


Relationship satisfaction and commitment in the transition to parenthood: A couple-centered approach

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Abstract

Objective: To provide a more comprehensive understanding of couple relationship satisfaction, commitment, and the dynamic between the two over the transition to parenthood.

Background: The transition to parenthood is an ideal time to concurrently study relationship satisfaction and commitment, as this period is filled with familial transitions such as less couple time, more domestic labor, and the formation of parent–child relationships. These familial transitions require significant investments that may constrain people from leaving relationships, potentially leading to diverging relationship satisfaction and commitment trajectories.

Method: We conducted dyadic latent class growth analyses (DLCGA), assessing variability in relationship satisfaction and commitment trajectories across six time-points (two prenatal) for 203 couples expecting their first child, through 12 months postpartum.

Results: We identified four couple classes for relationship satisfaction and three couple classes for relationship commitment. There were 46% of couples who retained high satisfaction and commitment and another 35% of couples who retained moderately high satisfaction and high commitment. Couples reporting lower attachment avoidance, higher relational self-expansion, and higher perceived partner commitment during pregnancy were more likely to be in classes that maintained high relationship satisfaction and commitment during the transition.

Conclusion: Our results contrast the prevailing narrative about relational declines during the transition to parenthood.

Many couples retain high satisfaction and commitment into the first year of parenthood, with declines driven primarily by a minority of couples. Couples' commitment was particularly likely to be high and stable throughout the transition.

KEYWORDS

dyadic/couple data, latent class analysis, relationship commitment, relationship quality, relationship satisfaction, transition to parenthood

Bringing a new child into the world can enrich meaning in life for new parents (Umberson & Gove, 1989). However, the transition to parenthood—pregnancy through a year following the birth of a child—can also be a stressor for couples and bring new challenges to relationships (Trillingsgaard et al., 2014). A meta-analysis (Mitnick et al., 2009) and a systematic review (Doss & Rhoades, 2017) give weight to concerns about this period, finding that the relationship satisfaction declines on average. But nuance may be lost by focusing on an average satisfaction trajectory. Research has shown enough variability in satisfaction trajectories to make assertions about substantial decline a point of ongoing discussion (e.g., Don & Mickelson, 2014). This contention may be further clarified by considering commitment in conjunction with satisfaction, in a study with more time points and a larger sample size than previous group-based modeling research. With theoretical insight from the investment model (Rusbult, 1980; Rusbult et al., 2012) and biopsychosocial model (Engel, 1980), combined with methodological rigor of dyadic, longitudinal, group-based modeling (Foran & Kliem, 2015; Jung & Wickrama, 2008), we aimed to provide a more comprehensive examination of variability in relationship satisfaction and commitment during this transitional period.

RELATIONSHIP SATISFACTION AND COMMITMENT—DESCRIBING CLASSES

The investment model (e.g., Rusbult, 1980; Rusbult et al., 2012) indirectly suggests that relationship satisfaction and commitment may follow distinct trajectories across the transition to parenthood, as they are sometimes in tension with one another. As related but distinct constructs (Fletcher et al., 2000), relationship satisfaction is generally considered to be a more emotionally valenced appraisal of happiness or contentment in the relationship (Fletcher et al., 2000; Fowers et al., 2016; Rusbult, 1980), whereas commitment is generally considered to be a cognitive appraisal reflecting people's psychological attachment and dedication to maintaining a relationship (Fletcher et al., 2000; Rusbult, 1980). The investment model further suggests the added utility of understanding how relationship satisfaction and commitment may work in tandem, or possibly diverge, as one study highlighted that commitment predicted relationship stability above and beyond satisfaction (Bui et al., 1996).

The transition to parenthood marks an ideal time to concurrently consider satisfaction and commitment, as this time period is filled with familial transitions such as less couple time, more domestic labor, and the formation of parent-child relationships (Kluwer, 2010). These familial transitions require significant investment of time, energy, and resources (Van Egeren, 2004), and constrain partners from leaving the relationship (Stanley et al., 2010). In investment model terms, the investments from these familial changes may result in a higher likelihood of couples maintaining or even increasing commitment irrespective of more emotionally valenced declines in satisfaction (Becker, 1981; Kluwer, 2010). The investment model helps us to conceptualize and anticipate potential differences in trajectories for relationship satisfaction and commitment because the added responsibilities requiring investment during this period could lead to

divergent relationship satisfaction and commitment trajectories. For example, one partner may choose to stay in a relationship in which they are not particularly satisfied for the sake of maintaining a family unit for the new child.

Empirical research on the transition to parenthood offers mixed support for the theoretical possibility of diverging relationship satisfaction and commitment trajectories. As mentioned, declining satisfaction is a consistent finding in the transition to parenthood, highlighted by a meta-analysis of 37 studies (Mitnick et al., 2009) and a recent review (Doss & Rhoades, 2017). Yet there is heterogeneity in findings; results across studies range from a steep decline to a small increase in relationship satisfaction (Mitnick et al., 2009). This heterogeneity across studies suggests value in establishing distinct classes of relationship satisfaction trajectories, but this class-based approach has rarely been used (for an exception expanded on below, see Don & Mickelson, 2014). For relationship commitment, researchers have long appealed to the investment model in suggesting that couples become more committed to each other after having a child (Becker, 1981), and have pointed out that the probability of divorce is lower for parents compared to nonparents (Waite & Lillard, 1991). However, a review of the research suggested that this claim has less empirical support than some might think (Kluwer, 2010). Whereas some research has documented a decrease in commitment over the transition to parenthood (Doss et al., 2009), other research has shown that some couples become more committed (Riggs et al., 2018). These limited, somewhat mixed findings for relationship commitment also suggest it may be advantageous to identify unique class trajectories. No study to our knowledge has done so.

BIOPSYCHOSOCIAL FACTORS—DISTINGUISHING CLASSES

After identifying distinct couple trajectories, it is helpful to identify what makes couples better equipped to retain or attain high relationship quality over the transition to parenthood. The biopsychosocial model (Engel, 1980) is an ideal framework to organize variables relevant to relationship adjustment for distinguishing class membership during this period. Historically, biomedical researchers (e.g., physicians) have focused on biological factors, whereas psychosocial researchers (e.g., psychologists) have examined psychological and relational contributors to health and well-being in the transition to parenthood. In recent decades, however, researchers have found added advantage considering biological factors in tandem with psychological and social factors (e.g., Dawson et al., 2020). By organizing variables into three meaningfully distinct, yet related domains, the combination of these factors provides information about the pregnancy and postpartum experience that could not be explained by focusing on only one or two of the three domains. Specifically, research has highlighted the importance of considering the interplay of biological (e.g., birth complications), psychological (e.g., optimism, pessimism, self-esteem), and social/interpersonal variables (e.g., attachment avoidance, perceived partner commitment, relational self-expansion) during the transition to parenthood, as these factors can all uniquely predict relationship quality (e.g., Birditt et al., 2016). One advantage of this relatively comprehensive group-modeling approach is it allows us to simultaneously examine a wide range of variables from these three domains, as well as sociodemographic variables (e.g., age, income, education).

Biological factors pertaining to the nature of the childbirth experience could shape couple trajectories. Indeed, birthing complications (e.g., cesarian section, baby needing to be placed in neonatal intensive care, episiotomy, vaginal tear) are biological stressors that have been linked to lower maternal satisfaction and higher maternal distress (Blomquist et al., 2011), which may carry over into distress experienced in the relationship. Other birth characteristics such as the baby's sex, vaginal or instrumental vaginal delivery, whether the mother received an epidural, weight of the baby, or the number of gestation weeks may be less likely to differ between classes, but still provide a descriptive picture of the sample and class membership.

The psychological mindset going into the transition to parenthood should be considered, as this transition is a major life event that can refine and complicate one's view of the self and outlook on life. Prior research has highlighted the importance of studying self-esteem, optimism, and pessimism during this period (Bleidorn et al., 2016; Harwood et al., 2007), though limited work has assessed how these characteristics going into the transition play a role in shaping relationship quality. As self-esteem tends to decline over the transition, particularly for mothers (Bleidorn et al., 2016), those starting this period with a lower reservoir of self-esteem could experience more unique challenges in their relationship (Robinson & Cameron, 2012). Although past research has suggested that optimism tends to buffer against the negative impact of stressful life events (Scheier & Carver, 1985), more nuanced evidence has suggested that excessive optimism combined with unmet expectations entering the transition to parenthood can present challenges for relationship adjustment (Harwood et al., 2007). Perhaps jointly assessing optimism and pessimism can provide insight into the point that some expectations are not realistic and unlikely to be reached.

