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## Dynamic Family System Trajectories From Pregnancy to Child's First Year

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### *Abstract*

*Family systems reorganize during transitional periods, such as the birth of a new child. Longitudinal research, however, on family dynamics during the transition to parenthood is lacking. Accordingly, the authors aimed to identify family system trajectories from pregnancy to the child's first birthday and to examine their contextual predictors. Both parents (N = 702) reported autonomy and intimacy in marital (wife-to-husband, husband-to-wife) and parenting (mother-to-child, father-to-child) relations during pregnancy and at child's ages of 2 months and 12 months. Finite mixture modeling revealed 7 unique family system trajectories: (a) Cohesive (35%), (b) Disengaged (5%), (c) Enmeshed Declining (6%), (d) Enmeshed Quadratic (5%), (e) Authoritarian (14%), (f) Escalating Crisis (4%), and (g) Discrepant (15%), families. Parental education in interaction with duration of partnership and parity predicted family trajectory membership. The study demonstrates how different family types reorganize during the transition to parenthood; this includes decline, growth and stability in autonomy and intimacy.*

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According to family systems theory, families consist of hierarchically ordered parts, from basic dyadic relations to marital and parental subsystems (Minuchin, 1985). In the transition to parenthood, family relationships change as the family system adapts to the new situation. The changes, such as improvements and declines in relationship quality, are different and unique, depending on how emotions and responsibilities are shared in the family. For instance, families with well-functioning relationships during pregnancy tend also to fare well in the postpartum period, whereas families with problematic relationships often experience further decline in their relationship quality across the transition (Doss, Rhoades, Stanley, & Markman, 2009).

Two basic dimensions, autonomy and intimacy, define different family systems and typical relationship patterns. *Autonomy* refers to individuality and a sense of agency in relations with others, reflecting family boundaries, whereas *intimacy* refers to sharing or withholding emotions (Kagitcibasi, 2005; Olson, 2000). Well-functioning family systems are high and balanced on both dimensions, whereas a lack of one or both indicates potential problems (Sturge-Apple, Davies, & Cummings, 2010). Despite understanding families as dynamic systems changing over time, earlier researchers have mainly focused on separate aspects of marital and parenting quality. Our aim was therefore to identify naturally occurring, dynamic family system types during the transition to parenthood and to examine their contextual predictors.

#### FAMILY SYSTEM TYPES AND THEIR LONGITUDINAL CHANGE

The *typological approach* depicts families as holistic systems that can be classified according to their unique patterns in relational dimensions (Mandara, 2003). Research suggests that there are at least four family types varying in levels of autonomy and intimacy (e.g., Baumrind, 1971; Minuchin, 1985; Sturge-Apple et al., 2010). The first type, *Cohesive* families, have an optimal balance between autonomy and intimacy, allowing members to maintain sufficient individuality but also to receive emotional support from each other (Stevenson-Hinde, 1990). They are characterized by high emotional warmth and absence of discord (Davies, Cummings, & Winter, 2004; Sturge-Apple et al., 2010). Second, *Disengaged* families lack both autonomy and intimacy, resulting in negative and poorly organized family interactions (Stevenson-Hinde, 1990). They are characterized by poor overall interpersonal functioning, withdrawal between spouses, and low parental acceptance of the child (Davies et al., 2004; V. K. Johnson, 2003). In The third type, *Enmeshed* families, lack autonomy between family members but have moderate to high levels of intimacy, often resulting in boundary disturbances and dependency (Kerig, 2005). They are characterized by

hostility between spouses and intrusive parental control, but at least moderate levels of parental intimacy (Davies et al., 2004; Sturge-Apple et al., 2010). Fourth and finally, *Authoritarian* families have relatively low intimacy but high levels of autonomy, suggesting rigid boundaries between family members (Kerig, 2005; Olson, 2000). In these families obedience typically overrides affective sharing (Jory, Xia, Freeborn, & Greer, 1997; Kagitcibasi, 2005).

Despite the central assumption of families as dynamic systems that are prone to qualitative shifts in new situations (Cox & Paley, 2003; Mandara, 2003), only two studies have empirically examined longitudinal changes in holistic family systems. Favez et al. (2012) identified longitudinal family trajectories based on the overall quality of triadic interactions among primiparous couples from the prenatal period to child's ages of 3, 9, and 18 months. Prenatal interactions with the baby were simulated using a baby doll. Such prenatal interactions reflect both parental representations and direct experiences of the baby (achieved, i.e., via fetal movements), which are known to predict the actual postnatal interactions. The results showed that in about three quarters of the families triadic interaction quality was stable (high or low), whereas in about one third it declined from high to low. Although Favez et al.'s study showed both stability and change in family systems, it was limited in that the trajectories were based on overall relational quality, thus failing to depict qualitatively different family types. Another study, conducted by V. K. Johnson (2003), identified family types on the basis of the observed quality of mother–father and parent–child interactions at the child's ages of 5 years (*Cohesive, Father–Child-Alliance*, or *Mother–Child-Alliance*) and 9 years (*Cohesive, Triangulated*, or *Disengaged*). There was no longitudinal stability in family type memberships between the time points, suggesting that family systems are open to radical reorganization at least over a long time period, yet the study could not provide information about the dynamic short-term changes in different family

types and was not focused on the transition to parenthood. Thus, we still lack knowledge about the specific and unique ways in which family system types change and reorganize during the transition to parenthood.

