

ABSTRACT

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The vast majority of eating disorders literature to date focuses on adolescent and college aged women. However, recent research suggests that eating disorders and struggles with body image are not limited to younger women, but instead occur in women of all ages (e.g. Hay, 1998). One group of women that might be particularly at risk for decreases in body image are first time mothers, as their bodies go through immense changes during pregnancy and the postpartum period. Thus far, the literature has shown a relationship between biological changes, such as weight retention, and low body image in postpartum women (e.g. Walker, 1998). However, little research has explored the role of psychosocial factors in postpartum body image. The current study explored a biopsychosocial model of postpartum image, drawing on psychosocial variables that had been shown to relate to body image in adolescent and college aged women. This study found that psychosocial factors (internalization of the thin ideal, pressure for thinness, and negative affect) accounted for variance in body satisfaction and disordered eating, above and beyond that of biomedical factors (weight change, postpartum BMI, and shape change). Additionally, psychosocial factors partially mediated the effect of weight change

and shape change on body satisfaction and disordered eating. These findings have important implications for psychologists and health care professionals who work with new mothers.

A BIOPSYCHOSOCIAL MODEL OF BODY IMAGE IN NEW MOTHERS

By

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TABLE OF CONTENTS

Acknowledgements	ii
Table of Contents	iii
List of Tables	v
List of Figures	vii
Chapter 1: Introduction	1
Chapter 2: Review of the Literature	7
Eating disorders across the lifespan	8
Biological factors and body image in new mothers	10
A biopsychosocial model of body image	13
Psychological factors	16
Internalization of the thin idea	16
Negative affect	19
Social Factors	24
Pressure for thinness	24
Social support	29
Body image and depression	34
Summary of issues and significance	35
Chapter 3: Statement of the Problem	37
Hypotheses	38
Research questions	40
Chapter 4: Method	42
Design	42
Participants	42
Measures	45
Procedures	51
Chapter 5: Results	52
Preliminary analyses	52
Analysis of hypotheses and research questions	52
Additional analyses	71
Chapter 6: Discussion	78
Sample	78
Biomedical contributors	80
Psychological contributors	83
A biopsychosocial model of postpartum body image	85
Breastfeeding and postpartum body image	91

Postpartum depression	95
Qualitative findings	96
Overall summary of findings	102
Limitations	104
Implications for research	105
Implications for practice	109
Appendices	113
Appendix A: List of websites for recruitment	113
Appendix B: Recruitment email/posting	114
Appendix C: Demographics	115
Appendix D: Biomedical factors	117
Appendix E: Internalization of the thin ideal	118
Appendix F: Negative affect	119
Appendix G: Perceived sociocultural pressure scale	120
Appendix H: Social support	121
Appendix I: Body dissatisfaction	122
Appendix J: Disordered eating	123
Appendix K: Depression	124
Appendix L: Qualitative questions and “concerns”	126
Appendix M: Debriefing form	127
Appendix N: Qualitative coding categories	128
Glossary	131
References	132

List of Tables

Table 1: Demographic Characteristics of Participants

Table 2: Means, Standard Deviations, and Internal Consistencies for Measures Used

Table 3: Two-Tailed Bivariate Correlations of Measures and Demographic Variables

Table 4: Hierarchical Regression on Body Satisfaction (BSQ-10-R)

Table 5: Hierarchical Regression on Disordered Eating (EAT-26)

Table 6: Mediation of Shape Change by Internalization of the Thin Ideal on Body Satisfaction

Table 7: Mediation of Shape Change by Internalization of the Thin Ideal on Disordered Eating

Table 8: Mediation of Shape Change by Pressure for Thinness on Body Satisfaction

Table 9: Mediation of Shape Change by Pressure for Thinness on Disordered Eating

Table 10: Mediation of Weight Change by Internalization of the Thin Ideal on Body Satisfaction

Table 11: Mediation of Weight Change by Internalization of the Thin Ideal on Disordered Eating

Table 12: New mothers concerns in the past month

Table 13: Categories of Qualitative Data for Research Question 3: How did you feel about your body before your pregnancy?

Table 14: Categories of Qualitative Data for Research Question 4: How did you feel about your body during your pregnancy?

Table 15: Categories of Qualitative Data for Research Question 5: How do you feel about your body now?

Table 16: Categories of Qualitative Data for Research Question 6: What types of comments have you received from people you know (i.e. spouse/partner, friends, family) about your body or how you look since giving birth?

Table 17: Moderation of Pressure for Thinness by Breastfeeding on Body Satisfaction

Table 18: Moderation of Pressure for Thinness by Breastfeeding on Disordered Eating

Table 19: Mediation of Breastfeeding by Shape Change on Body Satisfaction

Table 20: Mediation of Breastfeeding by Shape Change on Disordered Eating

List of Figures

Figure 1: The Biopsychosocial Model

Figure 2: General Depiction of Mediation Pathways

Figure 3: Shape Change Mediation (Internalization of the Thin Ideal)

Figure 4: Shape Change Mediation (Pressure for Thinness)

Figure 5: Weight Change Mediation (Internalization of the Thin Ideal)

Figure 6: Moderation of Breastfeeding by Pressure for Thinness (Body Satisfaction)

Figure 7: Moderation of Breastfeeding by Pressure for Thinness (Disordered Eating)

Chapter 1

Introduction

One might wonder what anthropologists or historians might think years from now, if they happened upon the tabloids and gossip magazines that are published today. Celebrity relationships and arrests aside, these articles frequently focus on celebrity babies. Headlines promise pictures of new celebrity “bumps,” the new born child and, of course, the celebrity herself; weeks after giving birth she has returned to her slim figure and appears perfectly pulled together. Given the biological reality of pregnancy and birth, and the numerous changes that come with new motherhood, these magazine stories seem unrealistic. However, in a culture that values thinness in women, it is not as surprising as it may seem. At the same time, Western diets and an increasingly sedentary lifestyle contribute to greater levels of obesity, creating a considerable gap between the ideal and actual body types for women (Maine & Kelly, 2005).

Unfortunately, just as young women feel badly about their bodies when faced with such impossible ideals, postpartum women might feel surprise and shame when they cannot return to their pre-pregnancy shape and weight. For example, Fishbein and Burgraff (1997) found that 63% of women reported “much concern” about returning to a “normal” figure just two weeks after giving birth, while Hisner (1986) found that 75% of women were concerned with their ability to return to a normal figure at six months postpartum. Even at one year postpartum, 39% of women were still dissatisfied with their weight. When a new mother feels negatively about her body, it can lead to feelings of depression (Walker, 1997) and even to the development of an eating disorder (e.g. Stein & Fairburn, 1996), which can in turn lead to eating pathology in her child (Pike & Rodin,

1991). However, despite the obvious potential impact of pregnancy and birth on maternal body image and the subsequent consequences for children, little research has explored body image in new mothers.

Throughout adulthood, women gradually gain weight, approximately one to two pounds a year (Kuczmarski, Flegal, Campbell & Johnson, 1994), which can add up to 10 to 20lbs over the course of a decade. However, the weight gain with pregnancy is much more sudden. In addition, women may expect to lose any weight gained with pregnancy quickly after childbirth, as they often attribute weight gain to the baby's growth rather than to their own weight increase. Therefore, postpartum weight retention can have a unique effect on body image because of its more sudden and surprising nature. Some previous research has looked at the impact of biological factors such as weight retention and body shape change, on body satisfaction (i.e. Walker, 1998) and depression (Walker, 1997). This research has found that women who retain more weight or have higher postpartum body mass indexes (BMI's) do feel more dissatisfied with their bodies. However, although biological changes, such as body mass, are bound to play a part in postpartum body image, it seems that psychosocial factors, such as pressure for thinness or internalization of the thin ideal, might be important as well, given their role in eating disorders and body image in women in general. Approaching the transition to motherhood from a biopsychosocial framework, as this study proposes to do, will better inform psychologists on ways to intervene with new mothers both before and after the birth of their new child, to help prevent eating and body image concerns.

The literature on eating disorders and body image has found two psychological variables to be of particular importance. The first, internalizing the thin ideal, refers to the

extent to which an individual accepts the “thin ideal” as an ideal way for herself to look. A great deal of research has found that internalizing the thin ideal can predict body dissatisfaction in young women (e.g. Tylka & Subich, 2004). In addition, it has been positively related to eating pathology (e.g. Stice, Schupack-Neuberg & Shaw 1994), and women diagnosed with an eating disorder show greater endorsement of the thin ideal (e.g. Mintz & Betz, 1988).