Finally, social factors pertaining to the state of the relationship (relational self-expansion, perceived partner commitment, attachment orientations) also play a role in how new parents experience this transition (e.g., Doss & Rhoades, 2017). As these social variables have to do with the relationship between partners, they may be particularly important for describing patterns of relationship quality within the couple. The transition itself can be classified as a self-expanding experience given the many instances of shared novel, exciting, and challenging opportunities for the couple. Couples entering this period that are already engaging in self-expanding activities together might be better equipped to reap the benefits of the self-expanding opportunities offered by new parenthood. Perceived partner commitment can also play a role in the transition to parenthood (Murray et al., 2017), as believing that one's partner is committed can stabilize the likelihood of staying in a relationship (Arriaga et al., 2006). This is a variable where it becomes particularly valuable to assess both satisfaction and commitment trajectories, as it seems likely that perceiving one's partner as highly committed during this transition could be just as, if not more, important for one's own sense of commitment as one's own sense of satisfaction. In addition, couples in which even one of the partners is higher in attachment avoidance (i.e., those who fear intimacy and dependence) may experience sharper declines in both mothers' and partners' relationship satisfaction and commitment (Simpson & Rholes, 2018), as these partners may be less likely to adapt to the level of responsiveness that their partner (especially the mother) needs during this demanding period of time.

Assessing biological, psychological, and social variables in tandem over the transition to parenthood offers additional nuance, particularly when identifying characteristics of couples based on their relationship satisfaction and commitment trajectories. For example, a class of couples could emerge including mothers who report low self-esteem in pregnancy, have birthing complications, and decline in both relationship satisfaction and commitment. But hypothetically, another class could emerge of couples in which mothers also report low self-esteem during pregnancy, have birthing complications, but do not decline in relationship satisfaction or commitment, possibly because they have a partner who they perceive to be highly committed and who is low in attachment avoidance. While we have no way to concretely anticipate what classes might emerge from these exploratory analyses, acknowledging all of these domains in tandem increases the likelihood of understanding the complexity of factors at play, as well as the relative importance of each domain.

CURRENT STUDY

Using Dyadic Latent Class Growth Analysis (DLCGA) with 203 couples assessed over six time points, we had two primary aims. First, based on theoretical justification from the investment

model (e.g., Rusbult, 1980; Rusbult et al., 2012), we sought to provide a more comprehensive understanding of relationship satisfaction and commitment over the transition to parenthood (prenatal to 12 months postpartum) by assessing both relationship satisfaction and commitment in tandem among couples, as well as whether classes for the outcomes were associated. Second, we appealed to the biopsychosocial model (Engel, 1980) to organize a number of variables that may distinguish multiple couple-based trajectories of relationship satisfaction and commitment.

Only one study to date has used group-based modeling to understand relationship satisfaction over the transition to parenthood, identifying two distinct relationship satisfaction trajectories for mothers and three for fathers (Don & Mickelson, 2014). Trajectories mainly varied with starting and ending points, but all showed a gradual decline. Our study allows us to uncover additional nuance by providing several key methodological advances over this initial study: (a) using the dyad rather than the individual as the unit of analysis, enabling us to take into account interdependence of both partners' reports in establishing *couple* trajectories; (b) assessing relationship commitment in addition to satisfaction; (c) having a larger sample size (203 vs. 104 couples), which increases our ability to detect smaller classes driving more dramatic changes (see Karney & Bradbury, 2020 for a review); and (d) having additional time points (6 vs. 4), giving us statistical flexibility to identify the transition from pregnancy to postpartum as a transition point (e.g., Galatzer-Levy et al., 2011; Perales, 2019).

METHOD

Participants

From May 2016 to April 2018, first-time mothers and their partners were recruited during pregnancy (range = 13–24 weeks, $M = 19.39$ weeks, $SD = 1.56$) online (40.0%), in person from the IWK Health Care Centre diagnostic imaging clinic during their routine 20-week ultrasound appointment (15.3%), or through pamphlets/posters in their doctor's office (17.7%). Other recruitment strategies included community posters (6.0%), newspaper advertisement (0.5%), word of mouth (14.4%), or other means (6.0%). We recruited a total of 252 couples. Figure S1 shows the flow of recruitment, depicting couples that were withdrawn at various time points, as well as the reasons for being withdrawn (e.g., screened but not enrolled, inattentive responders, subsequent pregnancy). A final sample of 203 couples were eligible to be included in the analyses, a sufficient sample size to detect small groups of subpopulations within a sample (Foran & Kliem, 2015). The 203 couples retained for the analyses were more likely than those not retained to be from Canada (89.7%, $\chi^2[1] = 4.22$, $p = .04$) and partners were less likely to identify as heterosexual (71.4%, $\chi^2[1] = 17.83$, $p < .001$). We did not find any other differences for sociodemographic variables. Sociodemographic information for the sample is available in Table 1. To be eligible for the study, both members of the couple were required to (1) be over 18 years of age; (2) be in a romantic relationship of at least 6 months duration; (3) be fluent in English; (4) have access to a personal email account; and (5) be having their first child. Additionally, mothers were required to (6) have an uncomplicated, singleton pregnancy. All participants who gave birth indicated that their gender/sex was woman/female, with one person identifying as a trans woman and female. We therefore refer to this group collectively as "mothers." Given the inclusion of eight same-sex couples in the sample, we refer to the partner as "partner" (rather than "father").

We had some missing data by the 12-month postpartum point, with 176 couples (86.7%) being retained from the analytic sample of 203 couples. Using logistic regression, we predicted missingness for the final wave of both partners' relationship satisfaction and commitment with sociodemographic variables (i.e., age, education, income) as well as baseline relationship satisfaction and commitment. The only significant predictor was that couples that had mothers who

TABLE 1 Sample sociodemographics (n = 203 couples)

	Mothers <i>M</i> ± <i>SD</i> or <i>N</i> (%)	Partners <i>M</i> ± <i>SD</i> or <i>N</i> (%)
Age (years)	30.04 ± 3.49	31.58 ± 4.51
Years of education completed (since Grade 1)	17.33 ± 2.79	17.00 ± 3.07
Sex		
Female	203 (100%)	7 (3.4%)
Male	—	196 (96.6%)
Sexual orientation		
Heterosexual	182 (89.7%)	194 (95.6%)
Lesbian/Gay	6 (3.0%)	4 (2.0%)
Bisexual	12 (5.9%)	3 (1.5%)
Pansexual	2 (1.0%)	—
Asexual	1 (0.5%)	1 (0.5%)
Somewhere between bisexual and lesbian	—	1 (0.5%)
Relationship status		
Married/engaged/common-law	186 (91.6%)	185 (91.1%)
Living with/dating one partner	17 (8.4%)	17 (8.4%)
Other	—	1 (0.5%)
Relationship length (months)	79.66 ± 43.24	79.66 ± 43.24
Country of residence		
Canada	145 (71.4%)	145 (71.4%)
United States of America	58 (28.6%)	58 (28.6%)
Culture		
European American/White	160 (78.8%)	164 (80.8%)
Asian American/Asian	19 (9.4%)	10 (4.9%)
Biracial/Multiracial	9 (4.4%)	7 (3.4%)
African American/Black	3 (1.5%)	3 (1.5%)
East Indian	6 (3.0%)	5 (2.5%)
Middle Eastern/Central Asian/South Asian	3 (1.5%)	7 (3.4%)
Aboriginal/Native American/First Nations	2 (1.0%)	2 (1.0%)
Hispanic/Latino/Latina	—	2 (1.0%)
Native Hawaiian/Pacific Islander	—	2 (1.0%)
Other (not specified or Ashkenazi)	1 (1.0%)	1 (1.0%)
Employment		
Fulltime (inside + outside home)	150 (73.9%)	174 (85.7%)
Part-time (inside + outside home)	35 (17.2%)	23 (11.3%)
Student (fulltime + part-time)	17 (8.4%)	24 (11.8%)
Unemployed	13 (6.4%)	3 (1.5%)
Other (paid/unpaid leave, casual, unable to work)	7 (3.4%)	5 (2.5%)
Annual income		
<\$60,000	39 (19.3%)	39 (19.3%)
>\$60,000	163 (80.7%)	163 (80.7%)

started out the study with higher satisfaction were less likely to be missing at 12-month postpartum ($OR = 0.53, p = .04$). Despite some missingness, we were able to utilize the full sample due to maximum likelihood analyses (see data analysis plan).

Procedure

We used two primary strategies to recruit a convenience sample of first-time parent couples during pregnancy ($M = 19.39$ weeks; Range = 13–24 weeks, $SD = 1.56$) from May 2016 to April 2018. The majority of couples were recruited online (40.0%) in the United States and Canada, pamphlets/posters in their doctor's office (17.7%), or during their 20-week ultrasound appointment from the Health Centre diagnostic imaging clinic in (masked for review) (15.3%). Participants were also recruited through word of mouth (14.4%), community posters (6.0%), newspaper advertisements (0.5%), or other means (6.0%). In-person recruitment followed established protocols from other studies on the transition to parenthood (Dawson et al., 2020). Participants gave informed consent online before accessing the first online survey.