#### FACTORS INFLUENCING THE TRANSITION TO PARENTHOOD

Various contextual factors influence family dynamics during the transition to parenthood, including, for example, the duration of the partnership and parity. Earlier studies have analyzed the impacts of contextual factors on the separate aspects of the marital relation and parenting, but research on holistic family systems combining these two aspects is still lacking. There is evidence that a short duration of partnership increases the risk for a steep decline in marital satisfaction due to high conflict between romantic dedication and the demands of new parenthood (Belsky & Rovine, 1990). First-time parents tend to experience stronger prenatal attachment to the child but lower parenting self-efficacy than multiparous parents (Mercer & Ferketich, 1995). In contrast, couples with multiple children and a long duration of partnership report poor marital quality, due to normative routinization of the marital relationship and increased demands of parenthood (Doss et al., 2009; D. Johnson, Amoloza, & Booth, 1992). Research also suggests that a couple's high educational level predicts sensitive parenting (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004) but, on the other hand, a steeper decline in marital satisfaction (Twenge, Campbell, & Foster, 2003). It is likely that high educational level ensures social and financial resources but also increases parental stress due to role conflicts between work and home. Some couples experience involuntary infertility, which may affect later family relations, for example, by increasing child centeredness at the expense of the marital relationship (Cairo et al., 2012). Yet most studies on parenting after assisted reproductive treatment (ART) report good family functioning and high resilience (Hammarberg, Fisher, & Wynter, 2008). Thus, in light of

earlier research, it is reasonable to expect that these contextual factors would also predict holistic family systems.

The process of becoming a parent varies according to parental gender. Mothers often act as primary caregivers for the infant and experience more parenting satisfaction than fathers (Elek, Hudson, & Bouffard, 2003). Conversely, fathers more often have a provider role, and some experience exclusion from close intimacy with the child (Nyström & Öhrling, 2004) or the spouse (Condon, Boyce, & Corkindale, 2004). Such gender differences may yield discrepant perceptions of family relations between spouses, with negative consequences for family dynamics (Byng-Hall, 1999).

#### RESEARCH TASKS AND QUESTIONS

Our first aim was to identify holistic and dynamic family trajectories that integrate both typological and longitudinal aspects of families. The trajectories depict the extent of and changes in autonomy and intimacy in family relationships, namely in marital (mother-to-father and father-to-mother) and parenting (mother-to-child and father-to-child) relationships, from pregnancy (Time 1 [T1]) to 2 months (Time 2 [T2]) and 12 months (Time 3 [T3]) of child's age. Second, we examined how contextual factors predict membership of the identified family trajectories. Despite the exploratory nature of our study, prior cross-sectional family-type research allowed us to hypothesize the identification of at least Cohesive, Disengaged, Enmeshed, and Authoritarian family trajectories. Furthermore, research on gender differences in the transition to parenthood allowed us to hypothesize about the identification of discrepant family trajectory or trajectories, depicting incongruent family perceptions between parents.

#### METHOD

##### *Participants and Procedure*

The study sample consisted of 705 Finnish married or cohabiting couples, including spontaneously conceiving (SC;  $n = 371$ ) couples with no history of infertility and couples whose pregnancies started after ART ( $n = 334$ ). SC couples were recruited from Helsinki University Central Hospital while attending ultrasonographic examinations, and ART couples were recruited from five Finnish infertility clinics in which they were treated with their own gametes. Recruitment took place during 1999–2000. Only couples with singleton pregnancies were included in the study, and only women above age 25 years were included in the SC group. All participants were Caucasian. All eligible couples were systematically asked to participate until approximately 1,000 had consented. The ethics committees of the participating clinics approved the study.

Women and men completed questionnaires independently at three time points: (a) during the second trimester of pregnancy (T1; 18–20 weeks of gestation), and when the child was (b) 2 months (T2) and (c) 12 months old (T3). Participation rates at T1 were 671 (95%) for mothers and 634 (89%) for fathers, at T2 the rates were 654 (92%) for mothers and 615 (86%) for fathers, and at T3 the rates were 546 (77%) for mothers and 506 (71%) for fathers. Five hundred and fifteen (73%) mothers and 467 (66%) fathers participated in all assessments (T1–T3). Attrition at T2 and T3 was independent of T1 autonomy and intimacy dimensions of family relations in both parents. It was also independent of parents' educational level, number of children, duration of the partnership, and parental age, yet attrition at T2 was greater in the SC group than in the ART group for both fathers (SC 17% vs. ART 9%),  $\chi^2(1, N = 705) = 10.54, p = .001$ ; and mothers (SC 9% vs. ART 5%),  $\chi^2(1, N = 705) = 3.97, p = .046$ ; and at T3 for fathers (SC 33% vs. ART 25%),  $\chi^2(1, N = 705) = 6.52, p = .011$ .

### *Measures*

*Family relations* were measured with the Subjective Family Picture Test (Mattejat & Scholz, 1994), which assesses autonomy and intimacy in marital and parenting subsystems. Both



parents rated the quality of four family relationships, namely (a) wife to husband, (b) husband to wife, (c) mother to child, and (d) father to child, during the second trimester of pregnancy (T1) and at child's age of 2 months (T1) and 12 months (T2). For each relationship, parents rated four pairs of items for autonomy (e.g., determined–indecisive, self-confident–uncertain) and four pairs of items for emotional intimacy (e.g., loving–rejecting, warm–distant) using a 7-point scale. The item pairs were identical for each relationship, but the questions varied according to each relationship (e.g., “In relation to me my husband is . . .” or “In relation to our child I am . . .”). At T1, parents were asked to report their expectations of the future relationships with the unborn child. High scores on autonomy indicate relational self-assurance, agency, and independence, whereas high scores on intimacy indicate emotional closeness, interest, and acceptance. The Subjective Family Picture Test has been shown to be a valid and reliable measure of family relationships with an average between-scale correlation of .60 with other family diagnostic questionnaires and a test–retest correlation of .77 (Mattejat & Scholz, 1994).

Sum variables were computed for self- and spousal reports of family relations at T1, T2, and T3. The Cronbach's alpha reliability coefficients were acceptable for mothers' (.68–.81) and fathers' (.73–.79) reports of marital autonomy and for mothers' (.80–.91) and fathers' (.73–.88) reports of marital intimacy. These coefficients are similar to those reported in the test manual (Mattejat & Scholz, 1994). Nevertheless, the reliability coefficients were lower for both mothers' and fathers' reports of parenting autonomy and intimacy (.52–.82). These variables were highly skewed (ranging from  $-0.77$  to  $-4.34$ ) and had high kurtosis (ranging from 0.19 to 24.17), indicating that parents reported high levels of parenting autonomy and intimacy. Such deviations from the normal distribution tend to cause unrealistically low reliability coefficients (Sheng & Sheng, 2012), and indeed, when logarithmic transformations were used, the reliabilities increased to a satisfactory level ( $\alpha =$

.65–.80, except mothers' self-reports of intimacy at T1,  $\alpha = .59$ ). The validity of prenatal parenting measures of the Subjective Family Picture Test is supported by the finding that they predict the level of parenting stress at 2 and 12 months (Flykt et al., 2009). We therefore used the original variables in our analyses, which were robust against nonnormality (see *Analytic Strategy* section).

