a line connecting to their partner’s previous line. Father-child tasks were (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.

Coding. Dyadic tasks were videotaped and coded using a coding scheme developed by Kochanska and Aksan (2004). 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). All coders underwent extensive training and were blind to all triadic and marital functioning data. Two independent raters coded 25% of the tasks to assess reliability, separate coders rated the tasks for child bids/ parent responsiveness and parent bids/child responsiveness, and separate groups rated mothers and fathers.

Microscopic parent and child responsiveness. Child bid/parent responsiveness coders made two passes per task. First, they identified child bids to the parent (an overture or signal with the potential for response). Second, they rated the quality of the parent’s response to each bid (maximum of eight bids and responses per 60-s interval). Each child bid was coded as one of three mutually exclusive codes: (a) social bid (verbal and nonverbal attempts to engage partner in social interaction [e.g., attempts at conversation]); (b) influence bid (commands and attempts to control or guide the partner or the activity); or (c) negative/distress bid (indicators of negative mood [e.g., whining]). Coders rated the quality of the parent’s response to each child bid 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 coding was similar. In the first pass, 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 (parent attempts to improve the child’s negative mood [e.g., soothing]). In the second pass, coders rated the quality of the child’s response to each parent bid coded using a 1 (poor) to 4 (exceptional) responsiveness scale; ratings were tailored to each bid type, and relevant qualitative aspects of the child’s behavior were considered (e.g., promptness, eagerness, wholeheartedness of response, if the child’s response is likely to please the parent) and were tailored to the developmental stage of this sample (preschool to early childhood age).

Macroscopic parent and child responsiveness. Coders also rated the overall quality of the parent’s or child’s responsiveness across the entire task using a scale ranging from 1 (highly unresponsive) to 6 (highly responsive). Ratings considered aspects of sensitivity–insensitivity, acceptance–rejection, and cooperation–interference.

Data reduction. Composite microscopic responsiveness variables were calculated by summing parent or child responsiveness ratings to bids in each category (e.g., social, influence), and then 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), 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 (see Figure 1). Child responsiveness to their parents’ mood-regulating bids did not load significantly on the latent variable and was not used as an indicator.

4 The ICC for parent responsiveness to child negative/distress bids (which occurred infrequently) was relatively low. We repeated the analyses without this indicator, and the results did not change, reducing concerns that use of this indicator biased the results.
Triadic functioning. The triadic interaction battery included cooperation, play, and compliance tasks, adapted from previous research (Egeland et al., 1995; Eyberg & Robinson, 1981) or developed for the present study. Tasks were selected to sample from a broad range of interactions common in families of young children, including free play, eliciting child compliance, and instructional/teaching contexts. Each triad completed four 4- to 6-min structured tasks (M = 18.70 total, SD = 2.43). Tasks included (a) 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 game: the family tried to toss small, bouncy balls into buckets spread 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 designed for this study. All coders underwent extensive training and were blind to all dyadic and marital functioning data; two independent raters coded 25% of the tasks to assess reliability. After viewing each task, the quality of each coparenting construct was rated using a 0 (never demonstrated the variable) to 3 (exhibited multiple instances of the variable) scale. Anchors were described for each variable that indicated the specific number of occurrences and gave behavioral examples for each scale code. Each family was given one score for each coparenting variable for each task. In line with recommendations to examine both positive and negative aspects of coparenting (McHale, 1997), the following coparenting variables were coded: (a) shared enjoyment: extent to which parents showed joint enjoyment of the task or child (e.g., laughing together; ICC = .86); (b) warmth/positive affect: amount and intensity of warmth/positive affect directed toward the spouse (e.g., facial expressions, verbal statements of warmth, appreciation or affection, or physical signs of affection; ICC = .79); (c) hostility/negative affect: amount and intensity of negative affect/hostility directed toward the spouse (e.g., facial expressions, verbalizations with negative tone/content, or physical signs of hostility [eye rolling]; ICC = .93); and (d) disagreement: extent to which each parent opposed the other’s actions with the child (e.g., behaviors showing disapproval/discouragement or engaging in a strategy that directly competed with the other parent’s interaction with the child; ICC = .80).

Data reduction. Scores for each triadic 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 (α = .78 across tasks) and hostility (α = .80; reverse-scored), each indicated by the ratings that loaded on each factor.