Participants completed measures of relationship satisfaction and commitment via Qualtrics at baseline (20-week pregnant), 32-week pregnant, and 3-, 6-, 9- and 12-month postpartum. They reported their sociodemographic information and completed measures of the biopsychosocial predictors at baseline and/or at 32-week pregnant. In addition, information regarding labor and delivery (i.e., biological variables) was collected via a brief survey at 2-week postpartum. Participants were emailed secure links that expired after 4 weeks. Email and telephone reminders were used to promote participation (Dawson et al., 2020; Rosen et al., 2020). Couples could receive a total of \$105 CDN (\$81 USD) in gift cards for either Amazon.ca or Amazon.com, prorated based on the number of surveys completed. Ethical review boards at (masked for review) approved the study. After data collection, but prior to testing our research questions, we preregistered our analysis plan on the Open Science Framework (OSF). Our preregistration, Mplus data and syntax, more detailed information about our analysis plan, and supplemental materials can be found at https://osf.io/7x2y3/?view_only=679b01ba32f54d58a7e74dde6b078267.

Measures

Relationship satisfaction and commitment

We measured relationship satisfaction (three items: “How satisfied are you with your relationship?”, “How content are you with your relationship?”, “How happy are you with your relationship?”; mother: $\alpha = 0.91$ – 0.96 ; partner: $\alpha = 0.89$ – 0.96) and relationship commitment (three items: “How committed are you to your relationship?”, “How dedicated are you to your relationship?”, “How devoted are you to your relationship?”; mother: $\alpha = 0.82$ – 0.95 ; partner: $\alpha = 0.76$ – 0.94) with subscales from the Perceived Relationship Quality Components Inventory (PRQC; Fletcher et al., 2000), all rated on a 7-point scale (1 = *not at all* to 7 = *extremely*). Descriptives and correlations are shown in Table S1.

Sociodemographics

We assessed how the classes potentially differed based on age, income, and education. Age was assessed with an open question asking participants to report the month and year they were born. Education was assessed by asking participants “How many years of schooling do you have (starting from first grade)?” Income was assessed with the question: “What is the

approximate total annual income of your household?" on an 11-point scale (1 = \$0–\$9999; 11 = \$100,000 and over).

Biopsychosocial variables

Biological

The following biological stressor variables were dichotomized in order to assess probability for agreeing with each variable: whether they had a cesarean section (0 = *no*; 1 = *yes*; $M = 0.26$, $SD = 0.44$), whether the doctor made an episiotomy to widen the vaginal opening for delivery (0 = *no*; 1 = *yes*; $M = 0.15$, $SD = 0.36$), whether they had any tearing in the vagina or perineum (0 = *no*; 1 = *any*; $M = 0.58$, $SD = 0.49$), and whether the baby spent any time in the neonatal intensive care unit (0 = *none*; 1 = *any*; $M = 0.12$, $SD = 0.33$). Data were coded as missing for those who answered "unsure/do not know." Additional preregistered descriptive birth characteristics were assessed as supplemental material: vaginal delivery (0 = *no*; 1 = *yes*; $M = 0.60$, $SD = 0.49$), whether they had an instrumental vaginal delivery (0 = *no*; 1 = *yes*; $M = 0.11$, $SD = 0.32$), whether they had an epidural (0 = *no*; 1 = *yes*; $M = 0.72$, $SD = 0.45$), whether there was an induction for the delivery (0 = *no*; 1 = *yes*; $M = 0.47$, $SD = 0.50$), the biological sex of baby (0 = *male*; 1 = *female*; $M = 0.39$, $SD = 0.49$), weight of the baby (total ounces, $M = 119.47$, $SD = 18.31$), and gestational age of delivery (total weeks, $M = 39.30$, $SD = 1.96$).

Psychological

We measured individual differences in optimism and pessimism with six items from the Life Orientation Test (Scheier et al., 1994) measured at the baseline. On a 5-point scale (1 = *I disagree a lot* to 5 = *I agree a lot*), participants rated three items for optimism (e.g., "I'm always optimistic about my future") and three items for pessimism (e.g., "I rarely count on good things happening to me"). Optimism (mother: $\alpha = 0.74$, $M = 2.24$, $SD = 0.81$; partner: $\alpha = 0.70$, $M = 2.07$, $SD = 0.74$) and pessimism (mother: $\alpha = 0.83$, $M = 3.71$, $SD = 0.96$; partner: $\alpha = 0.75$, $M = 3.66$, $SD = 0.90$) scales were reliable for mothers and partners. A promax, maximum likelihood exploratory factor analysis suggested that the two subscales loaded as separate constructs.

Participants completed a validated one-item measure of self-esteem (Robins et al., 2001) at 32-week pregnant. Participants were asked to rate the extent of their agreement with the statement "I have high self-esteem" on a 7-point scale (1 = *not very true of me* to 7 = *very true of me*), with a mean score of 5.42 ($SD = 1.48$) for mothers and 5.84 ($SD = 1.32$) for partners.

Social

The six-item subscale from the Experiences in Close Relationships Scale-Short Version (ECR-S; Wei et al., 2007) was used to assess attachment avoidance (e.g., "I am nervous when my romantic partner gets too close to me") at baseline, measured on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*). The scale was reliable for both mothers ($\alpha = 0.74$, $M = 1.62$, $SD = 0.71$) and partners ($\alpha = 0.76$, $M = 1.95$, $SD = 0.79$). We originally intended to assess attachment anxiety, but given that the scale alphas were 0.56 and 0.59, below the minimum reliability cut-off specified in our preregistered plan (0.60), it was omitted.

Relational self-expansion was measured with six items from the Self-Expansion Questionnaire (SEQ; Lewandowski Jr. & Aron, 2002), measured at 32-week pregnant. Participants completed items such as "How much does being with your partner result in you having new experiences?" on a 7-point scale (1 = *not very much* to 7 = *very much*). The scale was reliable for mothers ($\alpha = 0.87$, $M = 5.66$, $SD = 0.93$) and partners ($\alpha = 0.87$, $M = 5.56$, $SD = 0.94$).

Perceived partner commitment was measured with items adapted from the Investment Model scale (Rusbult et al., 1998) at 32-week pregnant. Participants rated three items such as "How committed is your partner to your relationship?" on a 7-point scale (*not at all* to

7 = *extremely*). The scale was reliable for both mothers ($\alpha = 0.91$, $M = 6.78$, $SD = 0.51$) and partners ($\alpha = 0.89$, $M = 6.72$, $SD = 0.55$).

Data analysis plan

All models were estimated with Mplus version 8.4 (Muthén & Muthén, 1998-2017) using the maximum likelihood estimator. Before we calculated total scores for outcomes and predictors, we used maximum likelihood imputation for item-level missing data insofar as missing data constituted less than 20% of the total number of items in a measure (Newman, 2003).

We examined trajectories through Dyadic Latent Class Growth Analysis (DLCGA). This approach combines the principles of Latent Class Growth Analysis (Jung & Wickrama, 2008) and Dyadic Growth Mixture Modeling (Foran & Kliem, 2015). DLCGA is a type of growth mixture modeling that allowed us to account for heterogeneity in longitudinal patterns of relationship satisfaction and commitment because the latent classes represent qualitatively unique trajectories. We followed the constraints of DLCGA rather than a true dyadic growth mixture model (Foran & Kliem, 2015) in part due to the challenges of achieving model convergence with our sample size. Variances of the intercepts, linear slopes, and quadratic term (when applicable) were assumed to be invariant (constrained to zero) within a class and allowed to vary only across classes (Grimm et al., 2016), similar to the approach of group-based modeling taken by Don and Mickelson (2014), but with the couple rather than the individual as the unit of analysis. We simultaneously assessed mothers and partners' reports of relationship satisfaction and commitment across six time points (a total of 12 variables were entered). Time was assessed in months, with the intercept representing the first time point. We tested linear, quadratic, and piecewise trajectories with the third time point (3-month postpartum) being the knot (Perales, 2019), as this point in our data marks the transition between pregnancy and postpartum. Modeling the knot at 3-month postpartum enabled us to test linear trajectories for the first portion of the piecewise model (as the first piece only had three time points) but to test both linear and quadratic terms for the second portion (as this second piece had four time points: 3, 6, 9, and 12 months postpartum). Time frame was weighted by months across the six time points (0, 3, 8, 11, 14, and 17).

We examined results from class solutions until we had three class solutions in a row that resulted in poorer model fit (van de Schoot et al., 2017). This approach helps ensure finding the optimal class solution as it is possible for a solution to result in a poorer model fit than the previous solution (e.g., a four-class solution being a worse solution than the three-class solution), but then the following solution to be a better class solution (e.g., a five-class solution being better than both the three- and four-class solution). Lower Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and sample-size-adjusted Bayesian Information Criterion (SABIC) values indicated better fit; entropy values closer to one indicated better fitting models (Celeux & Soromenho, 1996; Nylund et al., 2007). We also examined the Lo–Mendell–Rubin adjusted likelihood ratio test (LMR-LRT) and bootstrap likelihood ratio test (BLRT), which compare n vs. $n - 1$ classes to estimate comparable model fit (Asparouhov & Muthén, 2012). We also considered the size of classes (>5% sample in each), parsimony, and interpretability of classes (Nylund et al., 2007).