However, the subjects of this previous research were undergraduate women, and not postpartum women. It is unclear how these relationships will hold up in a different population, as few studies have examined these variables in pregnant or postpartum women. One qualitative study interviewed women about their feelings towards their body during pregnancy. A common theme among all the women interviewed was viewing their pregnancy as a “transgression” of the beauty ideals for women. They described themselves as “fat,” “frumpy,” and “unattractive,” but also said that being pregnant legitimized this transgression. In addition, they all felt concerned about returning to a “normal” weight postpartum, as they felt that the transgression was no longer allowed following birth (Johnson, Burrows & Williamson, 2004). While this study looked at pregnant and not postpartum women, it suggests that pregnant women may continue to hold their internal standards for beauty and worry about meeting them after having a child.

Another psychological risk factor for eating disorders in women is negative affect. Some previous research has shown a relationship between negative affect and disordered eating (e.g. Leon, Fulkerson, Perry & Cudeck, 1993) and that bulimics report purging to reduce negative affect (e.g. Schupak-Neuberg & Nemeroff, 1993). In addition, negative

affect has been shown to predict the onset of eating disorder behaviors in longitudinal studies (e.g. Stice & Agras, 1998). While no literature could be found that examined negative affect in postpartum women, a related study found that depression and self esteem, (factors related to negative affect), correlated with postpartum BMI and weight gain (Walker, 1997). In addition, there is evidence that serotonin levels impact depression, anxiety and eating disorders (Brewerton & Steiger, 2004) and that serotonin levels also change during pregnancy (Glaser, Russell, De Villiers, Searson, & Taljaard, 1990), suggesting that postpartum women may be at risk for negative affect and related emotional disorders. Given the evidence for a strong relationship of negative emotion and body image, negative affectivity might be an important variable to include in a model of postpartum body image.

In addition to psychological predictors of eating pathology and negative body image, there are social predictors as well. One social factor that has been supported by numerous studies is pressure for thinness. According to theorists, pressure for thinness from a variety of sources teaches women that they are evaluated on the basis of their weight. This can then lead to feeling shame towards one's body and negative body image (Fredrickson & Roberts, 1997). Many are aware of the pressure put on women to be thin by the media, but this pressure can also come from family and friends as well. All of these sources of pressure can contribute to eating disorder symptoms (Irving, 1990). In addition, studies have shown that pressure for thinness directly predicts body dissatisfaction beyond internalization of the thin ideal (Stice, Nemeroff & Shaw, 1996). In other words, regardless of whether a woman reports that the thin ideal is her ideal for her own body, external pressure for thinness can lead to negative feelings about her body.

Although a number of studies have shown that pressure for thinness is related to body dissatisfaction, research has rarely examined this construct in postpartum women. One qualitative study found that pregnant women experience pressure for thinness from the media and from their families (Johnson, et. al., 2004), yet no research has yet examined pressure for thinness in postpartum women. However, given the importance of pressure for thinness in eating disorders for women in general, pressure for thinness was included as a variable in the current study.

The second social factor that might be important in postpartum body image is social support. Studies have found that women with diagnosed eating disorders have less adequate social support networks (e.g. Tiller, Sloane & Schmidt, 1997), that both family and friend support predict unique variance in eating disorder symptoms (Hirsch, 1999), and that social support is a significant part of models predicting body image and disordered eating (e.g. Tylka & Subich, 2004).

Research has also found social support to correlate with positive outcomes in the transition to motherhood, such as life and parenting satisfaction (Crinic, et. al. 1983) and fewer depressive symptoms and lower stress (Paykel, Emms & Fletcher, 1980). Only two studies have explored the relationship of social support with postpartum body satisfaction (Walker, 1997; Jordan, et. al., 2005). However, given the results of these two studies and the wealth of literature on the importance of social support to general postpartum adjustment, social support is an important factor to explore in the context of postpartum body image.

The transition to motherhood presents a woman with many new challenges, not the least of which are the changes to her body. Previous research has shown that these

physical changes can lead to body dissatisfaction and depression in new mothers (i.e. Walker, 1998, 1997). In addition, the first year of new motherhood may represent the most dramatic body change that most women have experienced in their lives to date, and research has shown that first time mothers report greater body dissatisfaction than mothers of an additional child (Strang & Sullivan, 1985). Thus, this study looked at body satisfaction and depression for first time mothers during the first postpartum year. As research has shown that biological factors relate to postpartum body image (e.g. Baker, Carter, Cohen & Brownell, 1999), this study included three biological variables: weight change, postpartum BMI and shape change. In addition, despite the importance of psychological and social factors in body image for women in general (e.g. Tylka & Subich, 2004), and the importance of psychological and social variables in general postpartum adjustment (e.g. Crinic, et. al. 1983 and Howell, et. al., 2006), little research has explored psychological or social variables in postpartum body image for first time mothers. Thus, this study used a biopsychosocial framework, and included two psychological variables (internalization of the thin ideal and negative affect) and two social variables (pressure for thinness and social support). The inclusion of biological and psychosocial variables in this study helped provide a more nuanced perspective of the transition to new motherhood and can help clinicians in making interventions with postpartum women.

Chapter 2

Review of the Literature

The transition to motherhood involves significant changes in a woman's life, perhaps none so public and rapid as the changes to her body as she grows with pregnancy. While most people are aware of the physical changes of pregnancy, many who have not undergone the transition themselves are less aware of the short-term and enduring changes in a woman's body. Given the culture of thinness-as-beauty that pervades our society today, it seems that any changes to body weight or shape might impact one's sense of self esteem and well being. In fact, some research has shown that as many as 7% of new mothers developed an Eating Disorder, Not Otherwise Specified (EDNOS) after having their child (Stein & Fairburn, 1996), and that approximately 12% of new mothers will develop postpartum depression, both of which can effect the health of their child (CDC, 2000). Previous literature has explored the connection of biological changes such as weight gain and weight retention to body image in postpartum women and most of them have found that these variables are related. However, very few studies have considered the effect of psychological and social variables on postpartum women's body image. Given the role of psychological and social variables in body image for adolescents and young adults (e.g. Tylka & Subich, 2004), these variables might be important in the body image of postpartum women as well.

According to the biopsychosocial model, health involves ongoing adaptation to biological, psychological and social challenges and developments that inevitably occur over the course of one's life. Given the changes in all three of these domains that occur for a new mother, the biopsychosocial model is a strong framework for examining

postpartum body image. Thus, this literature review will begin with a brief, general overview of eating disorders and body image in adult women, and argue that postpartum women are particularly at risk for body dissatisfaction as they experience sudden and dramatic changes to their bodies. Because most studies have focused on the role of biological changes in pregnancy, this literature review will then examine the transition to motherhood and the role of biological changes in body image for new mothers. Following will be a brief review of the biopsychosocial model, its focus on psychosocial variables as well as biological variables, and its applicability to the present study. Finally, I will review the literature on two specific psychological factors (internalization of the thin ideal and negative affect) and two specific social factors (pressure for thinness and social support) and argue for their inclusion as potential variables impacting postpartum women's body image and psychological health.

Eating Disorders Across the Lifespan

Eating disorders are often thought of as a mental health disease, characterized by compulsions around food, eating and occasionally exercise. These disorders can have an effect on the individual's quality of life and mental health, but also have a number of physical ramifications, including death, often due to either malnutrition or heart problems. However, even in less severe cases, disordered eating behaviors can have effects on the musculoskeletal, neurological, renal, endocrine, and cardiac systems (Silber, 2005).

A significant amount of research has examined the occurrence of and risk factors for the development of eating disorders in adolescents and young adults. Specifically,

much of this research has focused on college-aged women. Some studies have reported that approximately 4-9% of college students suffer from a diagnosable eating disorder (Heisse-Biber, Marino & Watts-Roy, 1999), as many as 67% of undergraduate women can be seen as suffering from some sort of disordered eating and negative body image (e.g. Mintz & Betz, 1988; Mintz, O'Halloran, Mullholand, & Schneider, 1997; Shisslak, Crago & Estes, 1995).