Data Analyses

Structural equation modeling (SEM) 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) χ²; (b) Comparative Fit Index (.95 reflects good fit; Hu & Bentler, 1998); and (c) the Root Mean Squared Error of Approximation (RMSEA; < .06 reflects good fit, Hu & Bentler, 1998; < .08 reflects adequate fit, Browne & Cudeck, 1993) and its 90% confidence intervals (small ranges signify the RMSEA is accurately reflecting fit).

Results

See Table 1 for descriptive data and intercorrelations. First, separate measurement models were examined to create latent variables (see Figure 1). All manifest indicators had significant loadings on their respective latent variables, with standardized coefficients in the moderate to high range (range = .50–.94, median = .79). Second, we estimated a spillover model by including direct paths from marital functioning to each of the latent variables (see 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). We included covariances 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) mothers’ responsiveness to their child and children’s responsiveness to their mother (Covariance 16); and (e) fathers’ responsiveness and children’s responsiveness to their father (Covariance 17).

Does Child Gender Moderate Spillover Effects to Dyadic and Triadic Systems?

To explore child gender as a moderator, we next conducted multiple-group models. For each model, we set equality constraints on the model parameters (requiring them to be equivalent for girls and boys) to identify which aspects of the model were equivalent (or varied) across groups. At each step, the model with equality constraints was compared with a model in which the relevant parameters were free to vary by evaluating the Δχ² (see 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 the indicator loadings were constrained to equality. Fit indices were adequate, and it was not significantly different than Model 1, suggesting loadings were equivalent for boys and girls.
Third, retaining the constraints on the indicators, we estimated six separate models in which one gender (Model 5d; \( p < .05 \)) but Covariance 17 did \((r = .35 [.14], CR = 2.53, p < .05)\), but for boys, it was unrelated \((b = -.08 [.12], CR = -.65; p > .05)\).

In the final model, few covariances were significant, including those between the dyadic and triadic systems, except that between the disturbances on triadic warmth and fathers’ responsiveness (Covariance 14; \( r = .19 \) for boys and .23 for girls; \( p < .05 \)). This suggests that to the extent there is shared variance across triadic and dyadic systems (not accounted for by the effects of the marital system), it appears to be largely driven by links between fathers’ dyadic responsiveness and triadic warmth. Triadic relationship quality was not related to dyadic child responsiveness after accounting for the effects of the marital system on the dyad.

### 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 and 6b. Paths 3 & 4 constrained to equality \((b = .26 [.09], CR = 2.77; ps < .05)\), greater levels of responsiveness by fathers to their child \((b = .07 [.03], CR = 1.99; ps < .05)\), and greater levels of child responsiveness to their mothers \((b = .09 [.04], CR = 2.42; ps < .05)\). Contradicting the spillover hypothesis, marital functioning was unrelated to mothers’ responsiveness to their child \((b = .04 [.04], CR = 1.11; ps > .05)\) and child responsiveness to their fathers \((b = .02 [.02], CR = .77; ps > .05)\). Finally, there were significant gender differences for spillover to triadic hostility: for girls, more adaptive marital functioning was significantly related to lower levels of hostility \((b = .35 [.14], CR = 2.53, p < .05)\), but for boys, it was unrelated \((b = .08 [.12], CR = -.65; p > .05)\).
6b. 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. Model 6a (Paths 3 and 4 constrained) was significantly different from Model 5d, suggesting Paths 3 and 4 were significantly different ($p < .05$). Model 6b (Paths 5 and 6 constrained) was significantly different from Model 5d, suggesting Paths 5 and 6 were significantly different ($p < .05$). Together, this suggests that spillover effects to parent responsiveness were significantly stronger for fathers versus for mothers, whereas spillover effects were significantly stronger for child responsiveness to mothers versus to fathers.

**Discussion**

Using observational measures of parents and their children in dyadic and triadic contexts, we examined the spillover hypothesis in a sample of families of young children. Overall, results supported the spillover hypothesis, but there were gender differences in these effects. Three main findings emerged. First, among families of girls and boys, spillover of marital quality occurred to triadic warmth, fathers’ responsiveness, and child responsiveness to their mothers, but there was no evidence of spillover to mothers’ responsiveness or to child responsiveness to fathers. Second, spillover effects were significantly stronger for fathers’ responsiveness (as compared with mothers’ responsiveness), whereas spillover effects were significantly stronger for child responsiveness to mothers (as compared with child responsiveness to fathers). Third, spillover effects were largely equivalent for girls and boys, with the exception of triadic hostility: Among parents of girls only, more adaptive marital functioning was related to lower levels of hostility in the triad.