After selecting the best overall model fit for number of classes and type of trajectory (e.g., two classes of piecewise with a quadratic term), we also tested a number of constraints for the different class trajectories within the final solution. Hypothetically, even if we found that a four-class piecewise quadratic model had the best overall fit, that does not mean that each class has the same type of trajectory. One class could be piecewise quadratic, a second could be piecewise linear, and a third could be linear. To test this possibility, we constrained the quadratic term to zero for each class to assess whether the quadratic term was useful in shaping the

trajectory for each individual class. We also constrained the second piecewise linear term to equal the first piecewise linear term to test whether the second piecewise term was significantly different than the first piecewise term and therefore worth retaining in each class solution. Any constraint that resulted in increasing the BIC by more than 10 was left unconstrained (Raferty, 1995). More specifically, if the BIC did not increase by 10 or more when the quadratic term (Q) was constrained to zero, the class fit better as a piecewise linear trajectory. If the second piecewise slope (S2) constrained to be equal to the first piecewise slope (S1) did not increase the BIC by 10 or more, then the specific class would be best represented by a linear slope (S).

Once we selected the appropriate number of classes and type of trajectories, we used the BCH method (named for Bolck et al., 2004) in Mplus (Asparouhov & Muthén, 2020) to evaluate the significant differences between the classes on the biopsychosocial variables listed above. The BCH method tests for significant differences between the established classes. The BCH method estimates the differences between variables through weighted multiple group analysis, where the groups correspond to latent classes, avoiding shifts in latent class membership of the identified trajectories because the groups of classes are known.

RESULTS

Dyadic trajectories

Relationship satisfaction

When looking at the average trajectory, mothers (intercept = 6.40, $SE = 0.04$, $p < .001$; $EST_S = -.04$, $p < .001$) and partners (intercept = 6.32, $SE = 0.04$, $p < .001$; $EST_S = -.04$, $p < .001$) declined in relationship satisfaction over time. When applying DLGCA analysis, however, to a series of linear, quadratic, piecewise, and piecewise quadratic models, we uncovered significant heterogeneity, as the model that fit the data best was the four-class solution for the piecewise quadratic model. The model fits of the estimated DLGAs for the piecewise quadratic models are shown in Table 2 and the trajectories are shown in Figure 1A. We selected the four-class solution from the piecewise linear model because it best fit the predetermined criteria from our preregistration. In the final model, we constrained the second slope to be equal to the first slope for Class 1 Mothers ($BIC\ Change = 6.80$), Class 2 Partners ($BIC\ Change = 3.62$), and Class 4 Partners ($BIC\ Change = 0.27$). Figure 1A depicts the final trajectories.

Class 1 (*Highly Satisfied Couples*) included 47% of couples ($n = 99$) who reported high satisfaction throughout the transition. In this class, mothers' relationship satisfaction intercept was 6.77 ($SE = 0.06$, $p < .001$) and had a linear slope that showed no change over time ($EST_S = -0.01$, $SE = 0.02$, $p = .57$). Partners' intercept was 6.72 ($SE = 0.06$, $p < .001$) and had a piecewise linear slope that did not significantly change from baseline to 3-month postpartum ($EST_{S1} = 0.003$, $SE = 0.02$, $p = .86$) or after the 3-month mark ($EST_{S2} = -0.02$, $SE = 0.01$, $p = .50$).

Class 2 (*Mothers Postpartum Decline and Steady Partners*) included 38% of couples ($n = 75$) who reported relatively high relationship satisfaction throughout the transition. In this class, mothers' intercept was 6.15 ($SE = 0.08$, $p < .001$) and had a piecewise linear slope that did not significantly change from baseline to 3 months ($EST_{S1} = 0.01$, $SE = 0.02$, $p = .81$), but did significantly decline from 3- to 12-month postpartum ($EST_{S2} = -0.03$, $SE = 0.01$, $p = .01$). Partners' intercept was 5.98 ($SE = 0.08$, $p < .001$) and had a linear slope with no significant change from baseline to 12-month postpartum ($EST_S = -0.02$, $SE = 0.02$, $p = .52$).

Class 3 (*Postpartum Declining Couples*) included 9% of couples ($n = 16$). In this class, mothers' relationship satisfaction intercept was 5.82 ($SE = 0.14$, $p < .001$) and had a piecewise

TABLE 2 Latent classes for couple trajectories of relationship satisfaction and relationship commitment ($n = 203$ couples)

Relationship satisfaction	Class proportions	LL	AIC	BIC	SABIC	LMR-LRT p -value	BLRT p -value	Entropy
1 class	1.00	-2975.04	5998.08	6077.48	6001.44	NA	NA	NA
2 class	0.65/0.35	-2773.22	5608.44	5710.99	5612.78	.54	<.001	0.84
3 class	0.58/0.29/0.13	-2650.17	5376.35	5502.06	5381.67	.09	<.001	0.87
4 class	0.47/0.38/0.09/0.06	-2576.99	5243.98	5392.85	5250.28	.32	<.001	0.88
5 class	Did not converge							
6 class	Did not converge							
7 class	Did not converge							
Relationship commitment								
1 class	1.00	-1694.47	3440.95	3526.96	3444.59	NA	NA	NA
2 class	0.86/0.14	-1486.45	3042.91	3158.70	3047.81	.28	<.001	0.97
3 class	0.83/0.10/0.07	-1353.88	2795.76	2941.33	2801.92	.34	<.001	0.98
4 class	Did not converge							
5 class	Did not converge							
6 class	Did not converge							

linear slope that did not significantly change from baseline to 3-month postpartum ($EST_{S1} = 0.08$, $SE = 0.05$, $p = .12$), but declined after 3-month postpartum ($EST_{S2} = -0.10$, $SE = 0.03$, $p < .001$). Partners' intercept was 5.24 ($SE = 0.14$, $p < .001$) and had a piecewise linear slope that did not change from baseline to 3-month postpartum ($EST_{S1} = -0.03$, $SE = 0.05$, $p = .56$), but did decline after 3-month postpartum ($EST_{S2} = -0.12$, $SE = 0.02$, $p < .001$).

Class 4 (*Mothers Pregnancy Decline and Steady Partners*) comprised 6% of couples ($n = 12$). In this class, mothers' relationship satisfaction intercept was 5.59 ($SE = 0.17$, $p < .001$) and had a piecewise linear slope that declined from baseline to 3-month postpartum ($EST_{S1} = -0.27$, $SE = 0.07$, $p < .001$) and had no significant change from 3 to 12-month postpartum ($EST_{S2} = 0.03$, $SE = 0.04$, $p = .40$). Partners' intercept was 6.39 ($SE = 0.16$, $p < .001$) and did not significantly change from baseline to 12-month postpartum ($EST_S = -0.04$, $SE = 0.06$, $p = .47$).

Relationship commitment

When looking at the average trajectory, mothers (intercept = 6.90, $SE = 0.02$, $p < .001$; $EST_S = -0.01$, $p < .001$) and partners (intercept = 6.82, $SE = 0.02$, $p < .001$; $EST_S = -0.01$, $p < .001$) declined in relationship commitment. Similar to satisfaction, however, we found heterogeneity when estimating a series of linear, quadratic, piecewise, and piecewise quadratic models. The model that fit the data best was the three-class solution for the piecewise quadratic model. The model fits of the estimated DLGAs for the piecewise linear models are in Table 2 and the trajectories are shown in Figure 1B. We selected the three-class solution from the piecewise quadratic model because it best fit the predetermined criteria from our preregistration. The quadratic terms were constrained to zero for Class 1 Mothers (BIC Change = 1.22), Class 1 Partners (BIC Change = 0), and Class 2 Partners (BIC Change = 1.22).