Contextual factors were *education level* (1 = higher education, 2 = secondary education, or 3 = only basic education) averaged over both parents, *duration of the partnership* (years of marriage or cohabitation), *parity* (primi- vs. multiparous) and *former infertility* (ART vs. SC).

### *Analytic Strategy*

To identify family system trajectories, we used mixture modeling with Mplus 5 (L. K. Muthén & Muthén, 2007). Identification of latent classes was based on the means of 48 variables depicting autonomy and intimacy in mother-to-father, father-to-mother, father-to-child and mother-to-child relations, measured at T1, T2, and T3, and reported by both mothers (variables M1–M24) and fathers (variables F1–F24). Mixture modeling identifies naturally occurring subpopulations from the data, called *latent classes*, and provides criteria to evaluate the number of these classes (B. Muthén, 2001). To avoid identifying an artificially high number of latent classes due to highly correlating variables (Lubke & Neale, 2006), we added two common latent factors into the model with constant loadings of 1 for all maternal (i.e., mother-level) and paternal (i.e., father-level) reports. The inclusion of these latent factors reduced redundant variation, such as parental response biases. A model consisting of categorical classes, indicator variables, and continuous latent factors is a *factor mixture model*.

In the first phase of the analysis we identified the number of family system trajectories. In the second phase, we identified family trajectories in which mother's and

father's reports of family relations were either equal or discrepant by constraining the means of corresponding variables to be the same between maternal and paternal reports ( $M1 = F1$ ,  $M2 = F2$ ,  $M3 = F3$ , etc.). To find the optimal number of (un)constrained trajectories, this was done in successive steps, ranging from 0 to all trajectories being constrained.

In both phases of the analysis the number of identified classes was based on the Bayesian Information Criterion (BIC), because simulation studies have shown it to be a highly reliable criterion for factor mixture models (Nylund, Asparouhov, & Muthén, 2007; Tolvanen, 2007). Smaller BIC values indicate better goodness of fit between theoretical model and empirical data. We further evaluated the quality of the resulting family system trajectory classification with entropy and average posterior probabilities for most likely latent class membership. These range from 0 to 1, with higher values indicating better discrimination of the classes. We estimated model parameters using the maximum-likelihood method with robust standard errors against nonnormality, and missing data were handled by the full-information maximum-likelihood estimation implemented in Mplus. We could not use the bootstrapped likelihood ratio test to identify the number of classes because of high computational demands, but we ensured that the analysis found the best solution of all local maximums by using a large number (5,000) of randomized initial starting values. Finally, we conducted power analyses to ensure that the identified family trajectories were large enough to be described with statistical tests. We used a medium effect size ( $d = 0.50$ ) and error probability of  $\alpha = .05$  for two-tailed tests in these power analyses.

We describe the family trajectories using repeated-measures analyses of variance with marginal means aggregated over relationship (marital and parenting) and parent (mother and father) factors. Longitudinal changes are described by linear and quadratic trends. In these descriptive analyses, relationship variables were standardized using pooled variance over mother and father. Partial eta-squared ( $\eta_p^2$ ) coefficients are reported to indicate the strength

of the effects. Greenhouse–Geisser corrections were used to correct the violation of sphericity when needed.

To answer our second research question concerning the contextual predictors, we used multinomial regression analysis. Contextual variables and their interaction terms were used as independent variables, and family trajectory membership was the dependent variable. We conducted post hoc analyses with additional multinomial regression analyses separately for related subgroups (creating two groups using the median as a cutpoint when needed).

## RESULTS

### *Descriptive Statistics*

The mean age at T1 in the whole sample was 33.21 years ( $SD = 3.71$ ) for mothers and 34.61 ( $SD = 4.91$ ) for fathers. The mothers in our sample were older than the Finnish national average of mothers giving birth ( $M = 29.9$  years; Statistics Finland, 2013). About one third of mothers ( $n = 220$ , 34%) and fathers ( $n = 224$ , 36%) had tertiary education (a bachelor's or master's degree), more than half of mothers ( $n = 391$ , 60%) and fathers ( $n = 357$ , 57%) had secondary education (typically 1–3 years of vocational training), and about one-tenth of mothers ( $n = 43$ , 7%) and fathers ( $n = 42$ , 7%) had only basic education (elementary and junior high school). SC mothers were better educated than ART mothers,  $\chi^2(2, N = 649) = 11.21, p = .024$ , in that they more often had tertiary education (SC = 39% vs. ART = 30%). Overall, the sample was better educated than the corresponding national age group (Statistics Finland, 2013). The mean duration of partnership at T1 was 8.8 years ( $SD = 5.73$ ). Predictably, ART couples ( $M = 9.63$  years,  $SD = 4.47$ ) had longer partnerships than SC couples ( $M = 7.69$  years,  $SD = 4.45$ ),  $t(656) = 5.59, p < .001$ . Half of the couples were having their first child ( $n = 439$ , 53%), one third were having their second child ( $n = 208$ , 32%) and 15% already had two or more children ( $n = 96$ ). As expected, ART couples (97%) were more often primiparous than SC couples (73%),  $\chi^2(1, N = 636) = 70.38, p < .001$ .

### Identifying Dynamic Family System Trajectories

During the first phase of analysis, the factor mixture modeling identified 11 distinct family system trajectories. As shown in Table 1, the goodness of fit (BIC) decreased as the number of the classes increased until 11 classes were added into the model, suggesting that this was the best model in terms of parsimony and adequate representation of the data. Class sizes for this model were 304, 88, 85, 71, 54, 31, 24, 19, 16, 10, and 8. High entropy (.931) and high average latent class probabilities (.882–.999) indicated that these classes were clearly distinguishable.

