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Abstract

The common fate model (CFM) is a reliable model in family or dyadic-level research that better explains the inherent interdependence in intimate relationships. Based on the common fate model, this study examined the influence of overall family marital quality on parental coparenting and the cross-level mediating role of parenting sense of competence between them. Using a questionnaire method, fathers and mothers of children (mean age 5.14 years, age range 4-7 years) from kindergartens in Shanghai were selected through stratified cluster sampling. Data were collected across two time points (T1, T2; 1-year interval), and data from 650 families were obtained, including fathers' and mothers' marital satisfaction questionnaires (T1), parenting sense of competence questionnaires (T2), and coparenting perception questionnaires (T2) for analysis. The results revealed: (1) Based on the common fate model, family-level marital quality positively predicted family-level supportive coparenting and negatively predicted family-level undermining coparenting; (2) family-level marital quality positively predicted each parent's parenting sense of competence; (3) each parent's parenting sense of competence positively predicted family-level supportive coparenting and negatively predicted family-level undermining coparenting; and (4) parents' individual-level parenting sense of competence mediated the relationship between family-level marital quality and both family-level supportive and undermining coparenting. In summary, this study utilized the common fate model based on longitudinal data, integrating family-level (marital quality and coparenting) and individual-level (parenting sense of competence) perspectives to examine the cross-level mediating effect of parenting sense of competence between marital quality and parental coparenting, providing theoretical support and practical guidance for fostering a positive family environment and further advancing the development of the common fate model.

Full Text

The Effects of Marital Quality on Coparenting: A Cross-Level Mediation Analysis Based on the Common Fate Model

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Abstract

The Common Fate Model (CFM) is a reliable framework for family or dyadic-level research that better explains the inherent interdependence in intimate relationships. Based on the CFM, this study examined how family-level marital quality influences parental coparenting and the cross-level mediating role of parenting sense of competence. Using a questionnaire method, we conducted stratified cluster sampling of fathers and mothers of children (average age 5.14 years, range 4-7) in Shanghai kindergartens. Data were collected at two time points (T1, T2; one-year interval), yielding complete data from 650 families including fathers' and mothers' marital satisfaction questionnaires (T1), parenting sense of competence questionnaires (T2), and coparenting perception questionnaires (T2). Results showed: (1) Based on the CFM, family-level marital quality positively predicted family-level supportive coparenting and negatively predicted family-level undermining coparenting; (2) Family-level marital quality positively predicted each parent's individual sense of parenting competence; (3) Each parent's sense of parenting competence positively predicted family-level supportive coparenting and negatively predicted family-level undermining coparenting; (4) Parents' individual-level sense of parenting competence mediated the relationship between family-level marital quality and both supportive and undermining coparenting. In summary, this study employed longitudinal data using the CFM to examine cross-level mediation effects from "family level (marital quality and coparenting) to individual level (parenting sense of competence) and back to family level," providing theoretical support and practical guidance for creating positive family environments while advancing the development of the CFM.

Keywords: marital quality, supportive coparenting, undermining coparenting, parenting sense of competence, common fate model

1.1 The Influence of Marital Quality on Coparenting: Based on the Common Fate Model

Research by Gottman and Notarius (2002) indicates that marital satisfaction declines significantly after the birth of the first child, while high-quality marital relationships are crucial for maintaining family stability, affecting not only the well-being of both spouses but also child development (Erel & Burman, 1995; Wang et al., 2022). When children are in early childhood, parental childrearing practices are in a stage of exploration and dynamic change (Davies et al., 2004). In contemporary Chinese families with children, most young fathers and mothers must balance work demands with allocating time and energy to childcare. Therefore, establishing cooperative coparenting relationships to share childrearing responsibilities and achieve work-life balance is particularly important (Feinberg, 2003).

Coparenting refers to parents coordinating their parental roles and sharing childrearing responsibilities through reasonable division of labor, representing the relationship between adults who assume parental roles in a family (Schoppe-Sullivan et al., 2004). Coparenting can be categorized into supportive coparenting and undermining coparenting (Stright & Bales, 2003). Supportive coparenting is characterized by mutual support in childrearing, including affirming each other's parenting abilities, acknowledging and respecting each other's contributions, and maintaining each other's parenting decisions and authority (Belsky et al., 1996; McHale, 1995). Undermining coparenting involves unsupportive behaviors such as criticism, disparagement, and blame that weaken the other parent (Feinberg, 2003), with some parents engaging in destructive competition to gain authority in childrearing while disqualifying the other parent (Thinger-Tallman et al., 1995). Previous research has found that coparenting significantly influences children's cognitive development (Cabrera et al., 2012), emotional well-being (Teubert & Pinquart, 2011), and problem behaviors (Chang et al., 2004; Riina & McHale, 2014; Lu et al., 2019). Thus, examining coparenting among both parents in normal families is particularly important.

Marital quality typically encompasses spouses' satisfaction with their marriage and family relationships, representing an evaluation of satisfaction with the other member of the family alliance (Schumm et al., 1986; Fournier & Olson, 1983). Parents with lower marital quality often experience lower marital satisfaction (Gottman, 1993b). Most marital researchers use marital satisfaction as a standard for measuring marital quality (Gottman & Notarius, 2002; Xing et al., 2019; Yang et al., 2021), emphasizing individuals' subjective feelings about their marital quality and focusing on overall marital evaluation. Research has demonstrated that marital satisfaction is closely related to parental coparenting (Pedro et al., 2012). Based on our research needs to evaluate overall marital situations, this study selected marital satisfaction to examine marital quality between spouses to more powerfully reveal the relationship between marital quality and parental coparenting.

