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MARITAL HAPPINESS AND CO-PARENTING QUALITY AS PREDICTORS OF
POSTPARTUM DEPRESSION

MARINA LAURA GONZALEZ
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Reviewed and approved* by the following:

Douglas Teti, PhD
Professor of Human Development and Family Studies, Department Head
Thesis Supervisor

Lesley Ross, PhD
Associate Professor of Human Development and Family Studies
Honors Adviser

* Signatures are on file in the Schreyer Honors College.

ABSTRACT

Postpartum depression can be a debilitating mental health disorder that significantly impacts the health of a family unit. Mothers who experience postpartum depression struggle to enjoy the first months of their child's life. Unfortunately, this disorder is often not recognized by healthcare professionals, leaving women undiagnosed and without treatment. The purpose of this study is to examine two aspects of marriage that could predict the progression of postpartum depression during the first 9 months postpartum. It was hypothesized that marital satisfaction, positive co-parenting ratings, and negative co-parenting ratings at 1 month postpartum would significantly predict changes in postpartum depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months, with maternal co-parenting ratings being the strongest predictor. Pearson correlations and linear regressions were conducted to examine these hypotheses. The results demonstrate that marital satisfaction at 1 month and positive and negative co-parenting ratings at 1 month were correlated with maternal depressive symptoms at 1, 3, 6, and 9 months. In addition, both marital happiness and maternal co-parenting ratings at 1 month were predictive of decreases in maternal postpartum depressive symptoms, with marital satisfaction being the strongest predictor across all 9 months. This indicates that aspects of a marriage, especially a mother's contentment in her marriage, can have serious consequences on mental health and should be evaluated by healthcare professionals to identify mothers at risk.

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Chapter 1

Introduction

Approximately 17% of women experience a major depressive episode during the postpartum period (Hahn-Holbrook, Cornwell-Hinrichs, & Anaya, 2018; M. O'Hara & McCabe, 2013). Postpartum depression, a mental disorder characterized by a depressed mood, fluctuations in weight, significant loss of interests and energy, difficulty concentrating and insomnia, has an onset during the first six weeks postpartum (American Psychiatric Association, 2013). Despite this large prevalence, most women do not receive a formal diagnosis or treatment (Smith, Gopalan, Glance, & Azzam, 2016). In a cross-sectional study of 875 women, 4.3 - 15.2% of the women were identified as depressed, yet none of those women were official diagnosed by healthcare providers or received medical or therapeutic treatments (Watt, Sword, Krueger, & Sheehan, 2002). This large percentage of undiagnosed and untreated women dealing with mental health problems is a clear demonstration of the gravity of this issue.

Impact on Family Unit

This debilitating disorder can produce major consequences that infiltrate the entire family unit, including the mother, spouse, and infant through daily interactions. For example, depressed mothers are significantly more likely to behave towards their child with increased detachment, increased impatience, and decreased sensitivity. In response, infants are less responsive and sensitive to changes in maternal expressions (Braarud et al., 2017). Thus, a mother's lack of interest and dysfunctional interactions with her infant can lead to childhood behavioral and

emotional adjustment problems due to poor emotional availability and insecure attachment. Interestingly, this may partly explain why having a depressed mother is the strongest predictor of adolescent depression (Prenoveau et al., 2017). Similar to the parent-child relationship, interactions between spouses can be significantly impacted if one of them is clinically depressed. The lack of energy, interest, and self-efficacy that comes along with depression can impact a spouse's ability to contribute to the family unit, support their partner, and maintain a romantic relationship. Those who experience postpartum depression are significantly more likely to struggle with marital functioning and adjustment, a particularly important skill to maintain during the postpartum period (Whisman, Davila, & Goodman, 2011).

Early Interventions

Given the extensive negative outcomes that postpartum depression can have on a family unit, treating this disorder is critical. Current medical treatments, such as Selective Serotonin Reuptake Inhibitors (SSRIs), are effective therapies for immediate relief of depressive symptoms (C. L. Hammen, 2003). Nonetheless, it is widely understood that postpartum depression arises from both genetic disposition and environmental factors, meaning contextual risk factors must be addressed in therapy as well. Regardless of the use of antidepressants, an individual with the same environment, challenges, and behaviors is at a high risk of relapse. Medical treatments are efficacious, safe, and essential to the treatment of postpartum depression, but non-medical therapies that target patient specific characteristics are also key factors to the treatment of this disorder (C. L. Hammen, 2003). By correctly identifying predictors of postpartum depression, as this study aims to do, early interventions can be utilized to prevent the disorder from reaching its

debilitating effects. Commonly used psychological therapy treatments for postpartum depression include:

1. Interpersonal psychotherapy: Attempts to link symptoms to interpersonal relationships, marital disputes, and parent role transitions (Mauri et al., 2014; M. W. O'Hara, 2009)
2. Cognitive Behavioral Therapy: Attempts to remodel a mother's negative and dysfunctional thoughts and schemas to promote positive behaviors and interactions with infant. This therapy is used as an early intervention, as it has been shown to effectively reduce depressive symptoms in mothers who are at risk of postpartum depression. (Cho, Kwon, & Lee, 2008; Cooper, Murray, Wilson, & Romaniuk, 2003; M. O'Hara & McCabe, 2013).
3. General Counseling (Listening Visits): Attempts to allow a mother to openly discuss any issues she is having, including but not limited to, parenting difficulties or marital stressors (Cooper et al., 2003; M. O'Hara & McCabe, 2013).
4. Psychodynamic Therapy: Attempts to understand a mother's unconscious understanding of her relationship with her infant and her representation of her infant by analyzing the mother's history of attachment (Cooper et al., 2003; M. O'Hara & McCabe, 2013).

Predictors

In order to implement these successful therapies, healthcare professionals must first be able to identify those at risk. Similar to any major clinical depression, postpartum depression is significantly more likely to occur in those with a low income, low level of education, no spouse, and history of psychiatric disorder, such as anxiety (M. O'Hara & McCabe, 2013; Segre, O'Hara, Arndt, & Stuart, 2007). On the other hand, many risk factors of postpartum depression are unique to the individual. The aim of this study is to examine how aspects of a marriage, both the marital satisfaction and co-parenting abilities, predict changes in depressive symptoms.

Marital Satisfaction

Marital satisfaction involves the contentment and success each partner views in their marriage. Marital satisfaction measures typically account for many aspects of the relationship between parents, including finances, emotional availability, sexual relations, religion, household responsibilities and more (Elmslie & Tebaldi, 2014). Filled with new responsibilities and lifestyle changes, the postpartum period can alter marital relationships significantly. Thus, it has been repeatedly found that marital satisfaction is linked to postpartum depression. In a study that observed the relationship between marital satisfaction and postpartum depression in 309 low-risk nursing mothers, a significant inverse relationship was found between marital satisfaction and postpartum depression and anxiety. Interestingly, the item of marital satisfaction that most strongly correlated with postpartum depression was how mothers felt that their partner confided in them (Odinka et al., 2018). Another study that observed this same relationship with 65 mothers at 3 months postpartum, found that higher EPDS scores, which is indicative of higher

depressive symptoms, significantly correlated with lower marital satisfaction in mothers (Tissot, Favez, Frascarolo-Moutinot, & Despland, 2015). Though it seems to be consistent that marital distress and postpartum depressive symptoms are correlated at various time points postpartum, few studies have observed this relationship as a function of time. Interestingly, one of these studies found that marital relationship quality was more predictive of the development of anxiety and depressive symptoms over six months than other models of relationships such as attachment-avoidance (Clout & Brown, 2016). These results indicate a necessity to shift the focus towards marital distress when striving to understand the development of postpartum depression and should be further investigated. The current study attempts to do so by honing in on marital satisfaction and observing its relationship to the development of postpartum depression with a larger sample and time frame.

Co-parenting Quality

Regardless of marital status, parents also have a co-parenting relationship. Though the two overlap significantly, co-parenting describes the ability of two parents to work together and complete the daily responsibilities of raising children. This relationship can be an important source of support for mothers who are adjusting to the difficulties of parenthood. Many aspects of the relationship influence this measure, including daily stressors and decisions, paternal work hours, relationship quality, parental mood and negative emotions, and child-induced parental stressors (McDaniel, Teti, & Feinberg, 2018). Logically, mothers who feel as though their partner is demonstrating poor co-parenting quality should demonstrate increased postpartum depressive symptoms. This statement is consistently supported by research on the topic. In a

study of 49 women at two months postpartum, it was found that dissatisfaction with partner support and a withdraw in communication was association with increased maternal stress (Thorp, Elizabeth, Cukrowicz, & Lynch, 2004). Interestingly, a study that investigated this relationship over time found that depressive symptoms were more likely to predict changes in co-parenting than the vice versa. Also, they observed that the maternal depressive symptoms were more strongly correlated to changes in co-parenting quality than paternal depressive symptoms (Hervé Tissot, Favez, Ghisletta, Franscarolo, & Despland, 2017). The current study attempts to examine the relationship between co-parenting at various postpartum time points and changes in postpartum depressive symptoms to further investigate the relationships prior research has found.