<Table 1 about here>

During the second phase of the analysis, we estimated 11 classes in the factor mixture modeling and constrained maternal and paternal reports to be the same in successive steps from 0 up to 11 classes. The goodness of fit was smallest (BIC = 52,523.49) when nine out of 11 classes had constraints. Thus, in two out of 11 family system trajectories parents had discrepant views of family relations. Constrained class sizes were 274, 107, 46, 41, 38, 30, 14, 11, and 10, and unconstrained class sizes were 115 and 24. High entropy (.898) and high average latent class probabilities (.855–.998) indicated that the classes were clearly distinguishable.

Power analyses showed that for the smallest classes, with  $n < 25$  ( $n$ s ranging from 10 to 24), powers of .34 to .65 were achieved, whereas for classes with  $n > 25$  ( $n$ s ranging from 30 to 115) powers of .74 to .99 were achieved when they were compared to the largest class ( $n = 274$ ). Thus, to ensure that acceptable power of about 0.80 could be assumed for pairwise tests, we decided to exclude the four smallest classes ( $n = 14$ , 2%;  $n = 11$ , 2%;  $n = 10$ , 2%; and  $n = 24$ , 4%) using a cutoff criterion of  $n < 25$ . These excluded classes accounted for 9% of the whole sample ( $n = 59$ ), whereas the remaining seven classes accounted for 91% ( $n = 646$ ) of the whole sample.

The seven identified family trajectories are shown in Figure 1. They differed in their overall level of autonomy,  $F(6, 467) = 131.43, p < .001, \eta_p^2 = .63$ , and intimacy,  $F(6, 467) = 119.94, p < .001, \eta_p^2 = .61$ , indicating that the trajectories represent qualitatively different family types. Furthermore, these trajectories differed in how overall autonomy,  $F(12, 934) = 11.13, p < .001, \eta_p^2 = .13$ , and intimacy,  $F(12, 934) = 30.87, p < .001, \eta_p^2 = .29$ , changed over time, indicating that different family system types had unique longitudinal dynamics during the transition. To further examine these trajectories, we compared overall autonomy and intimacy between trajectories at T1, T2, and T3 (see Table 2), and we examined both linear and quadratic trends within each family trajectory.

<Figure 1 and Table 2 about here>

The first family trajectory was called *Cohesive* ( $n = 274, 35\%$ ), because it had the highest levels of autonomy and intimacy compared to other trajectories at all time points. Autonomy in this trajectory increased from pregnancy to 12 months,  $F(1, 195) = 14.66, p < .001, \eta_p^2 = .07$ .

The second family trajectory was called *Disengaged* ( $n = 41, 5\%$ ) because it had the lowest levels of both autonomy and intimacy compared to other family trajectories at all time points. Intimacy in this trajectory declined from pregnancy to 12 months,  $F(1, 27) = 15.33, p = .004, \eta_p^2 = .36$ .

The third and fourth family trajectories were both interpreted to be enmeshed because they had the lowest levels of autonomy, but somewhat higher levels of intimacy, namely, higher intimacy than in Disengaged family systems. The third trajectory was called *Enmeshed Declining* ( $n = 46, 6\%$ ), because intimacy declined from pregnancy to 12 months,  $F(1, 31) = 8.52, p = .042, \eta_p^2 = .22$ . The fourth trajectory was called *Enmeshed Quadratic* ( $n = 38, 5\%$ ), because intimacy first increased from pregnancy to 2 months but then declined by

12 months,  $F(1,31) = 16.15, p = .002, \eta_p^2 = .34$ . Enmeshed Declining families had a higher level of intimacy than Enmeshed Quadratic families at all time points.

The fifth family trajectory was called *Authoritarian* ( $n = 107, 14\%$ ) because it had a low level of intimacy combined with an average level of autonomy compared to other trajectories at all time points. Intimacy in this trajectory declined from pregnancy to 12 months of child's age,  $F(1, 77) = 7.82, p = .049, \eta_p^2 = .09$ .

The sixth family trajectory was called *Escalating Crisis* ( $n = 30, 4\%$ ) because it had average levels of autonomy and intimacy during pregnancy and at 2 months but the lowest level of autonomy and intimacy at 12 months, not differing significantly from those of Disengaged families. Both intimacy,  $F(1, 25) = 94.59, p < .001, \eta_p^2 = .79$ , and autonomy,  $F(1, 25) = .18.59, p < .001, \eta_p^2 = .43$ , were stable from pregnancy to 2 months but then declined by 12 months. As a result, both intimacy,  $F(1, 25) = 113.80, p < .001, \eta_p^2 = .82$ , and autonomy,  $F(1, 25) = 55.23, p < .001, \eta_p^2 = .69$ , declined from pregnancy to 12 months.

The seventh family trajectory was called *Discrepant* ( $n = 115, 15\%$ ) because parents in this trajectory had discrepant views of family relations. On average, the Discrepant trajectory had moderate levels of both autonomy and intimacy compared to other family trajectories during pregnancy and at 2 months. At 12 months, however, autonomy was relatively low, actually lower than in Authoritarian families but higher than in Disengaged families. As shown in Figure 1, fathers perceived family relations as less intimate than did mothers,  $F(1, 77) = 14.74, p = .002, \eta_p^2 = .16$ . Furthermore, fathers perceived family relations as less autonomous than did mothers,  $F(1, 77) = 81.56, p < .001, \eta_p^2 = .27$ , and perceived a steeper decline in autonomy than did mothers,  $F(1, 77) = 7.80, p = .046, \eta_p^2 = .09$ . Nevertheless both parents perceived that intimacy declined over time,  $F(1, 77) = 41.30, p < .001, \eta_p^2 = .35$ , in particular from 2 months to 12 months,  $F(1, 77) = 13.15, p = .004, \eta_p^2 = .15$ .