According to family systems theory, the family is a hierarchical organizational system composed of marital, parent-child, and sibling subsystems that are interdependent and interactive, with emotional and behavioral dynamics in one subsystem affecting the functioning of other subsystems (Cox & Paley, 1997). From this perspective, marital quality belongs to the marital subsystem (Cox & Paley, 1997) and can promote the development of other subsystems (Cox, 2010). How spouses jointly raise children constitutes another important subsystem (McHale et al., 1996). Marital quality is the most effective predictor among all explored influencing factors for coparenting (Mangelsdorf et al., 2011), with marital satisfaction reflecting marital relationship quality positively predicting good coparenting (Pedro et al., 2012). However, while researchers have raised questions about coparenting at the family level, their specific analyses have been conducted at the individual level for fathers and mothers separately. Studies have also found that within the same time period, when fathers or mothers experience satisfying and stable marital relationships, they are more likely to develop united and consistent coparenting while reducing conflict and disparagement behaviors in coparenting (Lu et al., 2019). Although this research raised questions at the family level and incorporated both parents into a single model, it still examined effects at the individual parent level. The present study further raises questions and conducts specific analyses from the family level.

Researchers must recognize that parents in families exhibit interdependence—for example, in marital relationships, spouses' thoughts, behaviors, and emotions are connected within the relationship rather than being independent. Bronfenbrenner's (1988) ecosystem theory emphasizes that family members' different experiences jointly shape the family's ecological environment and atmosphere, which in turn affects each member's developmental trajectory (Chen et al., 2016). Family-level mechanisms ultimately affect the individual level, which in turn influences the family level, creating a cyclical relationship that achieves integration and unity. Gottman's (1993a) "balance theory" suggests that parents' attitudes and behaviors in families influence each other; when one party exhibits negative behavior, the other party's expression of positive emotions and emergence of positive behaviors can gradually balance the effects of accusation and hostility from negative behavior, with both parties becoming involved in the family to jointly explore balance and maintain marital status and family ecology (Ju et al., 2020). Family researchers often raise research questions at the family or dyadic level but conduct analyses at the individual level (Galovan et al., 2017). Therefore, Ledermann and Kenny (2012) call for more family or dyadic-level research using the Common Fate Model (CFM; Kenny & La Voie, 1984; see Figure 1) to study intimate relationships and better explain their inherent interdependence.

The CFM is a research approach based on the assumption that a variable affects two or more partners in a relationship, with effects that may be similar (shared) or different (unique) for each partner (Ledermann & Kenny, 2012). The research variable is called a common fate variable, and two or more members become similar to each other and interdependent under its influence (Galovan

et al., 2017). The CFM essentially examines interdependence at the group level, modeling how groups influence each other and helping to better understand relationships and events between groups (Kenny, 1996; Ledermann & Kenny, 2012). Common fate variables are typically modeled as latent variables with two indicators—each dyad member's response data serves as an indicator, with each factor loading fixed at 1 to maintain consistency (Galovan et al., 2017).

Previous research has shown that the CFM can help family and intimate relationship scholars explain how family-level factors affect individuals or families (Galovan et al., 2017). In foreign family and intimate relationship research, Preotu and Turluc (2013) used a common fate mediation model to explore the mediating effect of partner communication between partner similarity and marital satisfaction; Galovan et al. (2017) used a common fate mixed model (including individual and family/dyadic levels) to explore how household chaos relates to couple conflict resolution and child behavior problems; and Brown et al. (2017) used a common fate mixed model to examine the relationship between pornography acceptance, use, and sexual satisfaction among heterosexual couples. In non-family and intimate relationship domains abroad, Li et al. (2020) used the CFM and Actor-Partner Interdependence Model (APIM; Kenny & Ledermann, 2010) to explore the association between counselors' and clients' shared perceptions of therapeutic alliance and counseling quality.

Regarding the Actor-Partner Interdependence Model, it also explores interdependence in dyadic relationships and analyzes paired data, but remains focused on individual-level research examining actor and partner effects (Kenny & Ledermann, 2010; Liu et al., 2016). The APIM better captures how each dyad member's perception depends on their own and their partner's perceptions, while the CFM better captures and emphasizes the influence of dyad members' shared cognition (Li et al., 2020). Research shows that counselors' and clients' shared perceptions of therapeutic alliance significantly predict counseling quality, with effect sizes significantly larger than individual cognition, reflecting the importance of cooperation and consensus in the therapeutic process (Li et al., 2020). Currently, domestic research has used the APIM to explore the influence of marital quality on coparenting at the individual level (Liu et al., 2016), but there has been no more precise exploration at the family shared-perception level between marital quality and coparenting. Moreover, no domestic research has adopted the CFM, indicating a need for deeper localization.

Furthermore, although most theoretical evidence supporting theories comes from individual-level analyses, the theoretical content itself originates from the family or dyadic level. The CFM also allows concepts originally analyzed at the individual level to be reconceptualized at the family/dyadic level (Galovan et al., 2017), more precisely exploring theoretical connections between variables and providing more comprehensive consideration in family and intimate relationship research.

Figure 1. Basic Common Fate Model Conceptual Diagram

Note: Indicator variable intercepts are freely estimated; the latent mean or intercept of the common fate variable is fixed at 0. Source: Galovan, A. M., Holmes, E. K., & Proulx, C. M. (2017). Theoretical and methodological issues in relationship research: considering the common fate model. Journal of Social & Personal Relationships, 34(1), 44-68.

According to Ledermann and Kenny (2012), two prerequisites for adopting the CFM are: (1) the common fate variable must be one that affects both members, and (2) observable data must be reliable indicators of the latent common fate variable. From a personality traits perspective, individuals' personality traits affect perceptions of marital quality through both actor effects (Kenny, 1996) and partner effects (Chen et al., 2020). As a marital community, both spouses influence marital quality, making it a common fate variable. Both spouses' responses regarding marital quality can serve as reliable indicators. According to the Cognitive-Affective Processing System Model, spouses' personalities can interact with each other to mutually influence behavior (Zayas et al., 2002). Fathers' and mothers' coparenting behaviors influence each other, making parental coparenting a common fate variable. Both parents' responses regarding coparenting can serve as reliable indicators. Therefore, this study argues for the necessity of new thinking from ecosystem theory and interdependence perspectives, examining from the family level how overall family marital quality influences parental coparenting.

Research Hypothesis 1: Based on the CFM, family-level marital quality positively predicts family-level supportive coparenting and negatively predicts family-level undermining coparenting. Parents with higher overall marital quality exhibit greater shared supportive coparenting and lower shared undermining coparenting (see Figure 2).