However, part of the reason for the focus on college-aged women might be convenience samples, as additional research has shown that eating disorders and body image concerns do occur in women throughout the lifespan. Hay (1998) completed a community sample of 3001 adults in Australia, with a mean age of 35. She found that approximately 6% reported some type of disordered eating, including bingeing, purging or severe restricting. Mangweth-Matzek et. al. (2006) completed a community sample of 1000 women between 60 and 70 years of age, finding that 80% reported controlling their weight in some way, 60% reported body dissatisfaction, and 4% met the criteria for a diagnosable eating disorder. Finally, multiple studies have found that there are no differences in eating disorders (Hsu & Zimmer, 1988) or body dissatisfaction (Webster & Tiggeman, 2003) between younger, middle aged and older adults.

Thus, eating disorders and body dissatisfaction are a life long problem. More specifically, some research has suggested that the sudden weight gain and body changes that come with pregnancy and birth can trigger eating disorders, both in women who had previously been diagnosed, and in women who had not struggled with eating before pregnancy (Stein & Fairburn, 1996). In addition, evidence suggests that the risks are higher in first time mothers (Strang & Sullivan, 1985).

Biological Factors and Body Image in New Mothers

The Institute of Medicine (1990) recommends that women gain between 11 and 16 kilograms (24-35 lbs) during pregnancy. On average, 3.5 kilograms (approximately 7 lbs) of this is fat, the majority of which is deposited on the torso (Sohlstrom & Forsum, 1995), which can also result in changes to a woman's shape. However, the range of weight change that women actually experience postpartum is much greater; one study reported a range of 28 kilograms (~62 lbs), with one woman weighing 5 kilograms (~ 11 lbs) less 4 weeks postpartum than she had prior to pregnancy and another woman weighing 23 kilograms (~51 lbs) more four-weeks postpartum. On average, women in this study weighed 4.88 kilograms (~10 lbs) more four-weeks postpartum that they had before pregnancy (Jenkin & Tiggeman, 1997). Thus, women might experience significant biological changes during pregnancy, such as weight gain and changes in body shape, that remain after giving birth. In addition, these changes occur much more suddenly than the more typical, gradual weight gain that the average woman faces with age (Kuczmarski, et. al., 1994). A number of descriptive studies have shown that these changes in weight and shape concern new mothers immediately after giving birth, and throughout the first year of parenthood. For example, in a survey of postpartum women's potential concerns/stressors, Hisner (1986) found that 75% of women were concerned with their weight and 70% were concerned with their ability to return to their previous figure at six months postpartum. Even at one year postpartum, 39% of women were still dissatisfied with their weight.

Some research suggests that this concern with weight begins almost immediately after giving birth. Fishbein and Burgraff (1997) surveyed 100 women who had been

recently discharged after the healthy birth of their first child. Women completed a maternal concerns questionnaire at two and four weeks postpartum, which asked them about their degree of concern about a range of psychological and physical health issues. The authors found that 63% of women reported “much concern” about returning to a “normal” figure two weeks after giving birth.

Thus, researchers know that postpartum women report feeling dissatisfied with their bodies; however, some questioned whether this body dissatisfaction actually represented a decrease from prepregnancy, or pregnancy levels, or simply reflected negative feelings that women had had since before pregnancy. The available research on this question suggests that body image does decrease postpartum. For example, Stein and Fairburn (1996) completed a longitudinal assessment of 100 first-time mothers. They interviewed each participant during early pregnancy (approximately 15 weeks), late pregnancy (approximately 32 weeks), three months postpartum, and six months postpartum, and included retrospective questions regarding the participant’s pre-pregnancy body image. Using the Eating Disorder Examination, which includes a range of behavioral and attitudinal questions about participants’ eating and body image, the authors found that global eating disorder scores were significantly higher at three and six months postpartum than during pregnancy or prepregnancy (with a large effect size). In addition, when looking at specific subscales, the authors found that concern about shape was significantly higher at three months postpartum than preconception, concern about eating was significantly higher at three and six months postpartum than during pregnancy, and concern about weight was significantly higher at three months postpartum than during pregnancy and was significantly higher at six months postpartum than at

three months. In addition, seven of the 97 women in their study developed Eating Disorders, Not Otherwise Specified (EDNOS) postpartum.

Once research determined that body satisfaction does seem to decrease postpartum, some began to explore how the biological changes associated with pregnancy and birth related to this decline. In one such survey of 90 women during pregnancy and at four months postpartum, Baker, Carter, Cohen and Brownell (1999) supported Stein and Fairburn's (1996) finding of a significant decrease in body satisfaction between pregnancy and four months postpartum, with a large effect size. In addition, they found that postpartum body satisfaction was correlated with postpartum BMI, with a small to medium effect size.

Walker (1998) also reported a relationship of postpartum body image and weight. She analyzed 227 postpartum women's written responses to the question: "How do you feel about your weight at this time?" She found that women predominantly fell into one of four categories: Satisfied (21%), satisfied but wanting to lose more (22%), perceived overweight with mild dissatisfaction (40%), and weight related distress (8%). An ANOVA comparing postpartum BMI across the four groups was significant with a medium effect. Thus, it does seem that actual BMI and weight do contribute to women's body dissatisfaction postpartum.

However, despite the strong evidence for the role of biological changes in postpartum body satisfaction, it seems that other variables might help explain additional variance. A small number of qualitative and descriptive studies have suggested that a new mother's relationship with her body is far more complicated than the purely biological changes (e.g. Johnson, et. al. 2004), implying that psychological and social factors might

play an important role as well. For example, women in one study reported experiencing pressure for thinness and internalization of the thin ideal (Johnson, et. al. 2004). Thus, one way to expand an understanding of postpartum body image is to approach the question from a biopsychosocial framework, which considers psychological and social factors in addition to biological factors, such as weight retention and BMI, when examining health-related outcomes.

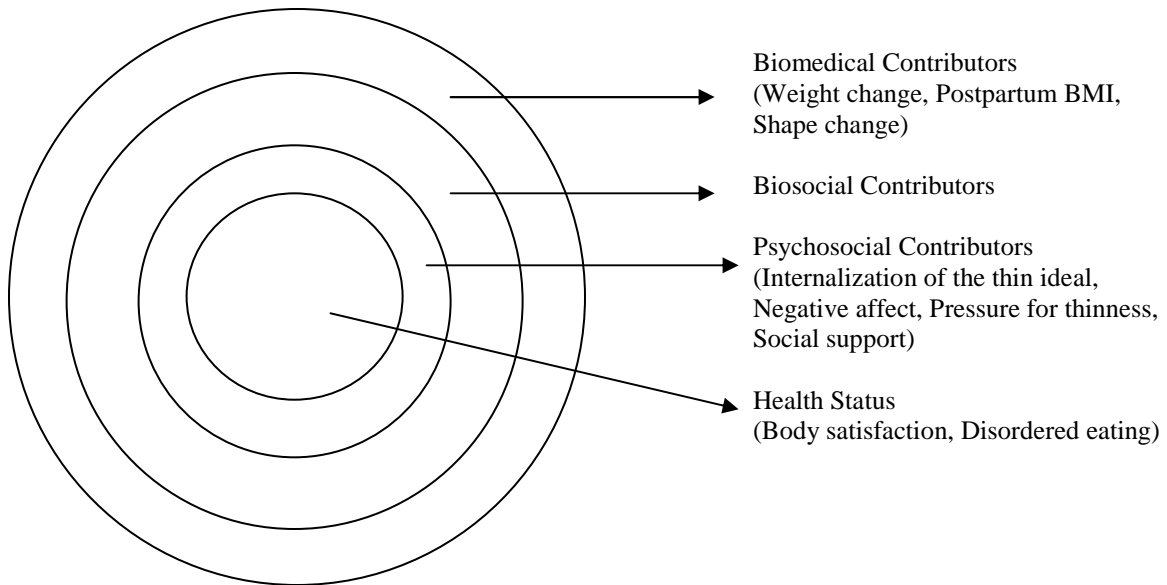
A Biopsychosocial Model of Body Image

For many years in the history of Western psychology and philosophy, the mind and body have been viewed as separate entities. The biomedical model reflects this split, emphasizing biological, genetic and medical factors as responsible for the etiology and maintenance of disease, and for distress associated with medical and physical concerns. However, recent research has demonstrated that the mind and body affect each other, and that biological, psychological and social variables all interact with one another (Hoffman & Driscoll, 2000).