*Factors Predicting Family System Trajectories*

Our second task was to determine the role of contextual factors in predicting family system trajectories. The analysis revealed no simple main effects of duration of partnership, parity, parents' educational level, or former infertility on trajectory membership. Instead, significant interactions were found between parents' educational level and duration of partnership,  $\chi^2(6, N = 586) = 24.68, p < .001$ ; between education and parity,  $\chi^2(6, N = 586) = 13.87, p = .037$ ; between education and former infertility,  $\chi^2(6, N = 586) = 21.17, p = .002$ ; and between duration of partnership and former infertility,  $\chi^2(6, N = 586) = 14.46, p = .025$ , on predicting family trajectory membership. These explained about 17% of trajectory membership,  $\chi^2(48, N = 586) = 103.82, p < .001$ , Cox and Snell  $R^2 = .17$ . We examined the interaction effects further in post hoc analyses. We used the Cohesive family trajectory type as a reference group because it was the largest family trajectory and had the highest levels of autonomy and intimacy.

Post hoc analyses showed first that, among couples with low education levels, multiparity predicted membership in both the Disengaged ( $B = 0.85, SE = 0.33, p = .009$ ) and Authoritarian trajectories ( $B = 0.76, SE = 0.24, p = .001$ ) and that short duration of partnership predicted membership in the Escalating Crisis trajectory ( $B = -0.03, SE = 0.01, p = .002$ ). Second, among couples with high education levels, former infertility predicted membership in both the Enmeshed Quadratic ( $B = -0.80, SE = 0.37, p = .029$ ) and Enmeshed Declining ( $B = -0.85, SE = 0.29, p = .003$ ) trajectories, and primiparity predicted membership in the Authoritarian family trajectory ( $B = -0.60, SE = 0.26, p = .019$ ). Third, among couples with no former infertility, long duration of partnership predicted membership in both the Authoritarian ( $B = 0.12, SE = 0.01, p = .003$ ) and Disengaged ( $B = 0.12, SE = .01, p = .021$ ) trajectories, and low educational level predicted membership in the Enmeshed Quadratic trajectory ( $B = 0.96, SE = 0.33, p = .003$ ).



## DISCUSSION

We used a novel approach to identify seven family trajectories during the transition to parenthood based on longitudinal changes in autonomy and intimacy in both marital and parenting relations. In line with earlier research, we identified Cohesive, Disengaged, Authoritarian, and two enmeshed family systems characterized by varying levels of autonomy and intimacy. We further identified a Discrepant family system characterized by differing perceptions of family relations among mothers and fathers, and an Escalating Crisis family system characterized by a strong decline in autonomy and intimacy from the pre- to postnatal period.

Our study is the first to report on the longitudinal dynamics of family types during the transition to parenthood, indicating systemic reorganizations of these families. Cohesive families experienced a slight increase in family autonomy, whereas Disengaged families experienced considerable decline in family intimacy from pregnancy to 12 months of child's age. These results concur with earlier research showing that dysfunctional family relations tend to be exacerbated during the transition, whereas functional family relations can protect the family or even lead to positive growth (Doss et al., 2009). Furthermore, in line with family systems theory, both types of enmeshed families experienced declines in family intimacy from child's age of 2 months to 12 months, whereas Authoritarian families showed only a slight decline in intimacy (Olson, 2000). The lack of boundaries in enmeshed families may cause spillover between family members and thereby increase difficulties in maintaining high family intimacy, whereas the strong boundaries of Authoritarian families may help to clarify family roles and stabilize family systems during transitional periods.

All identified family types except Escalating Crisis demonstrated strong longitudinal stability during the transition to parenthood. This extends the results of Favez et al. (2012) by showing stability not only in the overall quality of family interactions but also in the

qualitative types of families. Apparently, even as family systems reorganize during the transition, they maintain homeostasis and adhere to the rules of the respective family type (Olson, 2000). For example, whereas new parents may renegotiate their family responsibilities and experience distancing in the marital relationship, the more fundamental family type is often resistant to change during the transition to parenthood. Regarding dramatic changes in Escalating Crisis families, we can speculate that these families may have encountered severe transitional challenges, such as a child's illness or maternal postpartum depression. Such challenges could have disturbed these families' homeostasis and initiated their transformation from average to disengaged families.

Mothers and fathers had different perceptions of their family relationships in Discrepant families, with fathers perceiving family relations more negatively than mothers. This differs somewhat from research showing that during the transition, on average, mothers often perceive the marital relationship more negatively than do fathers (Doss et al., 2009). On the other hand, some studies have suggested that mothers often experience new parenthood more positively than fathers (Elek et al., 2003), and fathers' parenting is more susceptible to the influence of marital difficulties (Stroud, Durbin, Wilson, & Mendelsohn, 2011). It is therefore possible that in families with severely discrepant perceptions the mother's perceptions are colored positively by the experience of new motherhood, whereas the father's perceptions are colored negatively by the transitional distancing in the marital relationship. It is interesting that, despite the differences in family perceptions, both parents experience moderate declines in family intimacy during the postnatal period. Our study found a relatively large number of these families (15%), indicating that future studies should acknowledge the significance of gendered family dynamics.

None of the contextual factors alone predicted family trajectory membership among the entire sample. Interaction effects showed, however, that among either spontaneously

conceiving couples or those with low educational levels, long duration of partnership and multiparity predicted membership in the Disengaged and Authoritarian trajectories, whereas short duration of partnership predicted membership in the Escalating Crisis trajectory. These results are similar to those of studies of marital relationships showing that couples with several children and a long partnership often experience compromised marital quality, whereas couples with a short partnership may experience a steeper decline during the transition to parenthood due to abrupt termination of the marital honeymoon period (Doss et al., 2009). These results also suggest that high education level and experiencing former infertility may protect against such detrimental effects on family relations. We further found that high education level, together with infertility history, predicted membership in both the Enmeshed Quadratic and Enmeshed Declining trajectories. Earlier research suggests that the experience of involuntary infertility may increase child-centered family interactions and difficulties in maintaining family boundaries (Cairo et al., 2012) and our study specifies that such processes may be especially intensified among highly educated parents.