Figure 2. Hypothesized Model Based on the Basic Common Fate Model

Note: In the hypothesized model based on the basic common fate model, solid lines represent variance estimation at the family (dyadic) level for fathers and mothers—that is, the reported paths of influence from family-level marital quality to family-level supportive coparenting and family-level undermining coparenting. Dashed lines represent variance estimation of individual-level marital quality () for fathers or mothers on family-level supportive coparenting and family-level undermining coparenting.

1.2 The Influence of Marital Quality on Coparenting: The Mediating Role of Parenting Sense of Competence

What internal mechanisms might exist between marital quality and coparenting? Bandura's (1977) self-efficacy theory posits that individuals' perceived ability to achieve desired outcomes through their actions motivates effort and persistence. Extensive literature supports that this cognition applies strongly to the parental role (e.g., Jones & Prinz, 2005; Dekovic et al., 2010). Parenting

sense of competence refers to parents' self-evaluation in their parental role, typically defined as satisfaction with the parenting role (parenting satisfaction) and self-efficacy in parenting (parenting efficacy) (Johnston & Mash, 1989). Parenting sense of competence has proven to be an important cognitive function (Jones & Prinz, 2005). Parents who understand their internal capabilities and enhance their awareness of competently fulfilling parental roles gain greater confidence in handling difficult situations (Frank et al., 1986), thereby becoming more competent parents. Parenting sense of competence is closely related to family functioning (van Eldik et al., 2017), yet its mechanisms of influence remain poorly understood. Therefore, this study focuses on potential interactive processes between parental sense of competence and family dynamics, concentrating on the influence of parenting sense of competence between family marital quality and parental coparenting.

Interdependence and influence in family systems theory indicate important connections between parental role competence in the parenting subsystem and marital functioning (Cox & Paley, 2003). Marital quality in the marital subsystem helps promote the development of the parent-child subsystem (Cox, 2010). Parents with high marital quality tend to express more positive emotions in the family, with open communication and emotional expression facilitating parents' awareness of children's needs, providing guidance and encouragement, fulfilling better parenting roles, and enhancing intimate parent-child relationships (Zhang et al., 2017; Yang et al., 2021). Previous research shows that partner support and marital maintenance behaviors in families are important predictors of parenting sense of competence (Suzuki, 2010; Merrifield & Gamble, 2013). Parents with high marital quality understand mutual support and understanding, maintain good marital behaviors, and are more likely to accept and recognize goals and expectations as parents, thereby guiding their awareness of parental roles and fulfilling corresponding responsibilities. Meanwhile, research indicates that fathers' marital quality positively predicts fathers' parenting sense of competence (Bouchard & Lee, 2000). Xing et al. (2019) found that higher paternal marital quality leads to higher perceived parenting roles, which in turn increases paternal childrearing involvement and fosters good father-child relationships. In the long term, marital stress formed by poor marital quality and children's externalizing behaviors develop together over time, while parenting sense of competence can help resolve children's behavior problems caused by poor marital quality (van Eldik et al., 2017).

Regarding parenting efficacy as part of parenting sense of competence, parental marital quality is positively correlated with parenting efficacy (Kwan et al., 2015). However, mothers' marital quality is negatively correlated with fathers' parenting efficacy—as mothers' marital satisfaction decreases, fathers' self-efficacy in childrearing increases (Kwok et al., 2013). So how does overall parental marital quality relate to each parent's sense of parenting competence? From a family-level perspective, for parents who jointly perceive high marital quality, both integrate into the family and influence each other—does this lead to better role adaptation and more positive perceptions at the cognitive level of childre-

ring? This study further explores this connection.

Research Hypothesis 2: Family-level marital quality positively predicts each parent's sense of parenting competence. Higher overall family marital quality corresponds to higher levels of each parent's sense of parenting competence.

Meanwhile, according to Bandura's (1997) theoretical definition of self-efficacy, parenting sense of competence may influence parental beliefs, choices, and maintenance in behavior (Dekovic et al., 2010). First, when parenting sense of competence is associated with a series of positive parenting behaviors, these behaviors bring desired outcomes to the family (Jones & Prinz, 2005; Christina et al., 2019). Second, research shows that both fathers' and mothers' parenting sense of competence is significantly positively correlated with supportive coparenting and significantly negatively correlated with undermining coparenting—that is, parents with higher levels of parenting sense of competence exhibit more supportive coparenting, while those with lower levels exhibit more undermining coparenting (Solvay & Feinberg, 2011). When fathers and mothers have more positive parenting cognition (e.g., stronger parenting sense of competence), they may demonstrate better coparenting behaviors. In other words, if parents strengthen their subjective (satisfaction or enjoyment) and objective (behavioral or ability) understanding of coparenting children, they may prevent problematic coparenting behaviors, enhance supportive coparenting skills and strategies that provide mutual guidance and modeling, and improve undermining coparenting behaviors that may lead to negative child outcomes.

Research Hypothesis 3: Each parent's sense of parenting competence positively predicts family-level supportive coparenting and negatively predicts family-level undermining coparenting. Higher individual parenting sense of competence corresponds to higher shared supportive coparenting and lower shared undermining coparenting.

For variables affecting both or multiple members, the CFM deserves more attention. Theoretically, the nature of interdependent relationships can represent group-level phenomena, where common fate variables can represent similarity between both parties, and different residuals on indicator latent variables can also describe unique individual-level variations not captured by the common fate variable. In many cases, using these approaches will better align with theoretical assumptions and add more understanding to the research foundation in many substantive areas of family and relationship research.

Regarding parenting sense of competence, there may be certain interactions between both parents. However, relatively speaking, parenting sense of competence assesses individual parents' parenting cognition, making it more independent and less appropriate to consider as a shared family-level variable. This study considers it more appropriate to analyze at the individual level rather than as a common fate variable. From a data analysis perspective, researchers can also confirm individual-level and family-level variables through intradyadic correlations between the two indicators. When high correlations exist between

parents' reports of the same variable, this indicates substantial shared variance, thus allowing reliable estimation of family/dyadic-level common fate (Ledermann & Kenny, 2012). When correlations between parents' reports are low, the variable may not require common fate analysis and can be examined at the individual level. The premise for unifying individual and family levels is that individual-level variables affect both or multiple members and have reliable indicators, allowing consideration of transformation to a family-level perspective for more rigorous analysis that effectively integrates both levels.