Engel (1977) was the first to present a coherent and systematic model of how each of these factors contributes to disease. He suggests that biological, psychological and social factors operate in a hierarchical system. Each component operates independently, but also can affect the whole person by maintaining or causing disease. However, Engel's model, while innovative in its inclusion of psychological and social factors, is limited in its conception of health as the absence of disease, and in its hierarchical view of biological, psychological and social contributors to disease.

More recently, Hoffman and Driscoll (2000) built on and expanded Engel's model. While Engel saw health as the absence of disease, Hoffman and Driscoll propose a model in which health is a continuum that involves not just physical health, but also considers how physical health interfaces with psychological and emotional well being. In addition, they use the term "health status" rather than "disease" to emphasize the continuum of health. Thus, Hoffman and Driscoll's model is more reflective of counseling psychology's focus on strengths and positive outcomes. In addition to the differing definition of health and illness, Hoffman and Driscoll suggest that the contributors to health status are organized in concentric circles, rather than the hierarchy suggested by Engel, with the closer-in circles representing variables over which the individual has more control. Health status is in the center of their model. The next layer is the psychosocial contributors, which include psychological, social and behavioral factors. These factors are often the most amenable to change. The next layer is the biosocial contributors; these factors have a biological basis but are also socially constructed, such as gender. The outmost circle is the biomedical (or biological) contributors. They are often viewed as fixed, or difficult to modify. For a visual depiction of this model, and the variables relevant to the current study, see Figure 1. Thus, the three factors can affect health and adjustment directly or indirectly with the other factors. Health status is then an ongoing dynamic process that requires adaptation to challenges in multiple domains; physical conditions can lead to psychological outcomes and psychological difficulties can have physiological ramifications.

Figure 1: The Biopsychosocial Model



Research has provided evidence for these processes in recent years. For example, as lack of exercise can be a contributing factor for heart disease, some researchers have begun to develop community-based psychological interventions to increase activity levels (Wyatt, et. al. 2004). In addition, a substantial amount of research has demonstrated the powerful effects of social support on health and illness (e.g. Cobb, 1976).

Given the clear biological impact of pregnancy and birth on the body, it is understandable that researchers would chose to focus on how biological factors affect postpartum body image. However, the biopsychosocial model would suggest that biomedical and psychosocial factors will also play a significant role. As gender, a biosocial contributor, is inherently a part of pregnancy and birth, this study will focus on exploring new psychosocial contributors. Fortunately, while there is a paucity of research on the psychological and social variables contributing to body image for postpartum women, there is an abundance of literature on the contributions of psychological and

social variables to body image in adolescent and young adult women. In other words, the research on body image in young women incorporates physical, psychological, and social aspects in understanding the construct. The role of biomedical factors, such as BMI, weight change and shape change in postpartum women's body image, have been clearly demonstrated as discussed in the previous section. Thus, the following section will review some of the strongly supported psychological and social contributors to body image in women and discuss their potential applicability to postpartum women.

Psychological Factors

Body image disturbance is an inherently psychological phenomenon, and is a significant predictor of eating disorder behaviors (e.g. Tylka & Subich, 2004). While any number of psychological factors may contribute to negative body image, recent attempts to create a model of eating disorders have found very strong support for two particular variables: internalization of the thin ideal and negative affect.

Internalization of the Thin Ideal. Every culture has standards of beauty, and in today's Western culture, those standards involve an ideal of thinness. Internalization of the thin ideal refers to the extent to which an individual believes this ideal as a viable and necessary way that she, herself, should look (Thompson, et. al., 1999). Thus, internalization is different from awareness; one can be aware of the thin ideal without internalizing, or cognitively adopting, the thin ideal. Unfortunately, the ideal is difficult, if not impossible to attain. Thus, women who hold themselves up to this thin standard are left feeling disappointed with themselves and with their bodies when they do not achieve it.

A great deal of research has found that internalizing the thin ideal can predict both body dissatisfaction and eating pathology in young women. For example, Mintz and Betz (1988) found that greater degree of disturbed eating was associated with greater tendency to endorse sociocultural beliefs regarding the desirability of female thinness in a sample of 682 undergraduate women. Unfortunately, this study uses a convenience sample of undergraduate, introduction to psychology students and cannot generalize to all women. Yet, there is no evidence that eating disorders disappear after college.

More recent research has been able to demonstrate that internalization of the thin ideal is a risk factor for eating pathology, and not just a consequence. Stice and Agras (1998) surveyed 218 high school females in their community over a nine-month period. Using two measures of bulimia, the authors grouped participants into four trajectories: Those who denied bulimic symptoms at time one and time two, those who endorsed bulimic symptoms at time one and time two, those who denied symptoms at time one but endorsed them at time two and those who endorsed them at time one but denied them at time two. They found that internalization of the thin ideal at time one predicted the onset of bulimic symptoms at time two and that lower internalization of the thin ideal predicted the cessation of bulimic symptoms, although this latter relationship was weaker. Later similar studies have also shown that internalization of the thin ideal also predicts increases in dieting behavior (Stice, Mazotti, Krebs & Martin, 1998) and body dissatisfaction (Stice, 2001).

Thus, previous research has demonstrated that internalization of the thin ideal is an important predictor of eating disorders and of body dissatisfaction. However, the subjects of this previous research were adolescents and young adults, not postpartum

women. It is unclear how these relationships will hold up in a different population. One quantitative study has implications for the importance of the thin ideal for these women.

Using a phenomenological paradigm, Johnson, Burrows and Williamson (2004) interviewed six women about their feelings towards their bodies during pregnancy. In addition to discussing the dynamic nature of their relationship with their bodies as they went through the changes of pregnancy, they also all spoke of pregnancy as a transgression of their beauty ideals for women. They described themselves as “fat,” “frumpy,” and “unattractive,” but also said that being pregnant legitimized this transgression. During early pregnancy, the majority of the women reflected that they were worried about people thinking they were fat and not pregnant. Some added that they were happy when their stomachs grew large enough that their pregnancy was obvious; they felt it gave them permission to deviate from the norm. In addition, they all felt concerned about returning to a “normal” weight postpartum, as they felt that the transgression was no longer allowed following birth. While this study looked at pregnant and not postpartum women, it suggested that pregnant women continued to hold their internal standards for beauty and worry about meeting them after having their children. Pregnancy seemed to “allow” them to deviate from those internalized standards, as they and society expected them to gain weight and change shape, but the women continued to acknowledge the existence of the thin ideal and suggested that they hold themselves to it after giving birth.

Overall, there is overwhelming evidence for the importance of internalization of the thin ideal in body image for women in general. While research on this variable has tended to use convenience samples such as college women, and no research has explicitly

examined internalization of the thin ideal in postpartum women, the one related qualitative study suggests that women do have internalized thin body ideals in pregnancy.

Negative Affect. The other psychological variable of importance to body image for women is negative affect. Negative affectivity can be viewed as a state or trait variable that describes the extent to which an individual experiences a range of negative emotions. Someone who is high in negative affectivity experiences a great deal of subjective distress and aversive moods, such as anger, guilt or fear. In contrast, a person low in negative affect experiences calmness and serenity. When viewed as a trait characteristic, negative affectivity has been shown to relate to low self-esteem, neuroticism (Watson, Suls & Haig, 2002), depression, anxiety and poor coping skills (Costa & McCrae, 1992). Given these relationships, it seems possible that negative affect should also relate to poor body image and disordered eating behaviors. In fact, many clinical theories of eating disorders suggest that restricting serves as a way to control negative affect while bingeing and purging serve as ways to comfort and decrease negative affect (e.g. Heatherton & Baumeister, 1991).

Previous research has shown support for the association of disordered eating and negative affect. Leon, Fulkerson, Perry, and Cudeck (1993) completed a cross-sectional survey of 937 adolescent females, asking them about their eating behaviors and attitudes, and their personality, including negative emotionality. The authors used two eating disorder questionnaires (one designed for the purposes of their study, and the other a previously validated measure) to divide the students into three groups, representing their risk for an eating disorder (high, moderate or minimal). They found that an ANOVA of negative emotionality across groups was significant. In addition, in follow up regressions

they found that the strongest predictor variables for risk were body dissatisfaction, negative emotionality, and lack of interoceptive awareness.