The Present Study

The present study will examine the relationship between marital happiness and maternal ratings of co-parenting quality with maternal depressive symptoms over the first 9 months postpartum. Limited studies have examined how marital satisfaction and maternal perception of co-parenting work individually and in conjunction to predicate postpartum depression as a function of time.

The following four hypotheses will be tested:

1. Increased marital satisfaction at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.
2. Increased maternal positive co-parenting ratings at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

3. Increased maternal negative co-parenting ratings at 1 month will predict an increase, or less rapid decrease, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.
4. To be explored was the relative contribution of marital satisfaction and maternal co-parenting to changes in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

Chapter 2

Methods

Participants

The sample for this study originates from the NIH funded Project SIESTA study at the Pennsylvania State University. The original sample includes 167 families with data collected across the first two years postpartum at 1, 3, 6, 9, 12, 18 and 24 months. Families with healthy 1-month-old infants were recruited from the Penn State Hershey Children's Hospital in Hershey, PA, and the Mount Nittany Medical Center in State College, PA. This study examines a subset of this database, focusing on the period that postpartum is often most prominent: 1, 3, 6, and 9 months. The study utilizes data from surveys completed by 167 mothers with an age range of 18-43 years of age and a mean age of 29.43 (S.D.= 5.268). The mothers in the sample were predominantly white (82.1%), with 3.6% African American, 3.6% Asian American, 5.4% Latino, and 3.6% other. The majority of the mothers (93.4%) and fathers (92.2%) had over 4 year of education. The yearly family income, as reported by the father, ranged from \$8,000 to \$350,000 with the mean being \$70,669.18 (SD= \$49,700.50).

Measures

Maternal Depressive Symptoms

Maternal depressive symptoms were measured using the self-report Symptom Checklist-90 Depressive Symptom Rating Scale. This scale is widely used and has been accepted as a

reliable and valid measure of depressive symptoms (Bech, Bille, Møller, Hellström, & Stergaard, 2014). This study utilized 13 of the items, each with a scale of 0 to 4, with 0 indicating “*Not At All*” and 4 indicating “*Extremely*”. Participants were asked to rate how strongly in the past week they had felt various depressive symptoms including, “*low in energy or slowed down*”, “*lonely*”, “*hopeless about the future*”, and “*worthlessness*”. A higher score on this scaling was indicative of increased depressive symptoms, with mothers having an average score of 7.98 ± 0.63 at 1 month, 6.84 ± 0.60 at 3 months, 6.59 ± 0.59 at 6 months, and 6.01 ± 0.53 at 9 months. The sample overall had relatively low levels of depressive symptoms.

Marital Satisfaction

Marital satisfaction was collected using a self-report Dyadic Adjustment Scale, which measures relationship quality in 4 subscales: dyadic consensus, dyadic satisfaction, dyadic cohesion, and affectional expression. This scale is a reliable and valid measure of marital satisfaction (Graham, Liu, & Jeziorski, 2016). The first section of this survey included a scale from “*Very Unhappy*” to “*Perfect*”, asking participants to rate their relationship. The second section of this survey included a scale from “*Always Agree*” to “*Always Disagree*” that asked participants to rate how well them and their partner agree on topics including finances, religion, household tasks, and decisions about discipline. The last section of this survey asked various questions including how the couple spends their time, the participants ability to confide in their partner, and how the couple spends their free time. In the present study, scores from the “happiness” scale were used as an assessment of mothers’ marital satisfaction. These scores

ranged from 0 to 35 with a higher score indicating greater marital satisfaction. Mothers from this sample demonstrated a mean score of 22.13.

Co-parenting

Co-parenting was collected using the CoParenting Relationship Scale (CRS), which measures the mother's assessment of paternal co-parenting quality. This scale has been used by prior research and serves as a reliable measure of co-parenting quality (Solmeyer & Feinberg, 2011). This survey collects both positive and negative co-parenting ratings from the mother and father. Positive co-parenting ratings describe how often the mother observes positive parenting traits and behaviors in the father. Negative co-parenting ratings describe how often the mother is observing negative parenting traits and behaviors in the father, such as not paying attention to the child. The first section of the survey is scaled from 0 to 7, with 0 indicating "Not applicable" and 7 indicating "Very True of Us". This portion asks participants to rate statements including "I believe my partner is a good parent", "My partner pays a great deal of attention to our child", and "My partner supports my parenting decisions". The second section asks the participants to describe how often them and their partner encourage play with their child, praise their child, have a stressful exchange with their partner, or have loud and angry encounters in front of the child. This scale includes seven dimensions, including five positive subscales and two negative subscales. The positive subscales measure agreement, closeness, support, endorsement and division of labor between the spouses ($\alpha = 0.91$ to 0.94 for mothers). The negative subscales measure competition-undermining and exposure to conflict ($\alpha = 0.71$ to 0.80 for mothers). These statistics represent the first 12 months postpartum (Teti, Shimizu, Crosby, & Kim, 2016).