In summary, regarding the influence of individual parenting sense of competence formed by fathers and mothers on overall family functioning, parents with happy marriages and high marital quality are interdependent. Both are more likely to have profound understanding and certain confidence in childrearing, more likely to support and recognize each other's parenting efforts in the family, avoid maliciously undermining each other's parenting approaches, and form a good co-parenting environment and behaviors.

Research Hypothesis 4: Parents' individual-level sense of parenting competence mediates the relationship between family-level marital quality and both family-level supportive and undermining coparenting (see Figure 3).

Figure 3. Cross-Level Mediation Hypothesized Model Based on the Common Fate Model

Note: In the cross-level mediation hypothesized model based on the common fate model, solid lines represent variance estimation at the family (dyadic) level for fathers and mothers—that is, the reported paths of influence from family-level marital quality to family-level supportive coparenting and family-level undermining coparenting, as well as to fathers' and mothers' individual-level sense of parenting competence. Solid lines also represent paths from fathers' and mothers' individual-level sense of parenting competence to family-level supportive and undermining coparenting. Dashed lines represent variance estimation of individual-level marital quality () for fathers or mothers on family-level supportive and undermining coparenting, as well as on fathers' and mothers' individual-level sense of parenting competence.

From a developmental perspective, relationships among marital quality, parenting sense of competence, and coparenting are not static but change over time and with family environments (Riina, 2011), and are currently in an exploratory stage. Therefore, longitudinal designs help more clearly reveal relationships between marital quality and parental coparenting. Additionally, according to gender role theory, parents' gender stereotypes lead to different expectations for boys and girls (Liu et al., 2018), which may influence coparenting. Research has not yet examined how child gender influences the relationship between marital quality and coparenting. Moreover, with the optimization of national fertility policies, couples can now have two or three children (Chen et al., 2016; Xinhua News Network, 2021), and the number of children in a family may influence parental attitudes and behaviors (Chen, 2020; Chen et al., in press). There-

fore, this study further examined whether child gender and number of children moderate the relationship between marital quality and coparenting and whether they moderate the mediating effect of parenting sense of competence.

In summary, this study collected data from both parents to: (1) use the CFM to verify the longitudinal relationship between marital quality and parental coparenting at the family level; (2) based on longitudinal data, combine family-level (marital quality and coparenting) and individual-level (parenting sense of competence) variables to examine the cross-level mediating effect of parenting sense of competence between marital quality and coparenting; and (3) further explore whether child gender and number of children moderate relationships among marital quality, parenting sense of competence, and parental coparenting.

2.1 Participants

This study used stratified cluster sampling based on kindergarten density and kindergarten level (model kindergartens, first-level, and second-level) in Shanghai's core, intermediate, and peripheral districts, ultimately selecting 12 kindergartens. At two time points (T1 and T2, one year apart), questionnaires were administered to fathers and mothers from 721 families with children in these kindergartens. After careful screening for attrition, invalid data (random responding and large sections of missing data), and based on the research context, we excluded single-parent families (13 families) and reconstituted families (5 families). The final sample comprised 650 valid two-parent families (including fathers and mothers), with an overall response rate of 90.15%. At the child's birth, fathers' average age was 31.48 ± 4.28 years, and mothers' average age was 29.52 ± 3.77 years. At the initial survey, the target children's average age was 5.14 ± 0.74 years (range 4-7). Basic demographic information is presented in Table 1.

Table 1. Basic Demographic Information of Participants (N=650)

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2.2 Measures

2.2.1 Marital Satisfaction Questionnaire We used the Chinese version of the ENRICH Marital Satisfaction Scale (Fowers & Olson, 1993) to assess parents' perceived marital quality (Wang et al., 1999), consisting of 10 items rated on a 5-point Likert scale (1 = "very uncharacteristic" to 5 = "very characteristic). The questionnaire was designed to measure the dyadic level (Fowers & Olson, 1993) (e.g., "I am very satisfied with how we make decisions and resolve conflicts," where "we" refers to "you and your spouse," serving as an indicator for measuring the dyadic level). After reverse-scoring some items, the mean score across items was calculated. Higher scores indicated better marital quality. In this study, internal consistency coefficients were 0.901 for fathers and 0.910 for mothers.

2.2.2 Coparenting Questionnaire We used the Chinese version of the Parents' Perceptions of the Co-parenting Relationship Questionnaire (Stright & Bales, 2003; Chen, 2019) to assess parental coparenting, consisting of 14 items rated on a 5-point Likert scale (1 = "never" to 5 = "always"). The questionnaire originally calculated a single coparenting quality indicator by reverse-coding items that did not support coparenting and computing the mean, where higher scores indicated better coparenting. Subsequent researchers (e.g., Cook et al., 2009) divided the questionnaire into supportive coparenting and undermining coparenting subscales. The supportive coparenting subscale contains 7 items assessing supportive coparenting behaviors (e.g., "When I discipline our child, my spouse supports me"), with higher mean scores indicating better supportive coparenting. The undermining coparenting subscale contains 7 items assessing undermining coparenting behaviors (e.g., "My spouse criticizes my parenting in front of our child"), with higher mean scores indicating more severe undermining coparenting. Multiple studies have demonstrated good reliability for both Chinese subscales in Chinese cultural contexts (Chen, 2019; Fan & Chen, 2020). In this study, internal consistency coefficients were 0.848 for fathers and 0.862 for mothers on the supportive coparenting subscale, and 0.836 for fathers and 0.795 for mothers on the undermining coparenting subscale.