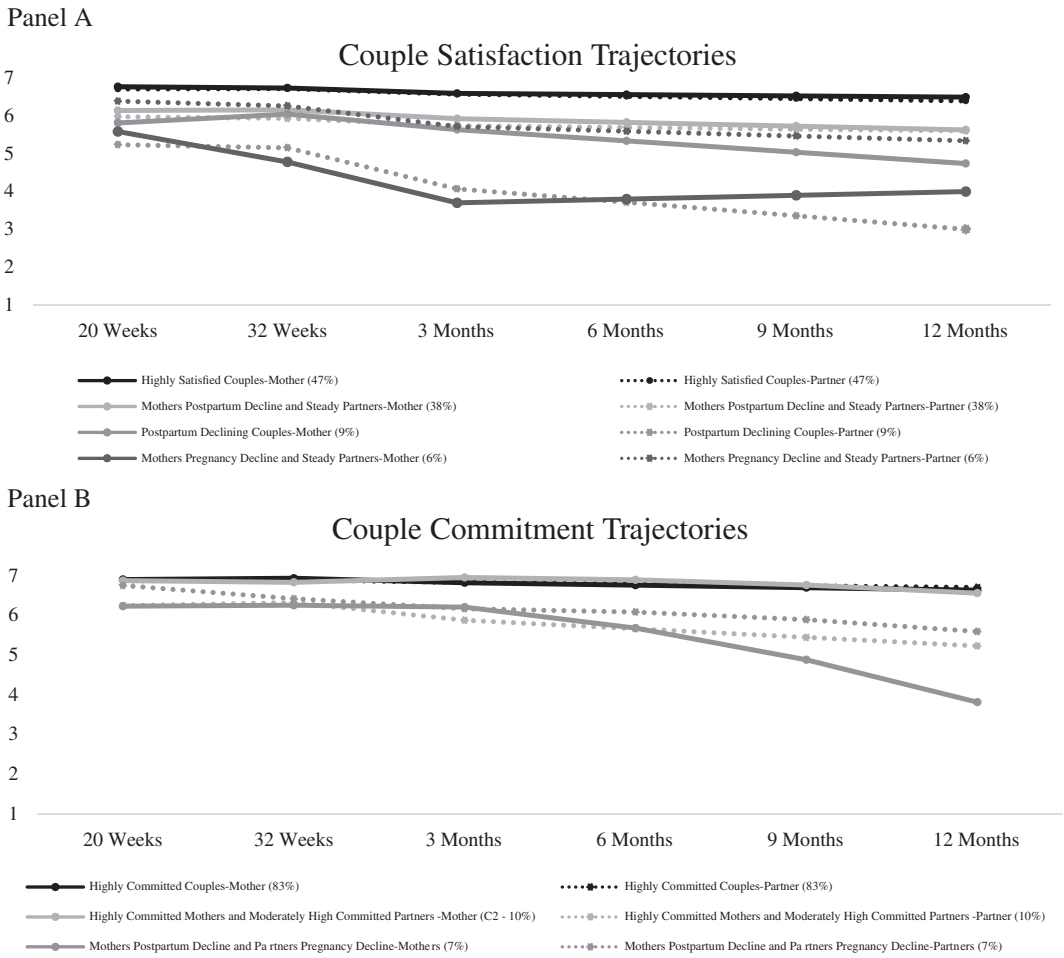


FIGURE 1 Couple trajectories for (A) relationship satisfaction and (B) commitment. Solid lines indicate mother trajectories and dashed lines indicate partner trajectories ($n = 203$ couples)

Class 1 (*Highly Committed Couples*) included 83% of couples ($n = 169$) who reported high commitment throughout the transition. In this class, mothers' relationship commitment intercept was 6.91 ($SE = 0.03$, $p < .001$) and did not significantly change from baseline to 3-month postpartum ($EST_{S1} = 0.01$, $SE = 0.01$, $p = .34$) or 3- to 12-month postpartum ($EST_{S2} = -0.02$, $SE = 0.01$, $p = .13$). Partners' similarly had an intercept of 6.87 ($SE = 0.03$, $p < .001$) that did not significantly change across both parts of the transition ($EST_{S1} = 0.01$, $SE = 0.01$, $p = .43$; $EST_{S2} = -0.01$, $SE = 0.02$, $p = .38$).

Class 2 (*Highly Committed Mothers and Moderately High Committed Partners*) included 10% of the couples ($n = 20$). Mothers had an intercept of 6.88 ($SE = 0.08$, $p < .001$) and had a piecewise quadratic slope that was not significant from baseline to 3-month postpartum ($EST_{S1} = -0.01$, $SE = 0.03$, $p = .65$); despite having a significant quadratic term ($EST_Q = -0.004$, $SE = 0.002$, $p = .04$), there also was no change from 3- to 12-month postpartum ($EST_{S2} = 0.06$, $SE = 0.04$, $p = .17$). Partners had an intercept of 6.25 ($SE = 0.14$, $p < .001$) and had a piecewise slope that did not significantly change over the entire transition ($EST_{S1} = 0.03$, $SE = 0.03$, $p = .45$; $EST_{S2} = -0.07$, $SE = 0.05$, $p = .11$).

Class 3 (*Mothers Postpartum Decline and Partners Pregnancy Decline*) included 7% of the couples ($n = 13$). Mothers' relationship commitment intercept was 6.23 ($SE = 0.09$, $p < .001$) and had a piecewise quadratic slope that was nonsignificant from baseline to 3-month postpartum ($EST_{S1} = 0.01$, $SE = 0.04$, $p = .20$), but then significantly declined after 3-month postpartum ($EST_{S2} = -0.11$, $SE = 0.15$, $p = .03$; $EST_Q = -0.02$, $SE = 0.0033$, $p < .001$). Partners' intercept was 6.76 ($SE = 0.09$, $p < .001$) and also had a piecewise quadratic slope, as they declined from baseline to 3-month postpartum ($EST_{S1} = -0.11$, $SE = 0.04$, $p < .01$), but did not have a significant change from 3- to 12-month postpartum ($EST_{S2} = 0.09$, $SE = 0.06$, $p = .12$), despite having a significant difference in the rate of change ($EST_Q = -0.01$, $SE = 0.003$, $p = .03$).

Overlap in classes

As presented in the descriptive statistics in Table 3, 47.2% of the sample retained high satisfaction and commitment throughout the study period, and 28.7% of the sample retained high commitment and relatively high satisfaction. Consistent with our preregistered analyses, we conducted dual trajectory analyses by regressing the established relationship commitment trajectories onto the established relationship satisfaction trajectories. Unfortunately, the model did not converge, likely due to regressing relatively small classes onto other relatively small classes, and we are therefore unable to report whether one class from the relationship satisfaction class solution is significantly more or less likely to correspond to a particular class from the relationship commitment class solution. Although not preregistered, we did however export classes and found that classes for relationship satisfaction and commitment were related ($\chi^2 [6] = 32.57$, $p < .001$). This result, however, should be interpreted with caution as conducting the analyses with this approach did not allow us to account for ambiguities in class membership among the couples.

TABLE 3 Descriptive results and estimated posterior probabilities from the dual trajectories analyses ($n = 203$ couples)

		Commitment classes		
		Class 1 Highly committed couples	Class 2 Highly committed mothers and moderately high committed partners	Class 3 Postpartum declining mothers and pregnancy declining partners
Satisfaction classes	Class 1 Highly satisfied couples	92 (46%) 0.97	2 (1%)0.02	1 (1%)0.01
	Class 2 Mothers postpartum decline and steady partners	70 (35%) 0.92	3 (1%)0.04	3 (1%)0.05
	Class 3 Postpartum declining couples	11 (5%)0.69	3 (2%)0.19	2 (1%)0.13
	Class 4 Mothers pregnancy decline and steady partners	7 (3%)0.48	4 (2%)0.26	4 (2%)0.26

Notes: Upper values indicate the number of cases and percentage of cases that fall into one of the 12 class combinations. Values below the percentage indicate the posterior probability that each of the four satisfaction classes falls into one of the three commitment classes (e.g., the .97 posterior probability means that for couples that were part of the *Highly Satisfied Couples* class, there was a 97% likelihood they would also be part of the *Highly Committed Couples* class). Due to rounding, rows of posterior probabilities do not always add up to 1.00.

TABLE 4 Biopsychosocial differences for couple satisfaction classes (n = 203 couples)

	(a) Highly satisfied couples (47%)	(b) Mothers postpartum decline and steady partners (38%)	(c) Postpartum declining couples (9%)	(d) Mothers pregnancy decline and steady partners (6%)	Range	χ^2	p-value
Biological							
C-section	0.25 (0.05)	0.28 (0.06)	0.31 (0.12)	0.16 (0.12)	0-1	1.10	.78
Episiotomy	0.20 (0.05)	0.12 (0.04)	0.08 (0.07)	0.09 (0.09)	0-1	2.93	.40
Tear	0.52 (0.06)	0.62 (0.06)	0.54 (0.14)	0.76 (0.13)	0-1	3.46	.33
Time in NICU	0.17 (0.04)	0.07 (0.03)	0.15 (0.10)	0.08 (0.09)	0-1	3.08	.38
Psychological							
Mother optimism	2.10 (0.09) ^c	2.31 (0.10)	2.56 (0.20) ^a	2.33 (0.29)	1-5	5.36	.15
Partner optimism	2.01 (0.09)	2.11 (0.09)	2.25 (0.14) ^d	1.75 (0.17) ^c	1-5	5.21	.16
Mother pessimism	3.87 (0.11) ^c	3.72 (0.12) ^c	3.06 (0.25) ^{ab}	3.30 (0.28)	1-5	11.61	<.01**
Partner pessimism	3.70 (0.10) ^c	3.73 (0.10) ^c	2.95 (0.27) ^{abd}	3.84 (0.25) ^c	1-5	7.68	.05
Mother self-esteem	5.63 (0.18)	5.23 (0.19)	5.63 (0.34)	4.88 (0.41)	1-7	4.18	.24
Partner self-esteem	5.90 (0.15) ^c	5.97 (0.15) ^c	4.68 (0.49) ^{abd}	6.23 (0.31) ^c	1-7	7.33	.06
Social							
Mother avoidance	1.36 (0.06) ^{bcd}	1.79 (0.09) ^a	1.87 (0.23) ^a	2.00 (0.28) ^a	1-7	19.62	<.001***
Partner avoidance	1.72 (0.09) ^{bc}	2.10 (0.09) ^a	2.18 (0.19) ^a	2.36 (0.35)	1-7	12.21	<.01**
Mother self-expansion	6.24 (0.11) ^{bc}	5.44 (0.18) ^a	5.39 (0.37) ^a	5.31 (0.47)	1-7	28.08	<.001***
Partner self-expansion	6.14 (0.13) ^{bc}	5.18 (0.16) ^a	5.19 (0.36) ^a	5.81 (1.09)	1-7	34.65	<.001***
Mother perceived commitment	6.93 (0.03) ^{bd}	6.75 (0.06) ^a	6.71 (0.11)	6.04 (0.37) ^a	1-7	14.86	<.01**
Partner perceived commitment	6.91 (0.05) ^{bc}	6.65 (0.06) ^{abc}	6.10 (0.21) ^{abd}	6.81 (0.18) ^c	1-7	20.15	<.001***