In addition to research showing an association of body image and negative affect, some research has shown a more detailed connection of eating disordered behavior and negative affect. Schupak-Neuberg and Nemeroff (1993) surveyed a small sample (N=26) of female undergraduates who met the criteria for Bulimia and found that they reported using purging as a way to regulate negative affect. However, in addition to using a very small convenience sample, this study relied on self-report and required a degree of self-insight regarding participants' emotions and motivations.

An experimental study also showed an association between negative affect and eating disordered behaviors. Cools, Schotte and McNally (1992) recruited 91 undergraduate women who represented a range of scores on an eating restraint scale. They then had them watch one of three movies (a travelogue, a comedy or a horror film) to induce neutral, positive or negative affect. All participants completed the Profile of Mood States to ensure that the mood induction worked. While watching the movie, participants were offered a bowl of popcorn and were told they could eat as much or as little as they would like, as long as they ate something. For participants in the neutral mood state, food intake decreased with increasing levels of restraint (self-report of food restraint and dieting). However, for participants in the negative and positive mood induction states, food intake increased with increasing levels of restraint, and this effect was largest for participants who viewed the horror film. Both of these studies suggest that negative affect might be related directly to the experience of bingeing or purging for

restrained eaters and bulimic clients. However, both studies focus on the immediate instance of these behaviors and view negative affect as a state variable.

In the previously described study of high school aged women, Stice and Agras (1998) demonstrated evidence for trait negative affectivity as a risk factor for eating disordered behaviors as well. Trait negative affectivity at time one predicted the onset of binge eating and compensatory behaviors at time two. However, unlike internalization of the thin ideal, lower negative affectivity scores at time one did not predict the cessation of eating disorder behaviors at time two.

More recent studies have also looked at trait negative affectivity in the context of a predictive model of eating disorders; however, there is some debate about where in the model negative affectivity falls, and over how to best measure it. Tylka and Subich (2004) developed a model of eating disorder symptomatology in college women using semantic equation modeling. To create their latent construct of negative affectivity, they used the odd items from a measure of neuroticism (the NEO-FFI; Costa & McCrae, 1992), the even items from the same measure, and a measure of self esteem. Using these measures, they found a significant path from negative affect to body image distortion (measured by instruments addressing body dissatisfaction). The authors did not hypothesize a direct path from negative affect to eating disorder behaviors. Essentially, their model suggests that negative affectivity impacts body dissatisfaction and that its effect on eating disorder behaviors is actually mediated by body dissatisfaction and poor interoceptive awareness. These findings are in direct contrast to the earlier described study (Schupak-Neuberg & Nemeroff, 1993), which showed that bulimic women were aware that purging serves as a negative affect regulatory mechanism. One possible reason

for this contrast is the use of neuroticism and self esteem to define negative affect. While negative affect is certainly related to neuroticism and low self esteem, the constructs are not the same. When developing a model of eating disorders, correct naming of the constructs involved can be very important.

A similar problem occurred in Stice, Nemeroff and Shaw's (1996) model of eating disorders, in which negative affect played a different role. Stice et. al. also surveyed college women and used semantic equation modeling to create their model of eating disorders. However, to create the latent construct of negative affect, the authors used measures of depression, anxiety and guilt. Using these measures, the authors found support for a path from body dissatisfaction to negative affect and from negative affect to bulimic symptomatology. In contrast to Tylka and Subich's (2004) findings that negative affect leads to body dissatisfaction but not eating disorder symptoms, this study suggests that body dissatisfaction is what creates negative affect. Thus, there is a good deal of contradiction over where negative affect falls in a model of eating disorders, which might in part be due to differences in measurement of the construct. Based on these findings, it seems that negative affectivity is an important variable to consider as a risk factor for both eating disorder symptoms and poor body image, but that its exact role is unclear.

In addition, it is unclear what the role of negative affect will be in the particular population of the current study, new mothers. One study suggests that some variables related to negative affect are related to postpartum BMI. Walker (1997) surveyed 149 women one year after giving birth. In addition to asking about their current BMI and their weight gain during pregnancy, she also included a measure of depression, and asked about their change in self-esteem around their weight. She found that postpartum BMI

correlated with depression with a small effect size, and that postpartum weight gain correlated with depression with a medium effect size. In addition, those with decreased self-esteem had significantly higher postpartum BMIs and postpartum weight gain than those who reported their self-esteem as unaffected.

Unfortunately, there was a major flaw in this study. In measuring self esteem, the author asked “How has your weight affected how you feel about yourself at this time?” Thus, her measure of self esteem was confounded with weight, and was actually closer to a measure of body dissatisfaction. Her results essentially demonstrate that feeling badly about yourself because of your weight is related to having a higher BMI. Nonetheless, the study does have implications for the role of variables related to negative affect in postpartum body image.

Looking at the neuropsychology literature, one can find additional evidence that suggests that negative affect might be a risk factor for negative body image in postpartum women. In a study of hormonal changes in pregnant rats, Glasser, et. al. (1990) found that serotonin levels, a neurotransmitter that can affect mood, were lower in pregnant and in four-day postpartum rats than in non-pregnant female rats. In addition, neuropsychologists have found that serotonin levels can impact depression and anxiety as well as eating disorders (Brewerton & Steiger, 2004).

Overall, there seems to be strong evidence that negative affectivity is a risk factor for the development of an eating disorder for adolescent and young adult women, although there is some debate as to where negative affectivity fits in various models. Unfortunately, there is very limited research on the importance of negative affect for eating disorders in postpartum women. However, given the evidence for a strong

relationship of negative affect and body image in women in general, the evidence suggesting a relationship of depression to body image concerns in postpartum women, and the evidence suggesting biological changes related to negative affect that occur during the pregnancy and postpartum periods, negative affectivity is an important variable to explore in a model of postpartum body image.

Social Factors

In addition to the psychological factors of negative affect and internalization of the thin ideal, social factors are of particular importance in eating disorders and body image disturbance, and should be examined in new mothers. In a general way, social factors, such as social support networks, may change as a new mother assumes new roles and identities. In addition, one's culture dictates the beauty ideals to which one is compared, even for postpartum women. Even if individuals do not themselves internalize the ideal or if they understand the ideal to be unrealistic, they still feel that others will judge them by these standards (e.g. Milkie, 1999). Two particular social factors that have been shown to be important in young women's body image are pressure for thinness and social support.

Pressure for Thinness. According to objectification theory, women learn to view themselves from an outsider's perspective, and see their bodies as objects. This perspective of oneself can lead to body monitoring and body shame, especially when one does not meet society's expectation for what a woman "should" look like. Essentially, the cultural value of thinness teaches women that they are evaluated on the basis of their weight, creating a feeling of pressure for thinness. This can then lead to feeling shame

towards one's body and negative body image (Fredrickson & Roberts, 1997). This process can be relatively overt; for example, in an experimental study on hiring practices, one study showed that attractive people were more likely to be hired than unattractive people (Cash, Gillen & Burns, 1977). It can also be somewhat more covert, such as exposure to thin models and actors in television, movies and advertisements.

The media is perhaps the most obvious source of pressure for thinness for women. Adult women and young girls are exposed to fashion models, beauty pageants, and celebrities, the majority of who are thin and considered beautiful. A great deal of research has demonstrated a connection of this pressure and eating disorder symptoms. For example, Irving (1990) examined the impact of viewing various models on young women's self evaluations. Using a sample of 162 undergraduate women who represented a range of self-reported bulimic symptoms, she measured self-esteem before and after exposure to thin, average or plus-size models. She found that regardless of level of bulimic symptoms, women exposed to the thin models reported lower self esteem. In addition, she found that women reporting high levels of bulimic symptoms reported a greater amount of pressure to be thin from the media.

However, pressure for thinness can also come from family, friends, and significant others. For example, Irving (1990) also found that women with greater bulimic symptoms reported greater pressure for thinness from family and friends. In addition, in a study examining the etiology and course on bulimia in 275 adult females, the authors found that 85% of the subjects reported that they started binge eating during a period of voluntary dieting, but that they had perceived pressure to lose weight from family and friends in association with that dieting episode. Both of these studies looked at

perceived pressure to be thin as a self report variable from the women themselves. However, looking at actual pressure to be thin from a family member or friends' perspective might also help inform the literature.