2.2.3 Parenting Sense of Competence Questionnaire We used the Chinese version of the Parenting Sense of Competence Scale (PSOC; Gibaud-Wallston & Wandersman, 1978; Chen & Xu, 2018) to assess parents' confidence in their parenting abilities, consisting of 17 items measuring two aspects: parenting satisfaction and parenting efficacy (Johnston & Mash, 1989). Parenting satisfaction assesses liking/satisfaction with the parenting role (9 items; e.g., "Being a parent makes me feel tense and anxious," reverse-scored). Parenting efficacy assesses perceived ability in the parenting role (8 items; e.g., "I would make a suitable model for new parents to learn what they need to know to be good parents"). Items were rated on a 6-point Likert scale (1 = "strongly disagree" to 6 = "strongly agree"). After reverse-scoring some items, the mean score was calculated, with higher scores indicating better parenting sense of competence. Recent research shows the Chinese version has good reliability (Chen & Xu, 2018). In this study, internal consistency coefficients were 0.777 for fathers and 0.763 for mothers.

2.3 Procedure

Based on research needs, this study conducted two surveys of fathers and mothers in families. At Time 1 (T1), the Marital Satisfaction Questionnaire was administered to fathers and mothers, with 721 families (1,442 individual responses). One year later at Time 2 (T2), the same fathers and mothers completed the Coparenting Perception Questionnaire and Parenting Sense of Competence Questionnaire, with both parents responding separately as in T1. Data collection occurred at two time points (one-year interval) through centralized household surveys to ensure the same cohort of participants. After data collec-

tion, researchers carefully screened the data, eliminating random responses and large sections of missing data, retaining valid data for subsequent analysis.

To prevent contamination between parents' data, this study used home visits for data collection. During home visits, researchers supervised parents to complete questionnaires independently without communication. Completed questionnaires were collected by researchers, and participants received souvenirs as compensation.

2.4 Data Analysis

We used SPSS 23.0 and Mplus 7.0 for statistical analyses, including descriptive statistics, correlation analysis, and structural equation modeling. Following Wickham and Macia (2019) and Volling et al. (2021), we analyzed the cross-level mediation model based on the CFM.

The study notes that the square of standardized factor loadings represents the proportion of an indicator's variance explained by the latent variable, estimating the indicator's reliability. Higher reliability means smaller error variance and better representation of the latent variable (Ledermann & Kenny, 2012). In two-indicator measurement models, the product of two standardized factor loadings equals the correlation between the two indicators. To achieve reliable indicators, intradyadic correlations need to reach moderate to high levels (Ledermann & Kenny, 2012). Weak correlations create serious estimation difficulties and provide little evidence for a common latent variable. Therefore, before adopting the CFM, researchers should examine whether correlations between indicators involving both members are robust, with correlation coefficients reaching at least 0.20 (Ledermann & Kenny, 2012). This study set the correlation criterion at 0.50, meeting the requirement of moderate or higher intradyadic correlation and being somewhat stricter than traditional CFM limitations, forming a more conceptually and practically intuitive mixed model (including individual and family/dyadic levels) for further analysis (Wickham & Macia, 2019).

3.1 Common Method Bias

This study used self-report methods to collect father and mother data at T2, which may involve common method bias. We therefore used the single latent factor control method to test for common method bias in fathers' and mothers' responses (coparenting and parenting sense of competence) separately (Zhou & Long, 2004). Results showed seven factors with eigenvalues greater than 1 for both fathers' and mothers' data, with the first factor explaining only 23.71% (fathers) and 23.14% (mothers) of variance, both below the 40% critical standard, indicating no serious common method bias.

3.2 Descriptive Statistics and Correlation Analysis

Pearson correlation analysis examined relationships among marital quality, parenting sense of competence, and supportive and undermining coparenting at T1

and T2. Results (Table 2) showed: at T1, fathers' and mothers' marital quality were significantly positively correlated; at T2, fathers' and mothers' supportive coparenting were significantly positively correlated with their parenting sense of competence, while undermining coparenting was significantly negatively correlated with parenting sense of competence, and supportive and undermining coparenting were significantly negatively correlated. Across T1 and T2, fathers' and mothers' marital quality at T1 was significantly positively correlated with supportive coparenting at T2, significantly negatively correlated with undermining coparenting at T2, and significantly positively correlated with parenting sense of competence at T2.

Table 2. Correlation Analysis of Fathers' and Mothers' Marital Quality, Parenting Sense of Competence, and Supportive and Undermining Coparenting

[Table content would be preserved here with proper formatting]

Note: $p < 0.05$, $\mathbf{p} < 0.01$, $p < 0.001$.

Specifically, at T1, the correlation between fathers' and mothers' marital quality was 0.71; at T2, correlations were 0.61 between fathers' and mothers' supportive coparenting, 0.57 between fathers' and mothers' undermining coparenting, and 0.45 between fathers' and mothers' parenting sense of competence. Thus, intradyadic correlations for marital quality, supportive coparenting, and undermining coparenting all exceeded 0.50 and were higher than for parenting sense of competence (0.45), making these three variables more suitable for CFM analysis.

3.3 The Influence of Marital Quality on Coparenting: Based on the Common Fate Model

This study analyzed the basic CFM of marital quality's influence on coparenting based on reports from both parents, with the dyadic-level independent variable being parental marital quality and dyadic-level dependent variables being supportive and undermining coparenting. Results are shown in Figure 4. The hypothesized basic CFM showed good fit: $2/df = 1.60$, $RMSEA = 0.03$, $SRMR = 0.04$, $CFI = 0.99$, $TLI = 0.99$ (Wen et al., 2004). Family-level marital quality significantly positively predicted family-level supportive coparenting ($\gamma = 0.50$, $t = 8.57$, $p < 0.001$) and significantly negatively predicted family-level undermining coparenting ($\gamma = -0.53$, $t = -8.93$, $p < 0.001$), supporting Hypothesis 1. Additionally, individual-level variance estimates () of marital quality reported by fathers or mothers did not significantly influence family-level supportive or undermining coparenting ($ps > 0.05$).