Notes: Superscripts indicate a class that is significantly different than the reference class ($p < .05$). p-values indicate the overall significant difference between the classes. Standard errors are in parentheses.
^a $p < .01$.
^{**} $p < .001$.

TABLE 5 Biopsychosocial differences for couple commitment classes (n = 203 couples)

	(a) Highly committed couples (83%)	(b) Highly committed mothers and moderately committed partners (10%)	(c) Postpartum declining mothers and pregnancy declining partners (7%)	Range	χ^2	p-value
Biological						
C-section	0.25 (0.03)	0.30 (0.11)	0.39 (0.14)	0-1	1.12	.57
Episiotomy	0.17 (0.03)	0.05 (0.06)	0.15 (0.10)	0-1	3.21	.20
Tear	0.58 (0.04)	0.56 (0.12)	0.54 (0.14)	0-1	0.13	.94
Time in NICU	0.13 (0.03) ^b	0.00 (0.00) ^a	0.15 (0.10)	0-1	26.51	<.001***
Psychological						
Mother optimism	2.23 (0.06)	2.32 (0.12)	2.23 (0.26)	1-5	0.42	.81
Partner optimism	2.08 (0.06)	2.05 (0.17)	2.05 (0.19)	1-5	0.04	.98
Mother pessimism	3.75 (0.07) ^c	3.72 (0.22)	3.15 (0.28) ^a	1-5	4.32	.12
Partner pessimism	3.67 (0.07)	3.65 (0.19)	3.49 (0.27)	1-5	0.43	.81
Mother self-esteem	5.42 (0.12)	5.55 (0.35)	5.31 (0.46)	1-7	0.21	.90
Partner self-esteem	5.91 (0.10) ^b	5.13 (0.36) ^a	6.08 (0.36)	1-7	4.56	.10
Social						
Mother avoidance	1.52 (0.05) ^c	1.82 (0.18)	2.47 (0.30) ^a	1-7	11.90	<.01**
Partner avoidance	1.85 (0.06) ^{bc}	2.30 (0.21) ^a	2.70 (0.27) ^a	1-7	12.93	<.01**
Mother self-expansion	5.72 (0.07) ^c	5.67 (0.39) ^c	4.92 (0.28) ^{ab}	1-7	7.48	.02*
Partner self-expansion	5.65 (0.07) ^b	4.99 (0.24) ^a	5.36 (0.09) ^a	1-7	7.67	.02*
Mother perceived commitment	6.85 (0.03) ^c	6.70 (0.11)	6.05 (0.34) ^a	1-7	7.22	.03*
Partner perceived commitment	6.80 (0.04) ^b	6.27 (0.13) ^a	6.47 (0.20)	1-7	16.81	<.001***

Notes: Superscripts indicate a class that is significantly different than the reference class ($p < .05$). p-values indicate the overall significant difference between the classes. Standard errors are in parentheses.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Biopsychosocial descriptives

With the four-class solution for relationship satisfaction and the three-class solution for commitment, we tested how biological, psychological, and social variables differed across classes (see Tables S2 and S3 in the supplemental materials for sociodemographic and additional descriptive biological factor differences between the classes).¹

For relationship satisfaction, there were no significant differences for any biological stressors in the main analyses. For psychological factors, the only significant difference was for mother's pessimism, as *Postpartum Declining Couples* had significantly lower pessimism than *Highly Satisfied Couples* and *Mothers Postpartum Decline and Steady Partners*. The social factors had the most consistent differences, as the *Highly Satisfied Couples* had the lowest attachment avoidance, highest relational self-expansion, and highest perceived partner commitment. All specific results are shown in Table 4.

For relationship commitment, whether mothers spent time in the NICU was the only biological stressor from the main analyses to distinguish the classes. *Highly Committed Mothers and Moderately Committed Partners* were significantly less likely to spend time in the NICU than *Highly Committed Couples*. There were no significant differences for psychological factors. Once again, the most consistent differences were found for social factors, as the *Highly Committed Couples* had the lowest attachment avoidance, highest relational self-expansion, and highest perceived partner commitment. Full results are shown in Table 5.²

DISCUSSION

We have built upon research examining relationship satisfaction and commitment during the transition to parenthood in several ways. First, our sample size, six time points, and couple-based approach gave us the opportunity to expand on previous research which has evaluated relationship satisfaction over the transition to parenthood (e.g., Don & Mickelson, 2014). Second, we are the first to quantify varying relationship commitment trajectories during the transition to parenthood. Third, we provided insight into the unique couple dynamic of relationship satisfaction and commitment in tandem. Finally, we provided insight into variables that distinguish couple relationship satisfaction and commitment trajectories over this period.

Previous research has highlighted the relationship challenges of the transition to parenthood (Trillingsgaard et al., 2014), as studies suggest an average decline in relationship quality (Doss et al., 2009; Doss & Rhoades, 2017). We confirmed an average decline in relationship quality with decreases in satisfaction and commitment. Our group-based analyses, however, show reason for optimism, as 46% of couples retained high relationship satisfaction and commitment and 35% of couples retained moderately high satisfaction and high commitment through the first 12 months of having a child. We also found support for the theoretical justification in the investment model by finding that a higher percentage of couples were able to maintain high commitment (83%) than those who were able to retain high satisfaction (47%).

Findings for our relationship satisfaction classes are consistent with growing evidence suggesting that declining satisfaction trajectories are not normative, but tend to be pulled down by a small subset of the sample that show more dramatic declines (Galatzer-Levy et al., 2011; Karney & Bradbury, 2020). We observed small differences from the only other study to assess relationship satisfaction over the transition to parenthood using a group-modeling approach. Don and Mickelson (2014) found two relationship satisfaction trajectories for mothers and three relationship satisfaction trajectories for fathers; trajectories mainly varied with starting and ending points, but all still showed a gradual decline. We suspect that our results differed in part due to the differences in sample size (104 vs. 203 couples). With a larger sample size, we

were better able to identify the small number of couples in two classes that were pulling the average trajectories down for relationship satisfaction (classes of 9% and 6%).

Researchers have long appealed to the investment model (Rusbult, 1980; Rusbult et al., 2012) in postulating that couples should fare better in maintaining relationship commitment than satisfaction over the transition to parenthood (Becker, 1981; Waite & Lillard, 1991). Though we found that relationship satisfaction and commitment classes are related, our data add to the limited literature evaluating whether couples are better at maintaining commitment than satisfaction (Kluwer, 2010), as we found the overwhelming majority (83%) of couples started and maintained high relationship commitment throughout the transition. This difference between our outcomes is also highlighted by the descriptives from our dual trajectory analyses. There were 35% of *Highly Committed Couples* who had high commitment throughout the transition to parenthood despite having moderately high satisfaction levels, and 9% who had high commitment despite experiencing substantive declines in satisfaction by at least one partner. Alternatively, there were only three couples in the *Highly Satisfied Couples* class that were not in the *Highly Committed Couples* class. These results were also reflected in the posterior probabilities: *Highly Satisfied Couples* (.97), *Mothers Postpartum Decline and Steady Partners* (.92), *Postpartum Declining Couples* (.69) and *Mothers Pregnancy Decline and Steady Partners* (.48) had moderate to high probabilities of both partners retaining high commitment. Overall, more couples retained high satisfaction than might be expected due to consistent findings about an average decrease in satisfaction (Mitnick et al., 2009), but the number of couples maintaining high satisfaction paled in comparison to those maintaining high commitment. This result highlights the value in expanding our conceptualizations of relationship quality over the transition to parenthood; different relationship quality indices may diverge in meaningful ways.