Pike and Rodin (1991) were able to complete such a study when they looked at mothers of bulimic adolescent women. Researchers began by sampling a group of 350 high school females and administering the Eating Disorder Inventory (EDI; Garner, Olmstead & Polivy, 1983). These results were used to group the women into disordered eaters (those who scored above the 75th percentile) and a comparison group. Mothers of these women were then recruited (77 participated) without knowing the reason for their solicitation; they answered questions regarding their family system, their own weight and body image, and were asked to rate their daughter's height and weight. In addition, they were asked to suggest an ideal weight for their daughter and rate their daughter's attractiveness. Researchers found that the mothers of the disordered eating group scored significantly higher on all five subscales of the EDI than the mothers of the comparison group, although they did not differ in terms of the amount of weight they themselves wanted to lose. Additionally, the mothers of the bulimic group wanted their daughters to lose significantly more weight than the mothers of the control group. This difference remained significant even after controlling for the daughters' current weight. Finally, while the two groups of mothers did not differ in their ratings of their own attractiveness, they did differ on ratings of their daughters' attractiveness. Mothers of the disordered eaters were more likely to rate their daughter as less attractive than the daughter had rated herself. While this study does not follow up with the daughters to determine if they perceived their mothers' opinions on their weight, it does suggest that pressure for

thinness is not “all in the heads” of women who suffer with body image; unfortunately the pressure is very real.

Pressure for thinness can also come in the form of teasing from peers. Thompson, Coovert, Richards, Johnson, and Cattarin (1995) looked at weight-related teasing in adolescent girls. Surveys were given to 210 adolescent females (ages 10-15), which included questions regarding the frequency with which they were teased about their weight and appearance and the effects of that teasing, as well as measures of body image and eating disorder behaviors. At time one, the authors found that teasing history was related to eating disturbance and to body image using covariance structure modeling. Researchers followed up with these women 3 years later. At that time, only 121 of the original 210 girls were still enrolled in the school district from which the sample was drawn. These girls once again filled out the same measures and researchers found that teasing at time one was significantly associated with weight and appearance dissatisfaction at time two. Stice and Agras (1998) also found longitudinal support for the impact of pressure for thinness on the onset of binge eating and compensatory behaviors in their previously described study of female adolescents.

Once again, however, there has not been significant research addressing how this construct, pressure for thinness, might impact postpartum women. Two studies of body image in pregnant women do suggest that pressures for thinness may play a role. Sumner, Walker, Killick and Elstein (1993) recruited ten pregnant and ten non-pregnant women to participate in a study looking at the impact of media on body image distortion. All of the women were tested twice: the pregnant women at 16 and 32 weeks and the non-pregnant women at an equivalent interval. At each test point, the women viewed photos of models

from contemporary fashion magazines or neutral photographs (of home décor) and then rated their overall body size as well as their body width at three points (chest, waist and hips). At time one, there were no differences on ratings of body size between the pregnant and non-pregnant group when viewing the photographs of models. However, at time two, the pregnant women rated their own body size as significantly larger than the non-pregnant women and than their ratings at time one. These differences only occurred for the whole body ratings and not for the individual ratings of chest, waist and hips, suggesting that the pregnant women were not rating themselves as larger due to the baby alone, as the most drastic actual change for the pregnant women was a larger waist and larger hips. This study suggests that pregnant women continue to experience pressure to be thin and are aware of their deviation from the ideal.

In addition, in the previously described qualitative study of pregnant women, Johnson et al. (2004) found that women talked about pressure for thinness from the media as well as from their husbands, and about the expectation that they return to their prepregnancy figure immediately. For example, one woman indicated that she worried about embarrassing her husband at social functions for his office, as she would be “a big fat cow” (p370). Another woman said “she recognized the pressure to ‘get back to normal’ after pregnancy from media images of women such as ‘Posh Spice,’ who had returned to a ‘virtually anorexic’ shape after the birth of her first child” (p370). These reports also imply that there is a continuing pressure for thinness during and after pregnancy.

In recent years, there has been a new focus on the transition to parenthood in the popular media, with increasing attention to celebrities’ “bumps” and their immediate

return to their prepregnancy weight and shape. In addition, in a focus group run while developing the current study, new mothers indicated feeling pressure for thinness from others. They added that with pregnancy, and even after giving birth, people felt allowed to comment constantly on their bodies. These reports suggest that pressure for thinness might not only be important for new mothers, but might even take a more overt form, in that others feel free to comment explicitly on pregnant and postpartum women's eating and body shape. Thus, pressure for thinness is an important social factor to include when exploring body image in new mothers.

Social Support. In addition to social factors specifically related to body image and thinness, one's relationships and sense of being supported may also play a role in body satisfaction. For example, if a woman feels supported by others and valued as a person, she may put less emphasis on her body and experience less internal and external pressure for thinness. In general, social support makes an individual feel cared for, loved, esteemed, and that he or she is a member of a network. Literature has shown social support to help with a variety of life stressors. In a broad review of the social support literature, Cobb (1976) showed social support to protect against complications in pregnancy, ease psychological reactions in children getting tonsillectomies, lessen the occurrence of heart disease, lower the need for steroid use in asthmatics, help in drinking cessation, buffer against depression after severe events and decrease depression in a senior (greater than 63 years of age) population. Given the wonderful effects of social support, it is an important variable to consider when studying eating disorders.

Two studies have examined the differences in perceived social support and support networks in women diagnosed with eating disorders versus those in non-eating

disordered control groups. Grisset and Norvell (1992) surveyed 600 undergraduate women using a bulimia screening device. From this group, they found 21 who met the DSM-III criteria for bulimia and 21 women who did not have an eating disorder, but who matched the eating disordered group on height and weight. Women in both groups were also interviewed to ensure the presence or absence of eating disorder symptoms. The authors found that the women with eating disorders reported less perceived support from friends and family, more negative interactions and conflict with others, and less social competence. This study suggests that not only do women with eating disorders perceive less support, but they also experience more negative interactions with others. Unfortunately, the sample size was very small and they did not mention controlling for whether the diagnosed group had been treated or were currently in treatment.

A second study looking at social support in a clinical population found similar results in a larger sample of women drawn from an outpatient hospital program (Tiller, Sloane & Schmidt, 1997). This study recruited 44 patients being treated for anorexia and 81 patients being treated for bulimia. In addition, they recruited a comparison group of 86 women without eating disorders from a local university. All of the women completed a measure of social support in which they rated their mother, father, spouse, closest sibling, best friend and one other friend on a variety of dimensions reflecting emotional and tangible social support. In addition, participants filled out the same rating form reflecting their ideal levels of support. The discrepancy between actual and ideal levels was used to represent their satisfaction with their social support. If participants indicated that they did not have a person filling one of the roles, they were not included for analyses regarding that role.

Their general findings were that the anorexic and bulimic groups did not differ from each other in their perception of actual support but both groups scored significantly lower than the comparison group. When looking at specific support figures, both patient groups perceived lower levels of emotional support from friends than women in the control group. Women in the bulimic group also reported lower levels of tangible support from parents, partners and siblings than the comparison group. A similar general pattern emerged when looking at ideal support: both the bulimic and anorexic groups reported lower ideal levels of support than the control group. Women in the anorexic group also reported lower levels of ideal support from their partners than the bulimic and comparison groups. Finally, the bulimic group, but not the anorexic group, was significantly higher in their dissatisfaction with their social support than the comparison group. This study looks in more detail at the support networks of anorexic and bulimic women and suggests that they do vary in both perceived and even in ideal levels of support. Yet, one might wonder whether these differences in social support still appear when looking at women who might not meet the criteria for an eating disorder diagnosis, but who still exhibit body dissatisfaction or disordered eating.

Two studies have looked at social support networks in non-clinical populations, and the relationship of support with eating disorder symptoms. Hirsch (1999) surveyed 196 college women about their eating attitudes and behaviors, their perceived social support and their level of self-differentiation. She found that women with healthier eating attitudes tended to view themselves as more socially supported, interpersonally connected to others and psychologically differentiated from others. Her study suggests that healthy

interpersonal patterns and social support correlate with healthier eating habits and attitudes.

In the previously described model building study by Tylka and Subich (2004), the authors found that perceived support from friends and family were an important part of the model. They found that both types of support predicted negative affect (which in turn predicted body dissatisfaction) and friend support directly predicted eating disorder symptomatology. Given the important role of social support in general health and the correlations of social support with body image related variables reported thus far in the literature, social support can be viewed as a potential important variable in the development or maintenance of eating disorders.