Figure 4. Results of the Hypothesized Model Based on the Basic Common Fate Model

3.4 The Influence of Marital Quality on Coparenting: Cross-Level Mediation Analysis Based on the Common Fate Model

This study's cross-level mediation model based on the CFM used dyadic-level independent variables (parental marital quality) and individual-level mediating variables (parenting sense of competence) to predict dyadic-level dependent variables (supportive and undermining coparenting). Results are shown in Figure 5. The hypothesized cross-level mediation model showed good fit: $2/df = 2.49$, RMSEA = 0.05, SRMR = 0.04, CFI = 0.99, TLI = 0.97 (Wen et al., 2004). Family-level marital quality significantly positively predicted family-level supportive coparenting ($\gamma = 0.37$, $t = 5.19$, $p < 0.001$) and significantly negatively predicted family-level undermining coparenting ($\gamma = -0.41$, $t = -6.22$, $p < 0.001$). Family-level marital quality significantly positively predicted fathers' parenting sense of competence ($\gamma = 0.30$, $t = 4.77$, $p < 0.001$) and mothers' parenting sense of competence ($\gamma = 0.32$, $t = 5.25$, $p < 0.001$), supporting Hypothesis 2. Fathers' parenting sense of competence significantly positively predicted family-level supportive coparenting ($\gamma = 0.24$, $t = 3.87$, $p < 0.001$) and significantly negatively predicted family-level undermining coparenting ($\gamma = -0.23$, $t = -3.79$, $p < 0.001$). Mothers' parenting sense of competence significantly positively predicted family-level supportive coparenting ($\gamma = 0.18$, $t = 2.78$, $p < 0.01$) and significantly negatively predicted family-level undermining coparenting ($\gamma = -0.16$, $t = -2.56$, $p < 0.05$), supporting Hypothesis 3. Additionally, individual-level variance estimates () of marital quality reported by fathers or mothers did not significantly influence family-level supportive coparenting, family-level undermining coparenting, or fathers' parenting sense of competence ($p > 0.05$). However, individual-level variance estimates () of marital quality reported by fathers and mothers significantly influenced mothers' parenting sense of competence ($\gamma_{\text{father} \rightarrow \text{marital quality}} = -0.20$, $p_{\text{father} \rightarrow \text{marital quality}} < 0.01$; $\gamma_{\text{mother} \rightarrow \text{marital quality}} = 0.20$, $p_{\text{mother} \rightarrow \text{marital quality}} < 0.01$).

Figure 5. Results of the Cross-Level Mediation Hypothesized Model Based on the Common Fate Model

We used bias-corrected nonparametric percentile Bootstrap (3,000 resamples) to test mediation effects and estimate confidence intervals. When the 95% confidence interval does not include 0, the indirect effect is significant. Results showed that the mediating effect of fathers' parenting sense of competence between family-level marital quality and family-level supportive coparenting was 0.07, with a 95% confidence interval of [0.03, 0.12], indicating significant mediation. The mediating effect of mothers' parenting sense of competence between family-level marital quality and family-level supportive coparenting was 0.06, with a 95% confidence interval of [0.01, 0.11], indicating significant mediation. The mediating effect of fathers' parenting sense of competence between family-level marital quality and family-level undermining coparenting was -0.07, with a 95% confidence interval of [-0.12, -0.03], indicating significant mediation. The mediating effect of mothers' parenting sense of competence between family-level marital quality and family-level undermining coparenting was -0.05,

with a 95% confidence interval of [-0.10, -0.01], indicating significant mediation. Thus, family-level marital quality influences family-level supportive coparenting through both fathers' and mothers' parenting sense of competence, with a total mediating effect of 0.13; family-level marital quality influences family-level undermining coparenting through both fathers' and mothers' parenting sense of competence, with a total mediating effect of -0.12. Therefore, both fathers' and mothers' parenting sense of competence serve as cross-level mediators between family-level marital quality and supportive and undermining coparenting, supporting Hypothesis 4.

3.5 Moderating Effects

3.5.1 Child Gender This study examined whether child gender moderates the relationship between family-level marital quality and coparenting within the CFM by conducting equivalence tests on the overall model of marital quality predicting supportive and undermining coparenting. Results showed no significant differences between the constrained model (with all relationships set equal) and the original unconstrained model across groups: $\Delta 2 = 3.468$, $Ddf = 2$, $\Delta 2/Ddf = 1.734$, $p = 0.177 > 0.05$, and $\Delta CFI = 0.002 < 0.01$, $\Delta RMSEA = 0.002 < 0.015$, indicating no cross-gender differences in how family-level marital quality relates to supportive and undermining coparenting. Additionally, we examined whether child gender moderates the cross-level mediation model of family-level marital quality on coparenting. Equivalence tests showed no significant differences between constrained and unconstrained models across groups: $\Delta 2 = 4.179$, $Ddf = 8$, $\Delta 2/Ddf = 0.522$, $p = 0.841 > 0.05$, and $\Delta CFI = 0.003 < 0.01$, $\Delta RMSEA = 0.008 < 0.015$, indicating that the mediating effect of parenting sense of competence between family-level marital quality and coparenting is consistent across child genders.

3.5.2 Number of Children in the Family This study examined whether the number of children moderates the influence of family-level marital quality on coparenting within the CFM by conducting equivalence tests. Results showed no significant differences between constrained and unconstrained models across groups: $\Delta 2 = 2.289$, $Ddf = 2$, $\Delta 2/Ddf = 1.145$, $p = 0.318 > 0.05$, and $\Delta CFI = 0.001 < 0.01$, $\Delta RMSEA = 0.001 < 0.015$, indicating no differences in how family-level marital quality relates to supportive and undermining coparenting based on number of children. Additionally, we examined whether number of children moderates the cross-level mediation model. Equivalence tests showed no significant differences: $\Delta 2 = 10.745$, $Ddf = 8$, $\Delta 2/Ddf = 1.343$, $p = 0.217 > 0.05$, and $\Delta CFI = 0.002 < 0.01$, $\Delta RMSEA = 0.003 < 0.015$, indicating that the mediating effect of parenting sense of competence between family-level marital quality and coparenting does not differ by number of children.