On a practical note, our analysis plan allowed us to establish additional nuance concerning trajectories during the transition to parenthood. Similar to Lawrence et al. (2007), by testing piecewise growth curves we were able to find varying magnitudes of slopes. Perhaps the best example of this effect was the *Postpartum Declining Mothers and Pregnancy Declining Partners* class for commitment. Mothers had steady commitment up until the delivery, but declined afterwards; partners had declining commitment up until the delivery, but had no significant change afterwards. Although much remains to be understood about why this combination exists, the emergence of these patterns highlights that experiences before and after delivery are not necessarily the same for both partners.

We also gained insight into factors that distinguish these classes. Using the biopsychosocial model to organize prenatal variables, we discovered that the interpersonally focused social variables best distinguished classes. As might be expected from previous research (e.g., Birditt et al., 2016), couples with the lowest attachment avoidance, highest relational self-expansion, and highest perceived partner commitment were most likely to be in classes that maintained high satisfaction and commitment over the transition. This may be due, in part, to the social variables being the most interpersonally based and the assessment of relational outcomes with a couple-centered approach. Because of the class differences in baseline satisfaction and commitment, the social variables are likely capturing class differences at the baseline as well as class differences in trajectories over the transition to parenthood. This information can be practically beneficial for educators and clinicians who are working with couples before and during the transition to parenthood. They might focus on how the atmosphere of the intimate partnership prior to the arrival of the baby plays the largest role in relationship adjustment post-parenthood, even more so than the physical toll stemming from giving birth or one's psychological vulnerabilities.

There was, however, some limited evidence for the influence of psychological factors on both satisfaction and commitment trajectories, as couples with better trajectories tended to have higher pessimism than couples with steady trajectories, a point consistent with research demonstrating the advantage of being realistic going into this period (Harwood et al., 2007). Though

the interpersonal factors most clearly distinguished the classes, this finding for pessimism does suggest value in diving deeper into psychological factors.

LIMITATIONS AND FUTURE DIRECTIONS

Though our study has several notable strengths, such as advanced statistical analyses with dyadic longitudinal data, there are also limitations that give rise to future research directions. First, the study consisted of mostly white participants and married couples; these couples are at less risk for decline (Karney & Bradbury, 2020), especially with emerging evidence suggesting that postpartum trajectories for cohabiting couples are significantly worse (Treter et al., 2020). Furthermore, consistent with research suggesting that more satisfied couples are more likely to enroll in a couple study (Barton et al., 2020), the couples in our sample entered the transition to parenthood with relatively high satisfaction and commitment. As such, we suggest caution in interpreting the precise percentages of these classes, as they may not reflect the experience of a more generalizable population; we likely overestimated the number of couples with high and stable satisfaction and commitment. However, given that a representative sample has similarly shown a small number of classes might be driving down the average trajectory of subjective well-being (Galatzer-Levy et al., 2011), we have some confidence in the general finding that many couples are successfully navigating the transition to parenthood by maintaining high satisfaction and commitment.

Another limitation of our study is that some of our classes comprised only a small percentage of couples in the sample. Although it is not unusual for these types of analyses to produce classes with relatively few observations (e.g., Lavner & Bradbury, 2010), our sample was viable but relatively small for this type of analysis (Foran & Kliem, 2015; Jung & Wickrama, 2008), and it does raise concerns about the robustness of the specific trajectories. Particularly when it comes to variables that distinguish classes, it would be helpful to replicate the results with a larger and more generalizable sample, as our analyses may have yielded some atheoretical and possibly spurious differences between classes.

Additionally, the trajectories of other subscales of the PRQC (i.e., love, intimacy, passion, trust) may differ from satisfaction or commitment (e.g., Doss et al., 2009). Commitment might be broken down into separate constructs for dedication commitment (wanting to commit) and constraint commitment (feeling like you have to commit; Stanley et al., 2010). There are likely differences between married and cohabiting couples (e.g., Treter et al., 2020), and there may be differences in other forms of committed relationships (e.g., polyamorous and swinging couples; Balzarini & Muise, 2020). There are also likely a number of additional variables that might influence relationship quality trajectories for which we did not account (e.g., child temperament; Solmeyer & Feinberg, 2011). We hope that our study helps solidify understanding of some aspects of relationship quality over the transition to parenthood, but also opens researchers up to the possibility of myriad additional factors to consider over this time period.

CONCLUSION

Overall, our results suggest that while some couples experience significant relationship challenges in transitioning to parenthood, many navigate this period while maintaining high or moderately high levels of satisfaction and commitment. For those couples who struggle in their partnership as they become new parents, the pre-parenthood relationship dynamics may serve as a potent warning of trouble ahead. Interventions to bolster the couple union prior to the arrival of a baby may yield dividends in terms of post-parenthood relationship adjustment (e.g., Doss et al., 2014). Conversely, couples who enter this transition with healthy relationship dynamics may navigate parenthood with greater success.

CONFLICT OF INTEREST

We have no known conflict of interest to disclose.

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ENDNOTES

¹ All demographic and biological variables moved to the supplemental analysis were included as part of our preregistration. They were initially included in the manuscript, but based on feedback during the editorial process, we decided to truncate the results focused on in the manuscript for the purpose of making the manuscript more parsimonious.

² Consistent with our preregistered analyses, we also conducted multinomial regression using the R3 step method. Results are available on the OSF (https://osf.io/7x2y3/?view_only=679b01ba32f54d58a7e74dde6b078267). Due to the collinearity between predictors and the small number of observations in some classes, we encourage caution when interpreting results.

REFERENCES

- Arriaga, X. B., Reed, J. T., Goodfriend, W., & Agnew, C. R. (2006). Relationship perceptions and persistence: Do fluctuations in perceived partner commitment undermine dating relationships? *Journal of Personality and Social Psychology, 91*(6), 1045–1065. <https://doi.org/10.1037/0022-3514.91.6.1045>
- Asparouhov, T., & Muthén, B. (2012). Using Mplus TECH11 and TECH14 to test the number of latent classes. Retrieved from <https://www.statmodel.com/examples/webnotes/webnote14.pdf>
- Asparouhov, T., & Muthén, B. (2020). Auxiliary variables in mixture modeling: Using the BCH method in Mplus to estimate a distal outcome model and an arbitrary secondary model. Retrieved from <https://www.statmodel.com/examples/webnotes/webnote21.pdf>
- Balzarini, R. N., & Muise, A. (2020). Beyond the dyad: A review of the novel insights gained from studying consensual non-monogamy. *Current Sexual Health Reports*, in press, 12, 398–404.
- Barton, A. W., Lavner, J. A., Stanley, S. M., Johnson, M. D., & Rhoades, G. K. (2020). “Will you complete this survey too?” Differences between individual versus dyadic samples in relationship research. *Journal of Family Psychology, 34*(2), 196–203. <https://doi.org/10.1037/fam0000583>
- Becker, G. S. (1981). *A treatise on the family*. Harvard University Press.
- Birditt, K. S., Newton, N. J., Cranford, J. A., & Ryan, L. H. (2016). Stress and negative relationship quality among older couples: Implications for blood pressure. *Journals of Gerontology: Series B, 71*(5), 775–785. <https://doi.org/10.1093/geronb/gbv023>
- Bleidorn, W., Buyukcan-Tetik, A., Schwaba, T., van Scheppingen, M. A., Denissen, J. J. A., & Finkenauer, C. (2016). Stability and change in self-esteem during the transition to parenthood. *Social Psychological and Personality Science, 7*(6), 560–569. <https://doi.org/10.1177/1948550616646428>
- Blomquist, J. L., Quiroz, L. H., MacMillan, D., McCullough, A., & Handa, V. L. (2011). Mothers’ satisfaction with planned vaginal and planned cesarean birth. *American Journal of Perinatology, 28*(5), 383–388. <https://doi.org/10.1055/s-0031-1274508>
- Bolck, A., Croon, M. A., & Hagenars, J. A. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12*(1), 3–27. <https://doi.org/10.1093/pan/mp001>
- Bui, K. V. T., Peplau, L. A., & Hill, C. T. (1996). Testing the Rusbult model of relationship commitment and stability in a 15-year study of heterosexual couples. *Personality and Social Psychology Bulletin, 22*(12), 1244–1257. <https://doi.org/10.1177/01461672962212005>
- Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification, 13*, 195–212. <https://doi.org/10.1007/BF01246098>
- Dawson, S. J., Vaillancourt-Morel, M. P., Pierce, M., & Rosen, N. O. (2020). Biopsychosocial predictors of trajectories of postpartum sexual function in first-time mothers. *Health Psychology, 39*(8), 700–710. <https://doi.org/10.1037/hea0000861>
- Don, B. P., & Mickelson, K. D. (2014). Relationship satisfaction trajectories across the transition to parenthood among low-risk parents. *Journal of Marriage and Family, 76*(3), 677–692. <https://doi.org/10.1111/jomf.12111>
- Doss, B. D., Cicila, L. N., Hsueh, A. C., Morrison, K. R., & Carhart, K. (2014). A randomized controlled trial of brief coparenting and relationship interventions during the transition to parenthood. *Journal of Family Psychology, 28*(4), 483–494. <https://doi.org/10.1037/a0037311>
- Doss, B. D., & Rhoades, G. K. (2017). The transition to parenthood: Impact on couples’ romantic relationships. *Current Opinion in Psychology, 13*, 25–28. <https://doi.org/10.1016/j.copsyc.2016.04.003>