Analyses

The relationship between marital happiness, co-parenting quality and postpartum depression was assessed using Pearson correlation analyses. Analysis of variance (ANOVA) and linear regressions between the independent variable (marital happiness and co-parenting quality) at 1 month and the change in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

Chapter 3

Results

Baseline Changes in Postpartum Depressive Symptoms and Pearson Correlations

This study examined the impact that marital satisfaction and co-parenting quality had on the change in depression across the first 9 months postpartum. To better understand how postpartum depression in this sample progressed over time, the baseline change in postpartum depression was examined across the first nine months. As seen in Figure 1, the score of depressive symptoms in mothers, as measured by the SCL-90, significantly decreased from 7.98 at 1 month to 5.67 at 12 months postpartum ($F=6.53, p< 0.001$). This demonstrates that postpartum depression symptoms decline significantly across the first-year post-partum.

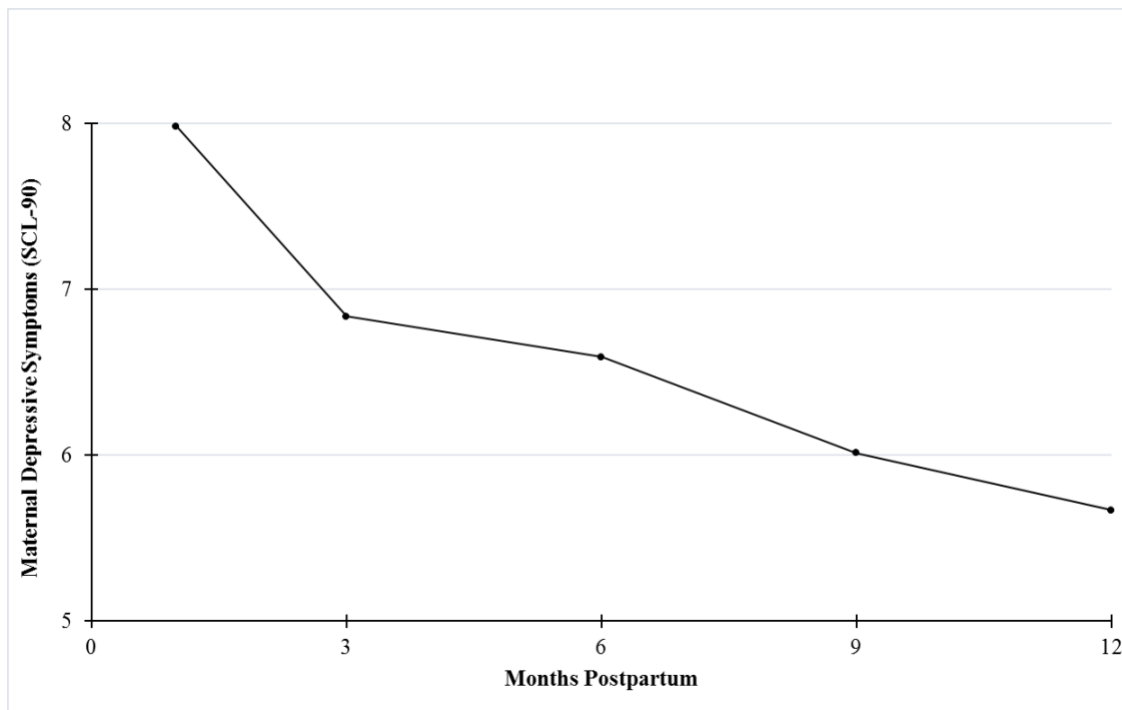


Figure 1. Normative change in maternal depressive symptom levels across the first year postpartum.

To provide further understanding of how the independent variables relate to maternal depressive symptoms, Pearson correlations were conducted (see Table 1). Marital satisfaction at 1 month and positive and negative co-parenting ratings at 1 month were correlated with maternal depressive symptoms at 1, 3, 6, and 9 months. Marital satisfaction at 1 month was negatively correlated with maternal depressive symptoms across all 9 months ($p < 0.001$). Maternal positive co-parenting quality at 1 month was negatively correlated with maternal depressive symptoms across all 9 months as well, with stronger correlations during 6 and 9 months postpartum ($p < 0.001$). Maternal negative co-parenting quality at 1 month was positively correlated with maternal depressive symptoms across all 9 months as well ($p < 0.001$).