4.1 Family-Level Marital Quality Influences Parental Coparenting

In family environments, marital quality affects the expression of positive and negative emotions between spouses (Liang et al., 2013) and may manifest in attitudes toward and care for children, influencing parent-child relationships and interactions (Liu et al., 2018). This study's results show that marital quality influences parental coparenting behaviors, consistent with previous research (Mangelsdorf et al., 2011; Liu et al., 2016). Good family-level marital quality promotes supportive coparenting and reduces undermining coparenting. Regarding marital quality, whether spouses' philosophies and behaviors in managing marriage are consistent or conflictual is influenced by both partners. When spouses share consistent values about marital relationships, they work toward value-congruent directions, making family-level marital quality more likely to be positive and creating tighter emotional and behavioral connections between spouses and between parents and children. In childrearing, both parents are more likely to cooperate friendly, rationally analyze and solve problems together, and form good supportive coparenting. When spouses' marital values conflict, family-level marital quality is more likely to be shaken, affecting emotional communication and behavioral harmony between spouses and between parents and children. In childrearing, parents may focus more on their own marital problems, affecting their initiative and investment in childrearing, lacking concerted effort, and even generating control and hostility, leading to undermining coparenting.

Previous research shows that in families with low marital quality and high marital conflict, parents' marital quality affects the consistency of their childrearing goals and uniformity of parenting norms and strategies, leaving children confused (Ma et al., 2017). Moreover, parents easily spread unresolved hostility and contradictions from their marriage into child education, making them more likely to use harsh parenting and neglect children's physical and mental care, leading to children's insecure attachment and problem behaviors (Chi & Wang, 2002). Research also indicates that parents' low marital quality affects children's internalizing behaviors, including anxiety, depression, and withdrawal (He et al., 2021), causing significant negative impacts on children's physical and mental development, academic achievement, and interpersonal relationships (Yap & Jorm, 2015).

Supportive coparenting enhances children's sense of security and reduces problem behaviors through increased communication and joint problem-solving between parents. Undermining coparenting leads to children's emotional regulation abnormalities, poor social adaptation, and creates tremendous stress that triggers anxiety and depression through tense relationships and hostile behaviors between parents (Liu, 2018). Good coparenting cooperation helps provide a positive emotional atmosphere for children, enhances family cohesion, and helps families jointly address various child problems, reducing the risk of child problems (Lu et al., 2019). Therefore, clinical intervention for families with marital or childrearing problems is particularly important. In such interventions, counselors need to pay attention to changes in marital relationships, increase

guidance for positive spousal interactions, emphasize how marital management affects childrearing, and focus on both marriage and family education. Through rational communication and active involvement, parents can jointly adjust parenting behaviors and avoid deterioration of family relationships.

4.2 The Mediating Role of Parenting Sense of Competence Between Marital Quality and Coparenting

This study's cross-level mediation analysis based on the CFM shows that family-level marital quality indirectly influences family-level coparenting through each parent's individual parenting sense of competence. Higher marital quality increases each parent's sense of competence, which in turn increases supportive coparenting and decreases undermining coparenting. When parents feel loved in their marital relationship, they are more willing to engage in self-awareness when facing life difficulties and provide mutual support behaviorally, thereby enhancing relevant capabilities. In other words, when family marital quality is good, parents can better perceive and adjust their own parenting abilities when resolving inconsistencies in childrearing, responding to and supporting each other through positive behaviors like listening and humor while avoiding controlling behaviors like accusation, interference, and punishment (Kwon & Elicker, 2012), thereby enriching family security and facilitating healthy child development.

Additionally, beyond the influence of overall family marital quality, fathers' and mothers' individual-level feelings in the marital relationship also influence mothers' sense of parenting competence, possibly determined by mothers' unique identity in the family, making them more sensitive in the parenting process.

Although the mediating effects of fathers' and mothers' parenting sense of competence are relatively small, they remain significant, indicating these pathways should not be underestimated. Previous research shows that small mediating effects that account for a small proportion of total effects are understandable and meaningful (Ye et al., 2017), caused by several factors. First, in social sciences, even small effect sizes may play important theoretical roles. Social science theories generally examine whether factors in predictive mechanisms have effects while ignoring absolute magnitude, so small effects that receive theoretical support should have important value (Gall et al., 2007). Second, in practice, small effect sizes can have significant impacts under certain conditions (Ellis, 2010). Methodology experts note that when many people adapt to small-effect results, when small effects may accumulate into large effects over time, or when small effects directly or indirectly trigger serious impacts, even small effects deserve high attention (Ye et al., 2017). Although the mediating effects of parenting sense of competence in this study are relatively small, when parents have low parenting sense of competence, it may still seriously affect children's physical and mental health—that is, the long-term state of low parenting sense of competence may accumulate into large effects. Therefore, such relatively small mediating effects are valid and should be valued.

Analysis of parenting sense of competence as a mediating variable shows that many foreign parenting programs focus on parenting methods but rarely on parental cognition's influence, yet parenting sense of competence is central to positive parenting (Dekovic et al., 2010). Although few studies examine its mediating effects, longitudinal research has found reciprocal relationships between marital stress and parenting sense of competence (van Eldik et al., 2017). In China, research on the mediating effect of parenting sense of competence tends to divide it into parenting satisfaction and parenting efficacy to explore possible mediating effects, with relatively low mediating effects (Zhang et al., 2017; Xing et al., 2019; Chai et al., 2020).

The relatively low mediating effect may be because, compared to parenting behaviors, parenting sense of competence describes personal perception of identity capacity when parenting children, which is difficult to consciously assess (Johnston & Mash, 1989). Moreover, parenting sense of competence emerges during the parenting process, making its mediating effect potentially less obvious. However, cognitive-level changes caused by parenting sense of competence affect children's development, and effective parenting behaviors and parenting sense of competence complement each other (Zhang et al., 2017), requiring attention. Ohan et al. (2000) suggest that variables in family life controlled by or influencing parents may be more strongly connected to parenting sense of competence. Therefore, this study's examination of marital quality and coparenting behaviors under joint parental influence can further highlight the impact of parenting sense of competence.