**Spillover of Parents’ Marital Functioning to Parent-Child Dyadic Responsiveness**

In accord with previous research (e.g., Davies et al., 2009), parents’ marital functioning was related to fathers’ (but not mothers’) responsiveness to their children; the link between marital functioning and parent responsiveness was stronger for fathers than mothers, regardless of child gender. Our findings extend previous research investigating spillover to parent responsiveness in that we used micro- and macroanalytic ratings of observational responsiveness, rather than self-reported measures (e.g., Davies et al., 2009; Nelson et al., 2009) or only macroscopic measures (e.g., Sturge-Apple et al., 2006; Cui & Conger, 2008). Further, some previous work with young children has largely focused on responsiveness to children’s distress (e.g., Davies et al., 2009); in line with findings based on global ratings of responsiveness (e.g., Owen & Cox, 1997), our findings suggest that marital functioning is related to fathers’ responsiveness to different types of bids, including, but not limited to, distress bids. Exploring parents’ responsiveness to a range of children’s bids is crucial, as parent–child interactions are characterized by a broad range of issues, cues, and concerns, and parents’ responsiveness to these different kinds of bids may have different consequences for children (Kochanska & Aksan, 2004). Our findings suggest that the link between the marital system and fathers’ responsiveness may be evident across a wide range of father-child interac-
tions (e.g., attempts to socialize with and influence one another in play and discipline). Finally, most research examining spillover to parent responsiveness has focused on infancy (e.g., Owen & Cox, 1997) and middle childhood (e.g., Nelson et al., 2009). Our findings suggest that fathers’ responsiveness to youth in early childhood is also linked to their marital functioning.

Our findings also align with the father vulnerability hypothesis (Cummings, Merrilees, & George, 2010), which proposes that marital distress has a greater impact on fathers’ parenting as compared with mothers’, potentially due to fathers’ greater difficulty containing emotions and insecurities generated in the marital system (e.g., Belsky et al., 1991; Davies et al., 2009). Another potential explanation could be that children made more bids to fathers (vs. mothers) or that fathers had higher levels of responsiveness as compared with mothers, thereby increasing the potential that spillover effects would be evident for fathers’ responsiveness. However, based on the average number of bids, children made significantly more bids to their mothers than their fathers ($p < .05$), and mothers and fathers were coded as being equally responsive (based on macroscopic ratings; $p < .05$). Thus, differences in number of child bids or level of parent responsiveness across mothers and fathers could not explain the finding in our sample. Alternatively, it may be that responsiveness in mothers is influenced by stressors outside of the marital relationship. For example, Nelson and colleagues (2009) showed that mothers’ responses to children’s negative emotions were influenced by their perception of home chaos and disorganization (but not marital dissatisfaction), whereas the opposite pattern of results was obtained for fathers. Further research is needed to clarify the mechanisms underlying spillover to fathers’ responsiveness, such as identifying if fathers’ attachment within the marriage is also a mechanism underlying this spillover (Davies et al., 2009).

Although several studies have examined links between marital functioning and parents’ responsiveness, as well as links between the marital system and a variety of child outcomes, including aspects of the parent–child relationship (e.g., Owen & Cox, 1997; Sturge-Apple et al., 2006; Sturge-Apple et al., 2008), little research has examined whether children’s responsiveness to their parents is related to parents’ marital functioning. Consistent with the one prior study that examined the quantity and type of child’s responses in dyadic interactions (Kerig et al., 1993), our findings show that the marital system may be related to the quality of children’s responsiveness to their mothers but not to their fathers. One potential explanation for this finding is that, compared with fathers, mothers made more bids to children. However, on average, fathers made significantly more bids than mothers ($p < .05$). Alternatively, it may be that children were more responsive to mothers than fathers, thereby increasing the potential to find spillover effects in children’s responsiveness to their mothers. However, children were equally responsive to their fathers’ and mothers’ bids ($p > .05$). This suggests that even though children were equally responsive to their parents, their responsiveness to their mothers was more strongly linked to their parents’ marital functioning. More work is needed to clarify links between the marital relationship and children’s behavior within the parent–child relationship, in order to examine if the greater impact on children’s responsiveness to mothers is specific to children’s responsiveness or extends to other aspects of the parent–child relationship. However, other work does suggest that mothers may “pay the price” in families, as adolescents more frequently respond to their mothers (vs. to their fathers) with aggression in response to interparental conflict in triadic interactions (Davis, Hops, Alpert, & Sheeber, 1998). Similarly, among young children of parents who were maritally dissatisfied, children made more positive and negative responses to their mothers than their fathers, suggesting that mothers may often be the targets of negative (and positive) responses (Kerig et al., 1993).