Table 1. Pearson Correlations of Marital satisfaction and co-parenting quality X maternal depressive symptoms

Variables	Maternal Depressive Symptoms 1 Month	Maternal Depressive Symptoms 3 Months	Maternal Depressive Symptoms 6 Months	Maternal Depressive Symptoms 9 Months
Marital Satisfaction 1 Month	-0.30** N = 158	-0.43** N = 149	-0.45** N = 146	-0.48** N = 144
Maternal Positive Co-Parenting 1 Month	-0.26** N = 158	-0.27** N = 149	-0.36** N = 146	-0.36** N = 144
Maternal Negative Co-Parenting 1 Month	0.23** N=158	0.22** N = 149	0.39** N = 146	0.30** N = 144

* $p < 0.05$, ** $p < 0.01$

HYPOTHESIS #1: Increased marital satisfaction at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

To examine if marital satisfaction at 1 month predicted changes in maternal depressive symptoms, linear regressions were conducted. By statistically controlling for maternal depressive symptoms at 1 month, the change in depressive symptoms between 1 month and 3 months, 1 month and 6 months, and 1 month and 9 months were predicted by marital satisfaction and coparenting quality at 1 month. Table 2 shows that marital satisfaction at 1 month significantly predicted change in maternal depressive symptoms from 1 to 3 months ($p < 0.001$, $R^2 = 0.41$). Thus, maternal depressive symptoms at 3 months decreased 0.27 compared to symptoms at 1 month for every one point increase in marital satisfaction. This trend was also found at 6 months ($p < 0.001$, $R^2 = 0.44$) and 9 months postpartum ($p < 0.001$, $R^2 = 0.44$).

Table 2. Change in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months as predicted by marital satisfaction at 1 month.

Variables		Unstandardized B	S.D.	Standardized Coefficient Beta	Significance
1-to-3 Months	Maternal Depressive Symptoms 1 month	0.43	0.06	0.50	<0.001
	Marital Satisfaction 1 month	-0.27	0.07	-0.27	<0.001
1-to-6 Months	Maternal Depressive Symptoms 1 month	0.41	0.05	0.52	<0.001
	Marital Satisfaction 1 month	-0.26	0.06	-0.29	<0.001
1-to-9 Months	Maternal Depressive Symptoms 1 month	0.48	0.05	0.56	<0.001
	Marital Satisfaction 1 month	-0.30	0.06	-0.31	<0.001

HYPOTHESIS #2: Increased maternal positive co-parenting ratings at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

To examine how maternal positive co-parenting ratings at 1 month predict changes in maternal depressive symptoms, the same analysis was conducted. Interestingly, Table 3 demonstrates that maternal positive co-parenting ratings did not significantly predict changes in depressive symptoms from 1 to 3 months ($p = 0.068$, $R^2 = 0.36$). This did not remain true for 6 and 9 months postpartum. Positive co-parenting ratings at 1 month significantly predicted a

decrease in depressive symptoms from 1 month to 6 months ($p = 0.002$, $R^2 = 0.41$) and 1 month to 9 months ($p = 0.004$, $R^2 = 0.47$).

Table 3. Change in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months as predicted by maternal positive co-parenting ratings at 1 month.

Variables		Unstandardized B	S.D.	Standardized Coefficient Beta	Significance
1-to-3 Months	Maternal Depressive Symptoms 1 month	0.48	0.06	0.56	<0.001
	Maternal positive coparenting 1 month	-0.04	0.02	-0.13	0.068
1-to-6 Months	Maternal Depressive Symptoms 1 month	0.44	0.05	0.55	<0.001
	Maternal positive coparenting 1 month	-0.06	0.02	-0.21	0.002
1-to-9 Months	Maternal Depressive Symptoms 1 month	0.52	0.06	0.61	<0.001
	Maternal positive coparenting 1 month	-0.05	0.02	-0.19	0.004

HYPOTHESIS #3: Increased maternal negative co-parenting ratings at 1 month will predict an increase, or less rapid decrease, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

Maternal negative co-parenting ratings at 1 month postpartum was also evaluated as a predictor of change in maternal depressive symptoms. Table 4 demonstrates results very similar to those above in Table 3, since maternal negative co-parenting was also not predictive of

changes in depressive symptoms from 1 month to 3 months ($p = 0.101$, $R^2 = 0.36$). Negative co-parenting ratings were predictive of an increase in depressive symptoms from 1 month to 6 months ($p < 0.001$, $R^2 = 0.44$) and from 1 month to 9 months ($p = 0.014$, $R^2 = 0.46$). This demonstrates the same trend as maternal positive co-parenting ratings at 1 month, since both did not predict significant changes in depressive symptoms until 6 and 9 months postpartum.

Table 4. Change in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months as predicted by maternal negative co-parenting ratings at 1 month.