- 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*(3), 601–619. <https://doi.org/10.1037/a0013969>
- Engel, G. L. (1980). The clinical application of the biopsychosocial model. *The American Journal of Psychiatry, 137*(5), 535–544. <https://doi.org/10.1176/ajp.137.5.535>
- Fletcher, G. J. O., Simpson, J. A., & Thomas, G. (2000). The measurement of perceived relationship quality components: A confirmatory factor analytic approach. *Personality and Social Psychology Bulletin, 26*(3), 340–354. <https://doi.org/10.1177/0146167200265007>
- Foran, H. M., & Kliem, S. (2015). Longitudinal analysis of dyads using latent variable models: Current practices and constraints. In M. Stemmler, A. von Eye, & W. Wiedermann (Eds.), *Dependent data in social sciences research: Forms, issues, and methods of analysis* (pp. 203–230). Springer.
- Fowers, B. J., Laurenceau, J.-P., Penfield, R. D., Cohen, L. M., Lang, S. F., Owenz, M.B., & Pasipandoya, E. (2016). Enhancing relationship quality measurement: The development of the Relationship Flourishing Scale. *Journal of Family Psychology, 30*(8), 997–1007. <https://doi.org/10.1037/fam0000263>.
- Galatzer-Levy, I. R., Mazursky, H., Mancini, A. D., & Bonanno, G. A. (2011). What we don't expect when expecting: Evidence for heterogeneity in subjective well-being in response to parenthood. *Journal of Family Psychology, 25*(3), 384–392. <https://doi.org/10.1037/a0023759>
- Grimm, K. J., Ram, N., & Estabrook, R. (2016). *Growth modeling: Structural equation and multilevel modeling approaches*. New York: Guilford Press.
- Harwood, K., McLean, N., & Durkin, K. (2007). First-time mothers' expectations of parenthood: What happens when optimistic expectations are not matched by later experiences? *Developmental Psychology, 43*(1), 1–12. <https://doi.org/10.1037/0012-1649.43.1.1>
- Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2*(1), 302–317. <https://doi.org/10.1111/j.1751-9004.2007.000054.x>
- Karney, B. R., & Bradbury, T. N. (2020). Research on marital satisfaction and stability in the 2010s: Challenging conventional wisdom. *Journal of Marriage and Family, 82*(1), 100–116. <https://doi.org/10.1111/jomf.12635>
- Kluwer, E. S. (2010). From partnership to parenthood: A review of marital change across the transition to parenthood. *Journal of Family Theory & Review, 2*(2), 105–125. <https://doi.org/10.1111/j.1756-2589.2010.00045.x>
- Lavner, J. A., & Bradbury, T. N. (2010). Patterns of change in marital satisfaction over the newlywed years. *Journal of Marriage and Family, 72*(5), 1171–1187. <https://doi.org/10.1111/j.1741-3737.2010.00757.x>
- Lawrence, E., Nylen, K., & Cobb, R. J. (2007). Prenatal expectations and marital satisfaction over the transition to parenthood. *Journal of Family Psychology, 21*(2), 155–164. <https://doi.org/10.1037/0893-3200.21.2.155>
- Lewandowski, G. W., Jr., & Aron, A. (2002). *The self-expansion scale: Construction and validation*. Paper presented at the third annual meeting of the Society of Personality and Social Psychology, Savannah, GA.
- Mitnick, D., Heyman, R. E., & Smith Slep, A. M. (2009). Changes in relationship satisfaction across the transition to parenthood: A meta-analysis. *Journal of Family Psychology, 23*(6), 848–852. <https://doi.org/10.1037/a0017004>
- Murray, S. L., Lamarche, V. M., Gomillion, S., Seery, M. D., & Kondrak, C. (2017). In defense of commitment: The curative power of violated expectations. *Journal of Personality and Social Psychology, 113*(5), 697–729. <https://doi.org/10.1037/pspi0000102>
- Muthén, L. K., & Muthén, B. O. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles: Muthén & Muthén.
- Newman, D. A. (2003). Longitudinal modeling with randomly and systematically missing data: A simulation of ad hoc, maximum likelihood, and multiple imputation techniques. *Organizational Research Methods, 6*(3), 328–362. <https://doi.org/10.1177/1094428103254673>.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*(4), 535–569.
- Perales, F. (2019). Modeling the consequences of the transition to parenthood: Applications of panel regression methods. *Journal of Social and Personal Relationships, 36*, 4005–4026. <https://doi.org/10.1177/0265407519847528>
- Raferty, A. E. (1995). Bayesian model selection in social research. *Sociological Methodology, 25*, 111–163.
- Riggs, D. W., Worth, A., & Bartholomaeus, C. (2018). The transition to parenthood for Australian heterosexual couples: Expectations, experiences and the partner relationship. *BMC Pregnancy and Childbirth, 18*(392), 1–9. <https://doi.org/10.1186/s12884-018-1985-9>
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin, 27*(2), 151–161. <https://doi.org/10.1177/0146167201272002>
- Robinson, K. J., & Cameron, J. J. (2012). Self-esteem is a shared relationship resource: Additive effects of dating partners' self-esteem levels predict relationship quality. *Journal of Research in Personality, 46*(2), 227–230. <https://doi.org/10.1016/j.jrp.2011.12.002>
- Rosen, N. O., Dawson, S. J., Leonhardt, N. D., Vannier, S. A., & Impett, E. A. (2020). Trajectories of sexual well-being among couples in the transition to parenthood. *Journal of Family Psychology*. Advance online publication. <http://doi.org/10.1037/fam0000689>

- Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of Experimental Social Psychology, 16*(2), 172–186. [https://doi.org/10.1016/0022-1031\(80\)90007-4](https://doi.org/10.1016/0022-1031(80)90007-4)
- Rusbult, C. E., Agnew, C. R., & Arriaga, X. B. (2012). The investment model of commitment processes. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 218–231). Sage.
- Rusbult, C. E., Martz, J. M., & Agnew, C. R. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships, 5*(4), 357–391. <https://doi.org/10.1111/j.1475-6811.1998.tb00177.x>
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219–247. <https://doi.org/10.1037//0278-6133.4.3.219>
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the life orientation test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078. <https://doi.org/10.1037/0022-3514.67.6.1063>
- Simpson, J. A., & Rholes, W. S. (2018). Adult attachment orientations and well-being during the transition to parenthood. *Current Opinion in Psychology, 25*, 47–52. <https://doi.org/10.1016/j.copsyc.2018.02.019>
- Solmeyer, A. R., & Feinberg, M. E. (2011). Mother and father adjustment during early parenthood: The roles of infant temperament and coparenting relationship quality. *Infant Behavior and Development, 34*(4), 504–514. <https://doi.org/10.1016/j.infbeh.2011.07.006>
- Stanley, S. M., Rhoades, G. K., & Whitton, S. W. (2010). Commitment: Functions, formation, and the securing of romantic attachment. *Journal of Family Theory and Review, 2*(4), 243–257. <https://doi.org/10.1111/j.1756-2589.2010.00060.x>
- Treter, M. O., Rhoades, G. K., Scott, S. B., Markman, H. J., & Stanley, S. M. (2020). Having a baby: Impact on married and cohabiting parents' relationships. *Family Process, 60*, 477–492. <https://doi.org/10.1111/famp.12567>
- Trillingsgaard, T., Baucum, J. W., & Heyman, R. E. (2014). Predictors of change in relationship satisfaction during the transition to parenthood. *Family Relations, 63*(5), 667–679. <https://doi.org/10.1111/fare.12089>
- Umberson, D., & Gove, W. R. (1989). Parenthood and psychological well-being: Theory, measurement, and stage in the family life course. *Journal of Family Issues, 10*(4), 440–462. <https://doi.org/10.1177/019251389010004002>
- van de Schoot, R., Sijbrandij, M., Winter, S. D., Depaoli, S., & Vermunt, J. K. (2017). The GRoLTS-checklist: Guidelines for reporting on latent trajectory studies. *Structural Equation Modeling: A Multidisciplinary Journal, 24*(3), 451–467. <https://doi.org/10.1080/10705511.2016.1247646>
- Van Egeren, L. A. (2004). The development of the coparenting relationship over the transition to parenthood. *Infant Mental Health Journal, 25*(5), 453–477. <https://doi.org/10.1002/imhj.20019>
- Waite, L. J., & Lillard, L. A. (1991). Children and marital disruption. *American Journal of Sociology, 96*(4), 930–953. <https://doi.org/10.1086/229613>
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The experiences in close relationship scale (ECR)—Short form: Reliability, validity, and factor structure. *Journal of Personality Assessment, 88*(2), 187–204. <https://doi.org/10.1080/00223890701268041>

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