Our study had several limitations. First, we described family trajectories in regard to their overall levels of autonomy and intimacy, even though we used more relationship-specific information (e.g., the mother's autonomy toward the child) to identify them. This approach produces a realistic typology of family systems but warrants further research on detailed differences in family dynamics between mothers and fathers and between marital and parenting subsystems. Second, the generalizability of our results should be viewed with caution. All the couples in our sample were over age 25 years and relatively highly educated. Furthermore, we excluded four small family trajectories ( $n_s = 10, 11, 14$  and  $24$ ) from our analyses to ensure adequate statistical power. Thus some family trajectories, especially those common among young and uneducated parents, may have been underrepresented or absent from our analyses. In other populations, contextual factors may affect family trajectories

differently and family trajectories missed in our analyses may emerge. Third, we did not analyze the associations between the family types and indicators of psychopathology, and therefore whether any of the family trajectories represent problematic or merely normative transitional processes remains unknown. Finally, our data were based on questionnaire methods, making the results susceptible to reporter biases. To account for such biases, we explicitly modeled discrepancies in parents' reports, although observational methods might have yielded more objective results.

By using rich data on family relations, we were able to present a family typology that integrates longitudinal and typological aspects of family systems. The family trajectories we identified were meaningfully associated with specific contextual factors, which lends some support regarding their validity. In regard to clinical implications, our results may be useful in identifying families at risk. Early preventive and focused interventions should be favored as our results indicate that family enmeshment, disengagement, and discrepant parental perceptions are already present during pregnancy. This study took the first steps toward understanding how different types of families reorganize and change during transitions. Our novel approach opens up new possibilities for understanding, for instance, how relationship patterns in different families are shaped and formed during transitions and how such dynamic family environments influence child development. We hope that this study will encourage more researchers to model families as dynamic and holistic systems.

#### NOTE

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## REFERENCES

- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology*, 4, 1–103. doi:10.1037/h0030372
- Belsky, J., & Rovine, M. (1990). Patterns of marital change across the transition to parenthood: Pregnancy to three years postpartum. *Journal of Marriage and Family*, 52, 5–19. doi:10.2307/352833
- Byng-Hall, J. (1999). Family couple therapy: Toward greater security. In D. J. Cassidy & P. R. Shaver (Eds.), *Developmental psychopathology: Vol 1. Theory and method* (2nd ed., pp. 625–645). New York: Guilford Press.
- Cairo, S., Darwiche, J., Tissot, H., Favez, N., Germond, M., Guex, P., . . . Despland, J.-N. (2012). Family interactions in IVF families: Change over the transition to parenthood. *Journal of Reproductive and Infant Psychology*, 30, 5–20. doi:10.1080/02646838.2012.669830
- Condon, J. T., Boyce, P., & Corkindale, C. J. (2004). The First-Time Fathers Study: A prospective study of the mental health and wellbeing of men during the transition to parenthood. *Australian and New Zealand Journal of Psychiatry*, 38, 56–64. doi:10.1111/j.1440-1614.2004.01298.x
- Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science*, 12, 193–196. doi:10.1111/1467-8721.01259
- Davies, P. T., Cummings, E. M., & Winter, M. A. (2004). Pathways between profiles of family functioning, child security in the interparental subsystem, and child psychological problems. *Development and Psychopathology*, 16, 525–550. doi:10.1017/S0954579404004651

- Doss, B. D., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2009). The effect of the transition to parenthood on relationship quality: An 8-year prospective study. *Journal of Personality and Social Psychology*, *96*, 601–619. doi:10.1037/a0013969
- Elek, S., Hudson, D. B., & Bouffard, C. (2003). Marital and parenting satisfaction and infant care self-efficacy during the transition to parenthood: The effect of infant sex. *Issues in Comprehensive Pediatric Nursing*, *26*, 45–57. doi:10.1080/014608601300035580
- Favez, N., Lopes, F., Bernard, M., Frascarolo, F., Lavanchy, S. C., Corboz-Warnery, A., & Fivaz-Depeursinge, E. (2012). The development of family alliance from pregnancy to toddlerhood and child outcomes at 5 years. *Family Processes*, *51*, 542–558. doi:10.1111/j.1545-5300.2012.01419.x
- Flykt, M., Lindblom, J., Punamäki, R-L., Poikkeus, P., Repokari, L., Unkila-Kallio, L., . . . Tulppala, M. (2009). Prenatal expectations in transition to parenthood: Former infertility and family dynamic considerations. *Journal of Family Psychology*, *23*, 779–789.
- Hammarberg, K., Fisher, J. R. W., & Wynter, K. H. (2008). Psychological and social aspects of pregnancy, childbirth and early parenting after assisted conception: A systematic review. *Human Reproduction Update*, *14*, 305–414. doi:10.1093/humupd/dmn030
- Johnson, D., Amoloza, T., & Booth, A. (1992). Stability and developmental change in marital quality: A three-wave panel analysis. *Journal of Marriage and the Family*, *54*, 582–594. doi:10.2307/353244
- Johnson, V. K. (2003). Linking changes in whole family functioning and children's externalizing behavior across the elementary school years. *Journal of Family Psychology*, *17*, 499–509. doi:10.1037/0893-3200.17.4.499

- Jory, B., Xia, Y., Freeborn, A., & Greer, C. V. (1997). Locus of control and problem-solving interaction in families with adolescents. *Journal of Adolescence*, 20, 489–504.  
doi:10.1006/jado.1997.0104
- Kagitcibasi, C. (2005). Autonomy and relatedness in cultural context: Implications for self and family. *Journal of Cross-Cultural Psychology*, 36, 403–422.  
doi:10.1177/0022022105275959
- Kerig, P. K. (2005). Revisiting the construct of boundary dissolution: A multidimensional perspective. *Journal of Emotional Abuse*, 5, 5–42. doi:10.1300/J135v05n02\_02
- Lubke, G., & Neale, M. C. (2006). Distinguishing between latent classes and continuous factors: Resolution by maximum likelihood? *Multivariate Behavioral Research*, 41, 499–532. doi:10.1207/s15327906mbr4104\_4
- Mandara, J. (2003). The typological approach in child and family psychology: A review of theory, methods, and research. *Clinical Child and Family Psychology Review*, 6, 129–146. doi:10.1023/A:1023734627624
- Mattejat, F., & Scholz, M. (1994). *Das subjektive Familienbild (SFB)* [Subjective Family-Image]. Göttingen, Germany: Hogrefe.
- Mercer, R. T., & Ferketich, S. L. (1995). Experienced and inexperienced mothers' maternal competence during infancy. *Research in Nursing & Health*, 18, 333–343.  
doi:10.1002/nur.4770180407
- Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development*, 56, 289–302. doi:10.2307/1129720
- Muthén, B. O. (2001). Latent variable mixture modeling. In G. A. Marcoulides & R. E. Schumacker (Eds.), *New developments and techniques in structural equation modeling* (pp. 1–33). Mahwah, NJ: Erlbaum.
- Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide* (5th ed.). Los Angeles: Authors.

- Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*, 535–569. doi:10.1080/10705510701575396
- Nyström, K., & Öhrling, K. (2004). Parenthood experiences during the child's first year. *Journal of Advanced Nursing, 46*, 319–330. doi:10.1111/j.1365-2648.2004.02991.x
- Olson, D. H. (2000). Circumplex model of marital and family systems. *Journal of Family Therapy, 22*, 144–167. doi:10.1111/1467-6427.00144
- Sheng, Y., & Sheng, Z. (2012). Is coefficient alpha robust to non-normal data? *Frontiers in Psychology, 3*, 34. doi:10.3389/fpsyg.2012.00034
- Statistics Finland. (2013). StatFin [Online database]. Retrieved from [http://www.stat.fi/tup/statfin/index\\_en.html](http://www.stat.fi/tup/statfin/index_en.html)
- Stevenson-Hinde, J. (1990). Attachment within family systems: An overview. *Infant Mental Health Journal, 11*, 218–227.
- Stroud, C. B., Durbin, C. E., Wilson, S., & Mendelsohn, K. A. (2011). Spillover to triadic and dyadic systems in families with young children. *Journal of Family Psychology, 25*, 919–930. doi:10.1037/a0025443
- Sturge-Apple, M. L., Davies, P. T., & Cummings, E. M. (2010). Typologies of family functioning and children's adjustment during the early school years. *Child Development, 81*, 1320–1335. doi:10.1111/j.1467-8624.2010.01471.x
- Tamis-LeMonda, C. S., Shannon, J. D., Cabrera, N. J., & Lamb, M. E. (2004). Fathers and mothers at play with their 2- and 3-year-olds: Contributions to language and cognitive development. *Child Development, 75*, 1806–1820. doi:10.1111/j.1467-8624.2004.00818.x
- Tolvanen, A. (2007). *Latent growth mixture modeling: A simulation study* (Unpublished doctoral dissertation). University of Jyväskylä, Jyväskylä, Finland.



Twenge, J. M., Campbell, W. K., & Foster, C. A. (2003). Parenthood and marital satisfaction:

A meta-analytic review. *Journal of Marriage and Family*, 65, 574–583.

doi:10.1111/j.1741-3737.2003.00574.x

Table 1. *Fit Statistics for Mixture Modeling Identifying the Number of Family System Trajectories*

Number of classes	Log likelihood	BIC	Entropy	Average latent class probabilities
1	-27,957.33	56,564.62		
2	-27,005.28	54,982.22	.886	.945-.974
3	-26,501.88	54,297.11	.888	.924-.957
4	-26,166.36	53,947.77	.912	.927-.974
5	-25,858.92	53,654.60	.927	.941-.970
6	-25,583.86	53,426.16	.932	.930-.986
7	-25,368.33	53,316.82	.924	.911-.975
8	-25,106.55	53,114.94	.928	.908-1.000
9	-24,900.10	53,023.75	.927	.912-.999
10	-24,717.32	52,979.89	.934	.908-1.000
11	-24,540.13	52,947.21	.931	.882-1.000
12	-24,439.46	53,067.55	.886	.911-1.000
13	-24,264.40	53,039.13	.941	.909-1.000

*Note:* BIC = Bayesian Information Criterion.

Table 2. *Differences Between Family System Trajectories in Autonomy and Intimacy at Pregnancy (Time 1 [T1]) and Child's Ages of 2 Months (Time 2 [T2]) and 12 Months (Time 3 [T3])*