Once again, the previous literature has focused on young women rather than new mothers. However, in the case of social support, a significant amount of research has shown social support to correlate with positive outcomes in the transition to parenthood, such as life and parenting satisfaction (Cronic, et. al. 1983), and with lowered depressive symptoms (Howell, Mora & Leventhal, 2006) and lower levels of stress (Paykel, Emms & Fletcher, 1980). In addition, previous research has shown various sources of support to be important to postpartum adjustment including spousal support (Teitjen & Bradley, 1985), friend support (Paykel, et. al., 1980), family support (Terry, 1991) and even community support (Cronic, et. al. 1983). Yet, it is unclear how important social support will be for new mothers in terms of their body image. Once again, there are a few studies that suggest its importance.

Walker (1997) surveyed 149 postpartum women regarding their level of “postpartum support,” (the level of emotional and instrumental support they received

with regards to child care or being a mother) and their postpartum BMI and weight change. She found that higher levels of postpartum social support were not related to higher postpartum BMI, but were related to more postpartum weight change. Walker's (1997) study suggests that social support and postpartum weight change are related in some way.

Jordan, Capdevila and Johnson's (2005) qualitative study of new motherhood has similar implications. In their study, the authors interviewed 20 women who had had their first child during the past three years. Using a Q sort method, participants were given a stack of 60 cards with statements regarding mothering. These statements were collected from published literature as well as the popular media and include items such as "The arrival of children has brought the family closer," "I love the way I look" and "My career is important to me." These items were a mix of positively and negatively valenced statements, and participants were asked to sort the items from most agree to most disagree on a grid with a quasi-normal distribution ranging from +6 to -6.

Analyses of the Q sorts revealed six different patterns or categories of women and three of the six categories are of importance to the current study. In the group of women labeled "stressed," mothers highly endorsed items reflecting negative feelings towards their bodies, missing their own time and freedom, and a general feeling of stress. Items reflecting support and relationships were not highly endorsed. In the group of women labeled "supportive family," women ranked items reflecting body dissatisfaction low, while items reflecting support from their husbands, their own family and their husband's family were ranked very high. Finally, women in the group labeled "mother/child oriented" did not assign importance to items related to body image and assigned high

importance to their children and their own family, but not to their husbands or husbands' family. These three groups paint a picture of new motherhood, in which social support from various sources are important in battling negative body image. While this study does not specifically seek to explore that relationship, it has implications for it nonetheless. The literature on the role of social support and body image has been limited, both for women in general and for postpartum women, although the literature that does exist suggests that social support plays a role in body satisfaction. Given the importance of social support to general postpartum adjustment, social support is an additional important variable to examine in postpartum women.

Body Image and Depression

Individuals suffering from eating disorders also often suffer from depression symptoms, either from a comorbid illness, or as secondary symptoms as a result of malnutrition (Devlin & Walsh, 1989). Given the changes to serotonin levels, a hormone related to depression, that occur during pregnancy (Glasser, et. al., 1990), it seems that women suffering from eating disorders postpartum might also suffer from postpartum depression. As postpartum depression occurs for approximately 12% of women, and can impact the health of mother and child (CDC, 2000), postpartum depression is also an important outcome variable to explore for new mothers.

Some research has shown a relationship of biological changes in postpartum body image and in postpartum depressive symptoms. For example, Walker (1997) found that postpartum BMI and weight gain correlate with depressive symptoms with a large effect size. In addition, another study demonstrated that body image was a significant predictor

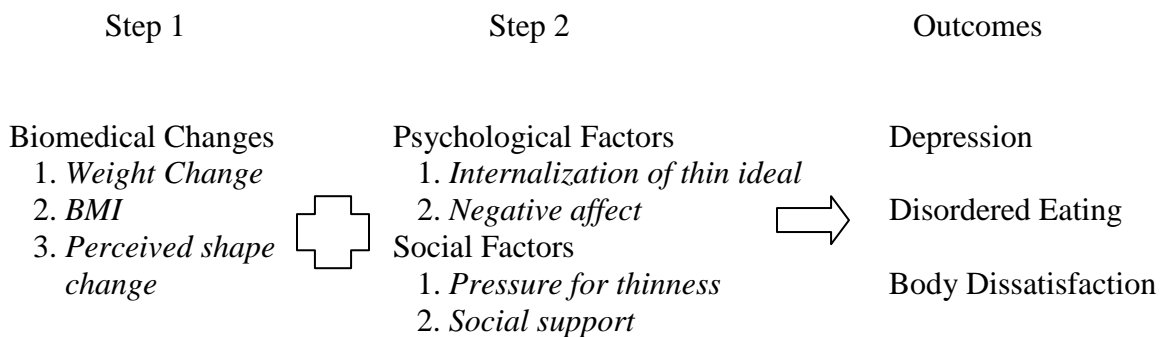
of depression controlling for ethnicity, marital status and income level in new mothers (Walker, et. al., 2002). These studies suggest that eating disorders, body image and depression may be related in postpartum women, just as they are in the general population. Thus, this study also looked at the predictive role of biomedical, psychosocial factors for postpartum depression.

Summary of Issues and Significance

Women undergo a great deal of physical change with the birth of their first child, including changes in their weight and shape. A number of studies have demonstrated that women are concerned by these weight changes soon after the birth of their baby (Fishbein & Burgraff, 1997), and that these concerns continue throughout the first year of parenthood for some mothers (Hisner, 1986). Given the potential for mothers to pass body concerns on to their children, it is important to understand the factors that contribute to body image in postpartum women.

Thus far, research has demonstrated the clear role of biological factors, such as postpartum BMI and gestational weight gain (Walker, 1997) with body image concerns. However, no research has looked at the potential psychological and social predictors. Meanwhile, the eating disorders literature has advanced a great deal in recent years and has provided some strong predictors of eating disorder symptoms in young women. While it is not known if these variables will function in the same way for postpartum women, there are some small quantitative studies and anecdotal evidence to suggest their importance for new mothers.

Thus, the purpose of this study was to synthesize the eating disorder literature and the literature on postpartum body image. In doing so, this study tested the predictive power of biomedical and psychosocial factors for body dissatisfaction, disordered eating behaviors and postpartum depression according to the biopsychosocial model. Specifically, it was hypothesized that biomedical variables (postpartum BMI, weight change, and shape change), psychological variables (internalization of the thin ideal and negative affect) and social variables (pressure for thinness and social support) would predict body dissatisfaction, disordered eating behaviors and postpartum depression. In addition, it was hypothesized that that psychological and social factors would account for additional variance in body dissatisfaction, disordered eating and depression, above and beyond variance accounted for by the biomedical factors. These hypotheses are visually depicted below:



Chapter 3

Statement of the problem

Over 4 million babies are born each year in the United States (CDC, 2004).

Women who give birth face a large variety of biological changes and new demands on themselves and their relationships. In part because of these changes, approximately 12% of new mothers will develop postpartum depression, which can in turn affect the health of their child (CDC, 2000). Women also often gain 2.2 pounds with each child (IOM, 1990). In a culture that values thinness and an immediate return to prepregnancy weight, shape, and functioning, this change can have major effects on a new mother's psyche, and as many as 7% of new mothers develop EDNOS after having their child (Stein & Fairburn, 1996).

Although previous research has shown that postpartum women report weight and shape concerns (i.e. Walker, 1998), as well as a relationship between weight retained and depression (Walker, 1997), no study has included psychological or social factors when looking at the body image of new mothers. Yet research examining models of eating disorders in college women, adolescents and young adults has shown the predictive power of both social influences, such as social support and pressure for thinness, and of psychological factors, such as negative affect and internalization of the thin ideal (e.g. Tylka & Subich, 2004). In addition, research examining the transition to parenthood has explored the importance of social and psychological factors as well (e.g. Crinic et. al. 1983; Howell et. al., 2006). However, there are also clear biological changes involved during this unique phase in a woman's life. Thus, a biopsychosocial framework appears to be a good fit for exploring body image in postpartum women.