Variables		Unstandardized B	S.D.	Standardized Coefficient Beta	Significance
1-to-3 Months	Maternal Depressive Symptoms 1 month	0.49	0.06	0.57	<0.001
	Maternal negative coparenting 1 month	0.12	0.07	0.11	0.101
1-to-6 Months	Maternal Depressive Symptoms 1 month	0.44	0.05	0.55	<0.001
	Maternal negative coparenting 1 month	0.26	0.06	0.27	<0.001
1-to-9 Months	Maternal Depressive Symptoms 1 month	0.53	0.06	0.62	<0.001
	Maternal negative coparenting 1 month	0.16	0.07	0.16	0.014

HYPOTHESIS #4: To be explored was the relative contribution of marital satisfaction and maternal co-parenting to changes in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

To evaluate the strongest predictor of changes in maternal depressive symptoms, the regression analyses were conducted with both independent variables. Positive co-parenting and negative co-parenting were analyzed separately, as their multicollinearity would diminish their predictive accuracy. As seen in Table 5, marital satisfaction is the stronger predictor across all 9 months. At 3 months, marital satisfaction is significantly predictive ($\beta = -0.24, p = 0.002, R^2 = 0.41$) while maternal positive co-parenting is no longer predictive of a change in depressive symptoms ($\beta = -0.04, p = 0.585, R^2 = 0.41$). From 1 month to 6 months, marital satisfaction remained the strongest predictor ($\beta = -0.20, p = 0.010, R^2 = 0.46$), though positive co-parenting was also significantly predictive to a lesser extent ($\beta = -0.17, p = 0.034, R^2 = 0.46$). This significance for positive co-parenting seemed to diminish again at 9 months, since marital satisfaction ($\beta = -0.26, p < 0.001, R^2 = 0.52$) once again was the only significant predictor of the change in postpartum depressive symptoms.

Table 5. Changes in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months factoring in both marital satisfaction and maternal positive co-parenting ratings at 1 month.

Variables		Unstandardized B	S.D.	Standardized Coefficient Beta	Significance
1-to-3 Months	Maternal Depressive Symptoms 1 month	0.43	0.06	0.50	<0.001
	Marital Satisfaction	-0.25	0.08	-0.24	0.002
	Maternal positive coparenting 1 month	-0.01	0.03	-0.04	0.585
1-to-6 Months	Maternal Depressive Symptoms 1 month	0.39	0.05	0.49	<0.001
	Marital Satisfaction	-0.18	0.07	-0.20	0.010
	Maternal positive coparenting 1 month	-0.05	0.02	-0.17	0.034
1-to-9 Months	Maternal Depressive Symptoms 1 month	0.47	0.05	0.55	<0.001
	Marital Satisfaction	-0.25	0.07	-0.26	<0.001
	Maternal positive coparenting 1 month	-0.03	0.02	-0.10	0.191

The results in Table 5 are supported below when determining if marital satisfaction or negative co-parenting is a stronger predictive of changes in maternal depressive symptoms. Once again, marital satisfaction proved to be the stronger predictor across all 9 months. Table 6 shows that the changes in depressive symptoms from 1 month to 3 months were significantly predicted by marital satisfaction at 1 month ($\beta = -0.26, p = 0.001, R^2 = 0.41$) but not by maternal negative co-parenting at 1 month ($\beta = -0.02, p = 0.752, R^2 = 0.41$). At 6 months, both marital satisfaction ($\beta = -0.26, p = 0.001, R^2 = 0.48$) and negative co-parenting ($\beta = 0.19, p = 0.004, R^2 = 0.48$) were significantly predictive, but marital satisfaction was stronger. Lastly, marital satisfaction at 1 month ($\beta = -0.27, p < 0.001, R^2 = 0.52$) was the only significant predictor of the changes in depressive symptoms from 1 month to 9 months.

Table 6. Change in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months factoring in both marital satisfaction and maternal negative co-parenting ratings at 1 month.