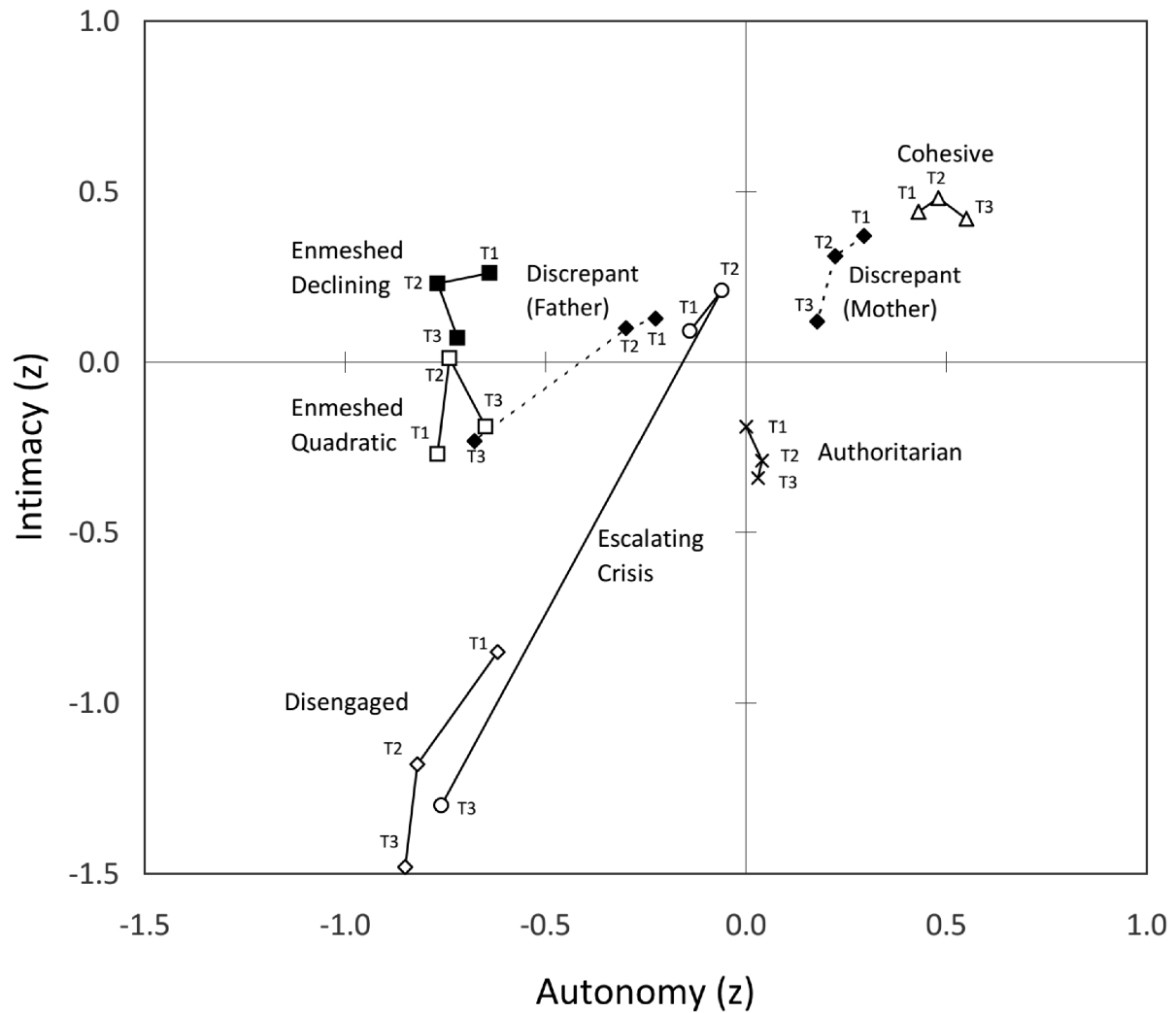
Family System Trajectory	T1		T2		T3	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
<b>Autonomy<sup>a</sup></b>						
Cohesive ( <i>n</i> = 274, 35%)	0.43 <sub>a</sub>	0.03	0.48 <sub>a</sub>	0.03	0.55 <sub>a</sub>	0.03
Disengaged ( <i>n</i> = 41, 5%)	-0.62 <sub>d</sub>	0.11	-0.82 <sub>c</sub>	0.11	-0.85 <sub>d</sub>	0.10
Enmeshed Declining ( <i>n</i> = 46, 6%)	-0.64 <sub>d,e</sub>	0.08	-0.77 <sub>c</sub>	0.10	-0.72 <sub>d</sub>	0.09
Enmeshed Quadratic ( <i>n</i> = 38, 5%)	-0.77 <sub>e</sub>	0.09	-0.74 <sub>c</sub>	0.01	-0.65 <sub>d</sub>	0.01
Authoritarian ( <i>n</i> = 107, 14%)	0.00 <sub>b,c</sub>	0.05	0.04 <sub>b</sub>	0.05	0.03 <sub>b</sub>	0.05
Escalating Crisis ( <i>n</i> = 30, 4%)	-0.14 <sub>c</sub>	0.11	-0.06 <sub>b</sub>	0.10	-0.76 <sub>d</sub>	0.09
Discrepant ( <i>n</i> = 115, 15%)	0.03 <sub>b</sub>	0.05	-0.03 <sub>b</sub>	0.05	-0.24 <sub>c</sub>	0.05
<b>Intimacy<sup>b</sup></b>						
Cohesive ( <i>n</i> = 274, 35%)	0.44 <sub>a</sub>	0.03	0.48 <sub>a</sub>	0.03	0.42 <sub>a</sub>	0.03
Disengaged ( <i>n</i> = 41, 5%)	-0.85 <sub>d</sub>	0.14	-1.18 <sub>e</sub>	0.12	-1.48 <sub>e</sub>	0.16
Enmeshed Declining ( <i>n</i> = 46, 6%)	0.26 <sub>b</sub>	0.07	0.23 <sub>b</sub>	0.07	0.07 <sub>b</sub>	0.08
Enmeshed Quadratic ( <i>n</i> = 38, 5%)	-0.27 <sub>c</sub>	0.09	0.01 <sub>c</sub>	0.08	-0.19 <sub>c,d</sub>	0.09
Authoritarian ( <i>n</i> = 107, 14%)	-0.19 <sub>c</sub>	0.05	-0.29 <sub>d</sub>	0.05	-0.34 <sub>d</sub>	0.05
Escalating Crisis ( <i>n</i> = 30, 4%)	0.09 <sub>b</sub>	0.08	0.21 <sub>b</sub>	0.07	-1.30 <sub>e</sub>	0.13
Discrepant ( <i>n</i> = 115, 15%)	0.25 <sub>b</sub>	0.05	0.21 <sub>b</sub>	0.05	-0.06 <sub>c,b</sub>	0.05

*Note:* Different subscripts (a–e) denote statistically significant differences between values separately for each column (T1, T2, or T3) and for autonomy or intimacy. Values are marginal means aggregated over parent (father or mother), relationship (parental or marital), and reporter (father or mother).

<sup>a</sup>Between-trajectories effects were as follows: T1,  $F(6, 612) = 92.05, p < .001, \eta_p^2 = .48$ ; T2,  $F(6, 592) = 12.43, p < .001, \eta_p^2 = .54$ ; T3,  $F(6, 496) = 129.81, p < .001, \eta_p^2 = .61$ .

<sup>b</sup>Between-trajectories effects were as follows: T1,  $F(6, 612) = 86.68, p < .001, \eta_p^2 = .46$ ; T2,  $F(6, 592) = 22.55, \eta_p^2 = .56$ ; T3,  $F(6, 496) = 120.77, p < .001, \eta_p^2 = .60$ .

FIGURE 1. FAMILY SYSTEM TRAJECTORIES FROM PREGNANCY TIME 1 (T1) TO CHILD'S AGES OF 2 MONTHS (TIME 2 [T2]) AND 12 MONTHS (TIME 3 [T3]).



*Note:* Values are marginal means aggregated over parent (father or mother), relationship (parental or marital), and reporter (father or mother). However, separate values are presented for mother's and father's reports for Discrepant families, marked with dashed line.