**Spillover of Parents’ Marital Functioning to Co-Parenting**

The current findings add to the literature demonstrating spillover to coparenting/triadic contexts (e.g., McHale, 1995). Parents’ marital functioning was positively linked to the degree of positive affect, warmth, and shared enjoyment in the triad even after accounting for spillover effects on the dyadic parent–child system. Together with existing work, our results indicate that this link is fairly robust, as it has been found in families with children of varied ages, using observational measures, and in both cross-sectional and longitudinal studies.

Spillover effects for triadic warmth were evident in all families, but there were significant gender differences in spillover to triadic hostility. For daughters only, parents’ marital distress was associated with the degree of coparenting hostility, negative affect, and disagreement, contradicting a prior study which showed marital distress was linked with the frequency of hostile/competitive coparenting in parents of infant boys but not girls (McHale, 1995). Given the divergent findings, investigating the interaction of factors that contribute to gender differences in spillover effects for coparenting in families with children of varied ages is needed.

Few studies examining the spillover model have included dyadic and triadic observations of parents with their children. Our findings suggest that the marital system independently influences the dyadic and triadic systems, even when accounting for the overlap between the systems. Further, to the extent that the quality of dyadic parent–child relationships covaries with quality of triadic coparenting, this is primarily driven by links between fathers’ responsiveness and coparenting warmth. Although not investigated in the present study, this overlap may be due to characteristics of fathers that influence their parenting in both systems (e.g., personality traits, parenting values). Of note, child responsiveness was not related to the triadic interaction after accounting for the effects of the marital system, suggesting that coparenting may be largely unrelated to children’s responsiveness to their parents in dyadic interactions. Consistent with prior work demonstrating differences in parent-
ing behavior in dyadic and triadic contexts (e.g., Lindsey & Caldera, 2006), this indicates some degree of independence of parent–child interaction qualities in the dyadic versus triadic contexts.

**Strengths and Limitations**

This study has several strengths. We examined the influence of the marital system on the dyadic and triadic systems in a sample of families with young children using multiple measures, methods (including observations of parents and children interacting), and reporters. Both parent and child responsiveness in their dyadic interactions was explored. Finally, we examined the impact of child and parent gender on spillover effects. However, the study also has limitations. We did not include an observational measurement of the marital system. The design was cross-sectional, limiting conclusions about causality; thus, we cannot rule out the possibility that third variables may account for links between the systems. Furthermore, we were not able to examine if the observed effects varied according to race/ethnicity; future research should continue to address this question. Finally, we did not explore other moderators or mechanisms underlying the spillover effects.

In sum, our findings suggest that parents’ marital functioning may have different effects on the mother-child and father-child dyad. This indicates that there may be different intervention and prevention targets in these relationships in the context of marital distress. To produce changes in fathers’ dyadic parenting, targeting the marital relationship is critical. This aligns with findings from a study of the effects of a preventive intervention for couples, which showed that fathers, but not mothers, were warmer and more responsive to their young children in dyadic interactions following a maritally focused intervention (Cowan, Cowan, & Heming, 2005). However, for the mother-child dyad, our findings highlight the need for interventions addressing children’s behavior within the mother-child relationship. Finally, our findings also support targeting the marital relationship to produce changes in coparenting behavior (Gattis, Simpson, & Christensen, 2008), especially in families with daughters.

**References**


Received January 14, 2011
Revision received August 2, 2011
Accepted August 9, 2011