Variables		Unstandardized B	S.D.	Standardized Coefficient Beta	Significance
1-to-3 Months	Maternal Depressive Symptoms 1 month	0.43	0.06	0.50	<0.001
	Marital Satisfaction	-0.26	0.07	-0.26	<0.001
	Maternal negative coparenting 1 month	0.02	0.08	0.02	0.752
1-to-6 Months	Maternal Depressive Symptoms 1 month	0.39	0.05	0.50	<0.001
	Marital Satisfaction	-0.20	0.06	-0.22	0.002
	Maternal negative coparenting 1 month	0.19	0.07	0.19	0.004
1-to-9 Months	Maternal Depressive Symptoms 1 month	0.48	0.05	0.56	<0.001
	Marital Satisfaction	-0.28	0.06	-0.29	<0.001
	Maternal positive coparenting 1 month	0.06	0.07	0.06	0.379

Chapter 4

Discussion

HYPOTHESIS #1: Increased marital satisfaction at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

The results demonstrate that marital satisfaction at 1 month significantly predicted a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, 1-to-9 months. Therefore, the first hypothesis was supported. This indicates that higher contentment in the marriage, as perceived by the mother, is predictive of a decrease, or less rapid increase, in maternal depressive symptoms from 1 month to 3 months, 1 month to 6 months, and 1 month to 9 months. Prior research strongly aligns with these results. In a larger study of 309 low-risk mothers, a significant negative correlation was found between marital satisfaction and postpartum depression and anxiety. By examining this relationship under the subcategories of marital satisfaction, they determined that confinement was the aspect of marital satisfaction most strongly correlated (Odinka et al., 2018). In addition, another study that examined this relationship at 3 months postpartum with 65 mothers found that higher depressive symptom levels were correlated with lower marital satisfaction in mothers (Tissot et al., 2015). These results, along with the support from prior research, indicate that poor marital satisfaction could be a key identifier of women at risk of developing postpartum depressive symptoms.

HYPOTHESIS #2: Increased maternal positive co-parenting ratings at 1 month will predict a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

The results demonstrate that maternal positive co-parenting ratings at 1 month were predictive of a decrease, or less rapid increase, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months. Therefore, the second hypothesis was supported. This indicates that higher positive co-parenting ratings from the mother is predictive of a decrease, or less rapid increase, in maternal depressive symptoms from 1 month to 3 months, 1 month to 6 months, and 1 month to 9 months. This hypothesis aligns closely to prior research. In a study that also examined this relationship as a function of time, it was found that maternal depressive symptoms were more strongly correlated with changes in co-parenting quality than paternal depressive symptoms (Hervé Tissot et al., 2017). Interestingly, prior work in the SIESTA program has found that positive co-parenting more strongly correlated with marital quality than negative co-parenting (Mauro & Douglas, 2013). Though the current study did not examine this relationship, this supporting literature may provide insight into how marital satisfaction and co-parenting may be interacting to predict the development of postpartum depression.

HYPOTHESIS #3: Increased maternal negative co-parenting ratings at 1 month will predict an increase, or less rapid decrease, in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

As expected from the second hypothesis, increased negative co-parenting ratings from the mother at 1 month predicted an increase, or less rapid decrease, in depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months. Overall, this conveys that more negative co-parenting, as perceived by the mother, is predictive of increases, or less rapid decrease, in maternal depressive

symptoms across the first 9 months. Thus, the third hypothesis was supported. Prior research strongly aligns with these results, as a study with 49 women at two months postpartum found that dissatisfaction with partner support was significantly correlated with maternal stress and anxiety (Thorp et al., 2004). Therefore, both positive and negative co-parenting together can create a predictive tool for understanding the development of postpartum depression in mothers. Interestingly, both positive and negative co-parenting were not significantly predictive until the later months, suggesting that they are not predictive of early changes in postpartum depression. This may be due to the fact that co-parenting relationships begin developing the moment a child is added to the family. This relationship is relatively underdeveloped compared to the marital relationship, as the parents have had much more time to stabilize their marriage before the child was born. Therefore, positive and negative co-parenting may be insignificant in the early postpartum months due to the recency of formation of the co-parent relationship.

HYPOTHESIS #4: To be explored was the relative contribution of marital satisfaction and maternal co-parenting to changes in maternal depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months.

Lastly, the results indicate that marital satisfaction was the strongest predictor of changes in maternal postpartum depressive symptoms from 1-to-3, 1-to-6, and 1-to-9 months. The increased quantity of time that the marriage had to stabilize compared to the newly developed co-parenting relationship may explain why marital satisfaction proved to be a stronger predictor. Though there are limited studies that examine marital satisfaction, co-parenting, and postpartum depression together, prior research does support the result that marital satisfaction significantly predicts postpartum depression symptoms trajectories. A study of 129 couples determined that

mothers and fathers who more commonly interact negatively, by demonstrating irritability, arguments and criticism, had a more rapid increase in postpartum depressive symptomology across the first 30 months postpartum (Figueiredo et al., 2018). This confirms that although both marital satisfaction and co-parenting quality can be used as predictive tools for identifying mothers at risk, marital satisfaction may be a stronger predictor.