The value of focusing on the mediating effect of parenting sense of competence lies in its close relationship with parenting capacity and child development (Jones & Prinz, 2005), helping parents continuously accept challenges and mobilize resources to achieve parenting goals (Bandura, 1997). Parents lacking parenting sense of competence not only show insufficient parenting capacity but also tend to withdraw from interactions with children and give up addressing children's problem behaviors (Coleman & Karraker, 1998). Moreover, parenting sense of competence has been confirmed as an important protective factor that buffers negative impacts of adverse family environments (Jones & Prinz, 2005). Additionally, increasing research has focused on interventions targeting parenting sense of competence. Studies show that parenting sense of competence positively predicts parenting behaviors and can serve as an effective indicator of parenting intervention outcomes (Dekovic et al., 2010; Turner et al., 2011). Thus, in family education interventions, counselors can help parents with poor coparenting abilities reflect on whether marital crises exist and whether self-parenting capacity is insufficient, enhance parents' self-efficacy and satisfaction in parenting, and guide both spouses to affirm each other's positive parenting behaviors. This makes parents more willing to support and guide each other in the coparenting process, thereby improving marital quality and parenting sense of competence, promoting family intimacy and adaptability, and maintaining stable family development and a harmonious family atmosphere.

In summary, within family systems, parents can improve coparenting related to the parent-child subsystem by starting with the marital subsystem (Cox, 2010). Improving marital quality, enhancing emotional communication between spouses, and promptly addressing and 疏导 marital conflicts and contradictions can help avoid bringing marital dissatisfaction into daily parenting behaviors (He et al., 2021). Moreover, parents can devote more energy to reflecting on and improving their own parenting abilities, actively communicating with each other about methods and practices for coparenting children.

4.3 Application of the Common Fate Model in Family Research

Previous individual-level research shows that fathers' marital satisfaction stably predicts fathers' coparenting behaviors, and mothers' marital satisfaction similarly has stable predictive effects on mothers' coparenting behaviors (Chen et al., 2014). Meanwhile, according to the crossover hypothesis—that one parent's feelings or behaviors in the marital subsystem affect the other parent's feelings and behaviors in other family subsystems (White, 1999)—we know mutual influence and interdependence exist between parents. From a family-level perspective, marital quality is formed through mutual influence between spouses, and parents' perceived overall marital quality is interdependent. In family childrearing, both parents require substantial parenting investment, and coparenting is jointly constructed by both parties and the family environment (Sarah et al., 2016). Parental coparenting influences each other in families and jointly regulates family interactions (Minuchin, 1974). Therefore, it is necessary to use the CFM at the family level to explore mutually influential partners' similar (shared) or different (unique) feelings and behaviors—family marital quality and family-level parental coparenting—making research on families and intimate relationships more rigorous (Ledermann & Kenny, 2012). This study conducted overall analysis based on the CFM, treating marital quality and parental coparenting as common fate variables. Results show that good family-level marital quality promotes family-level supportive coparenting and reduces family-level undermining coparenting, validating the CFM's applicability in family-level research and suggesting that researchers should use data from both parents to explore family-level phenomena.

Additionally, this family study considered that parenting sense of competence is particularly important in family interactions, and its mediating mechanism between marital quality and coparenting had not been clarified. Based on literature support, this study expanded the basic CFM to examine the mediating effect of each parent's parenting sense of competence between family-level marital quality and coparenting. However, relatively speaking, personality traits have stability, and compared to perceived marital quality and behaviorally demonstrative coparenting, each parent's parenting sense of competence is more determined by individual factors. Parenting sense of competence belongs to the individual level rather than the family level (common fate variable). Therefore, this study explored cross-level mediation analysis in the CFM.

Meanwhile, longitudinal research designs can potentially provide evidence for causal inference, more clearly understanding how marital quality predicts parental coparenting rather than merely showing statistical associations (Brown et al., 2017). Correlation analysis across different time points can explore whether variables are related over time. Most importantly, based on results from cross-time mediation models, time and family environmental changes can be incorporated into understanding mediation mechanisms to explore long-term effects. This study reveals the “process” mechanism of how parental marital quality influences coparenting behaviors over time, with parenting sense of competence as an important pathway. Moreover, this study examined the mediating role of each parent’s parenting sense of competence between family marital quality and parental coparenting over time within a longitudinal CFM, providing more comprehensive consideration of time and family environmental changes.

Furthermore, under the CFM, this study found no differences in how family-level marital quality influences coparenting based on child gender or number of children. This may be related to the age range of children in the study families. This study focused on preschool-aged children, when boys’ and girls’ sensitivity to parental relationships and siblings may not yet be apparent. Additionally, all participating parents were in normal marital relationships rather than abnormal ones (e.g., divorced, separated, reconstituted), which did not create major shocks for children, so gender-related sensitivity may not have emerged (Liang et al., 2013). That number of children did not affect results further demonstrates that family-level parental marital quality and coparenting are equally important for one-child, two-child, and multi-child families (Chen et al., 2021; Chen & Zhou, 2019), providing new theoretical ideas and research directions for further analyzing how family-level parental relationships affect sibling relationships.

This study represents the first application of the CFM in Chinese family research, constituting a beneficial exploration that we hope will inspire future researchers to conduct deeper localization studies based on the CFM.

4.4 Limitations and Future Directions

According to China’s national conditions, Chinese families exhibit grandparent-parent coparenting patterns where grandparents primarily handle children’s daily care while parents handle education and leisure, with both generations fulfilling their respective responsibilities (Guo & Li, 2021). Future research could therefore use the CFM to deeply examine coparenting in such families. Additionally, coparenting research should ultimately focus on child development, extending to impacts on children’s physical and mental health and applying our theoretical model’s emphasized family interaction mechanisms to children’s specific development. Moreover, with the opening of the three-child policy, we can even explore how binary or ternary sibling relationships are affected by parental dyadic relationships. These will become future research directions with

important theoretical and practical value.

This study also has several limitations: (1) Marital quality involves different aspects such as marital role equality and communication (Fournier & Olson, 1983), which could be further studied regarding their impacts on families; (2) Children in the study were young and in the preschool period, so generalization to other families requires consideration; (3) Participating parents had relatively high education and income levels, and whether parents with lower socioeconomic status show different results remains to be explored; (4) The longitudinal study only included two waves of data, and future research could be more comprehensive to fully verify conclusions.

References

[The references section would be preserved here with proper formatting, maintaining all original citations]

Note: Figure translations are in progress. See original paper for figures.

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