Chapter 5

Limitations

Several limitations may have impeded the results of the current study. The primary limitation to this work is that many of the surveys used to collect postpartum depression, marital satisfaction, and co-parenting were self-reported by the mother. This limits the validity of these results, as self-reports can often be biased and unrepresentative of an objective analysis. In addition, the sample studied contained women with relatively low levels of postpartum depression, therefore this study is not representative of a clinically or severely depressed mothers. Despite this limitation, many women experience at least some level of depressive symptoms during pregnancy or postpartum. Therefore, this study can still be useful for identifying women who may be developing postpartum depression or highly at risk. Lastly, the current study failed to include covariates in the analyses, including income, education, age, and previous history of depression or anxiety. These variables have been highly researched as correlated with postpartum depression and could be included in future research.

Chapter 6

Conclusion

The present study confirmed that both marital satisfaction and co-parenting quality can serve as predictors of changes in maternal postpartum depressive levels, with marital satisfaction being the strongest predictor. These results apply to the first nine months postpartum, which is when postpartum depression symptoms are most prominent. This research can be used to identify woman at risk of postpartum depression at various postnatal time points. By incorporating marital satisfaction and co-parenting quality measures into screenings, pediatricians may be able to more effectively implement early interventions into the family's life. Therapies such as Cognitive Behavioral Therapy (CBT) are known to be effective early interventions for women who are considered high risk for postpartum depression (Cho et al., 2008). These therapies are essential to implement early on to prevent symptoms from worsening and becoming severe. Therefore, identifying predictors of postpartum depression is a key step to the inclusion of CBT into patient treatment. To expand the understanding of marital satisfaction and co-parenting quality on postpartum depression, future research should continue to examine these variables. This study could be replicated with data that is collected by observation, instead of self-reporting surveys, to examine if the same trends persist. In addition, future work could delve into the subcategories of marital satisfaction and co-parenting, to see if certain areas of these variables are more predictive than others. With a stronger understanding of how postpartum depression develops, women can receive increasingly beneficial and efficient treatments to aid them through the disorder.

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ACADEMIC VITA

Marina Gonzalez

Mlg5591@psu.edu

EDUCATION

Pennsylvania State University
University Park
Schreyer Honors College

B.S. in Biology with concentration in Vertebrate Physiology
Minor and Honors in Human Development and Family Studies

WORK EXPERIENCE

Penn State Hershey Medical Center

Summer Undergraduate Research Assistant

May – August 2017

- Collected and analyzed data for human research studies in the Penn State Hershey Heart and Vascular Institute to determine the effects of heat therapy on individuals with Peripheral Artery Disease
- Used various medical and statistical software (Hemolab, Sigma Plot, etc.) to analyze and calculate beat-by-beat heart rate and blood pressure, heart rate variability (time domain and frequency domain), and renal blood flow velocities
- Presented research poster at the 2017 Penn State Hershey Summer Undergraduate Research Symposium

Project SIESTA (Study of Infant's Emergent Sleep Trajectories)

Undergraduate Research Assistant

December 2016 - Present

- Conduct studies as part of a thesis research project to determine how parent and infant behavior can affect the development of infant sleeping patterns
- Code and analyze data from parents and infant, including video-taped interactions

LEADERSHIP EXPERIENCE

The Penn State Chapter of Remote Area Medical

Secretary

February 2018 - Present

- Manage club activities and organize trips to medical clinics
- Attend weekly meetings and distribute tasks among executive members
- Attend free RAM clinics to serve as a Spanish translator and general volunteer

Schreyer Honors College Career Development Program

Mentor

September 2017 - May 2018

- Mentored two undergraduate pre-medical students on academic work and career trajectory biweekly

South Halls Residence Association (SHRA)

Vice President

April 2016 – May 2017

- Oversaw weekly discussions and programmed events to encourage students to join their local dorm community
- Managed the association by running meetings twice a week, attending Association of Residence Hall Students (ARHS) meetings, and planning and designing events
- Previously served as SHRA Fundraising Chair

RELEVANT VOLUNTEER AND CLUB EXPERIENCE

Ronald McDonald House Charities of Central PA

Volunteer

May – August 2016

- Worked as a welcoming hostess by answering questions and concerns, giving tours of the house, and accepting all incoming donations for families of children facing serious medical conditions
- Managed the office by taking room requests, checking families into and out of rooms, and answering all incoming phone calls

Penn State Hershey Medical Center

Volunteer

May – August 2015

- Assisted in managing the Hershey Medical Center Gift Shop by stocking, taking inventory, and delivering gift baskets to patients

HONORS AND AWARDS

- The President's Freshman Award: Received for obtaining a 4.00 GPA during first two semesters of undergraduate career (April 2016)
- The President's Sparks Award: Received for obtaining a 4.00 GPA during the third and fourth semesters of undergraduate career (April 2017)