The purpose of the current study was to investigate the biopsychosocial predictors of body satisfaction and disordered eating behaviors in new mothers during the first year of parenting. In addition, I will explore the relationship of these body variables with postpartum depression. This study is unique in a) its use of the biopsychosocial frame, and b) its synthesis of the postpartum depression and body image literature. Gaining an understanding of the relationship of these variables may help clinicians in making interventions with postpartum women.

Hypotheses

Hypotheses 1: Postpartum body dissatisfaction will correlate with biomedical and psychosocial variables. Specifically;

Hypothesis 1a. Postpartum body satisfaction will negatively correlate with postpartum weight retention.

Hypothesis 1b. Postpartum body satisfaction will negatively correlate with postpartum BMI.

Hypothesis 1c. Postpartum body satisfaction will negatively correlate with perceived shape change

Hypothesis 1d. Postpartum body satisfaction will negatively correlate with internalization of the thin ideal

Hypothesis 1e. Postpartum body satisfaction will negatively correlate with negative affect.

Hypothesis 1f. Postpartum body satisfaction will negatively correlate with pressure for thinness.

Hypothesis 1g. Postpartum body satisfaction will positively correlate with social support.

Hypotheses 2: Postpartum disordered eating will correlate with biomedical and psychosocial variables. Specifically,

Hypothesis 2a. Postpartum disordered eating will positively correlate with postpartum weight retention.

Hypothesis 2b. Postpartum disordered eating will positively correlate with postpartum BMI.

Hypothesis 2c. Postpartum disordered eating will positively correlate with perceived shape change

Hypothesis 2d. Postpartum disordered eating will positively correlate with internalization of the thin ideal

Hypothesis 2e. Postpartum disordered eating will positively correlate with negative affect.

Hypothesis 2f. Postpartum disordered eating will positively correlate with pressure for thinness.

Hypothesis 2g. Postpartum disordered eating will negatively correlate with social support.

Previous research has found that body dissatisfaction and eating disorder symptoms correlate with postpartum BMI and postpartum weight gain (Walker, 1997), psychological factors, including internalization of the thin ideal and negative affectivity, and social factors, such as pressure for thinness and social support (e.g. Tylka & Subich, 2004). It was hypothesized that this study would replicate these findings.

Hypothesis 3: Psychological and social variables will predict additional variance in body dissatisfaction of postpartum women, above and beyond that predicted by the biomedical variables.

Hypothesis 4: Psychological and social variables will predict additional variance in disordered eating among postpartum women, above and beyond that predicted by the biomedical variables.

Previous research has shown that biomedical factors, such as weight retention, predict body image in postpartum women (e.g. Walker, 1997). In addition, psychosocial variables have been shown to predict body dissatisfaction and eating disorders in adolescent women (e.g. Stice & Agras, 1998). It was hypothesized that psychosocial variables would also predict body dissatisfaction and disordered eating in postpartum women, beyond the predictive contribution of the biomedical variables. As indicated, follow up mediation analyses were run to help determine ways in which these variables interacted.

Research Questions

Question 1a. How many mothers report that weight/shape/appearance has been a concern in the past month?

Question 1b. How many mothers report that weight/shape/appearance has been their most important concern in the past month?

As previous research has demonstrated that as many as 75% of women report feeling concerned with their appearance after birth (e.g. Hisner, 1986), this study also looked at how many mothers reported appearance as a concern. It also explored how

many reported appearance as their primary concern, among other possible concerns for new mothers.

Question 2a. Do body satisfaction and disordered eating correlate with postpartum depression?

Question 2b. To what extent do the biomedical and psychosocial variables predict depression in postpartum women?

As one previous study has demonstrated correlations of body image and depression in lower socioeconomic status women (Walker, et. al., 2002), this study explored more specifically whether postpartum depression correlates with body satisfaction and disordered eating. It was also of interest to explore the potential predictive power of the biomedical and psychosocial factors on depression in postpartum women.

Questions 3-6: How will participants respond to the following open-ended questions:

Question 3. How did you feel about your body before your pregnancy?

Question 4. How did you feel about your body during your pregnancy?

Question 5. How do you feel about your body now?

Question 6. What types of comments have you received from people you know (i.e. your spouse, friends or family) about your body or how you look since giving birth?

As there has been very little research exploring the role of psychosocial variables in postpartum body image, and there are few measures found in the literature, this study included the aforementioned open-ended questions. These questions allowed participants to voice the factors involved in their body image through their own words and provided researchers with a more nuanced understanding of postpartum body image.

Chapter 4

Method

Design

This study collected data from first time mothers during the baby's first year of life. The overall research design was a correlational field study.

Participants

One hundred and ninety two adult (at least 18 years of age) partnered women who had become mothers within the past year completed the survey and fit the participation criteria. An a priori power analysis indicated that a minimum of 85 participants were needed for the regression to detect a medium effect size for the semi-partial correlations (important in moderation analyses) based on an alpha of .05 and power of .80. However, as this study involved multiple analyses, the author aimed for a larger sample size of approximately 170 people. Women who had had their first child during the past year were eligible as previous research has shown that women are at the greatest risk for decreases in overall well being during the first year of parenthood (Cox et al., 1999a; Cowan et al., 1985) and first time mothers are at a greater risk for body dissatisfaction (Strang & Sullivan, 1985). Of the women who completed the survey, six were excluded from analyses as they indicated they had given birth at least one time previously.

The participants ranged in age from 20 to 41, with a mean of 30.47 years old (SD=3.82), represented at least eight different ethnicities, and had been in their current relationship for an average of 6.9 years (SD=3.12). The majority had completed college or graduate school; 37.4% had completed college and an additional 35.1% had completed graduate school. Only 7.7% reported that their highest level of education completed was high school. However, their socioeconomic status (as indicated by annual income)

represented a range of classes. In addition, 33.3% of the sample was currently working full time, 17.6% were working part time, 5.9% indicated that they were students and 23.0% were not employed. For a more comprehensive picture of the mothers' demographic information, see Table 1.

The average age of the babies was 6.63 months ($SD=3.57$); 49.7% were male and 50.3% were female. In addition, 79.1% of the pregnancies were planned and of 7.9% of the women had received fertility treatments (of those who chose to answer these questions). Finally, of 63.3% reported that they were currently breastfeeding their child, and of those who were not currently breastfeeding, 71% indicated that they had previously.

Participants were recruited through online forums (message boards, chatrooms, etc.) such as www.babycenter.com and www.craigslist.org (for a complete list of websites where the advertisement was posted, see Appendix A), through faculty, staff and graduate student emails at the researcher's university, and through the snowball sampling technique (Monge & Contractor, 1988). Snowball sampling is a technique in which participants are obtained through an email chain of referrals. Essentially, an email is sent to the researcher's network (including friends, families, colleagues and listserves), with the request that the email be passed along to additional eligible participants. (See Appendix B for the recruitment email/posting.)

Table 1. Demographic Characteristics of Participants		
<i>Race/Ethnicity</i>	<i>N</i>	<i>Percentage*</i>
African American/Black	12	5.4%
Asian American/Pacific Islander	5	2.3%
White/European American	146	65.8%
Hispanic/Latino(a)	3	1.4%
Middle Eastern/Arab	2	0.9%
Native American/Native Alaskan	3	1.4%
Multiracial	3	1.4%
Other	4	1.8%
<i>Highest Level of Education Completed</i>		
<i>Highest Level of Education Completed</i>	<i>N</i>	<i>Percentage*</i>
Grade School	1	0.5%
High School	17	7.7%
College	83	37.4%
Graduate School	78	35.1%
<i>Annual Income</i>		
<i>Annual Income</i>	<i>N</i>	<i>Percentage*</i>
Less than 30,000	5	2.3%
30,000-59,999	41	18.5%
60,000-99,999	51	23.0%
100,000-149,000	44	19.8%
150,000 or greater	36	16.2%
<i>Current Employment Status</i>		
<i>Current Employment Status</i>	<i>N</i>	<i>Percentage*</i>
Not Employed	51	23.0%
Part time	39	17.6%
Full time	74	33.3%
Student	13	5.9%
<i>Pre-pregnancy Employment Status</i>		
<i>Pre-pregnancy Employment Status</i>	<i>N</i>	<i>Percentage*</i>
Not Employed	6	2.7%
Part time	18	8.1%
Full time	142	64.0%
Student	13	5.9%

* Percentages do not necessarily add up to 100%, as not all participants answered all demographic questions

Response Rate. Because participants were recruited via website message boards and snowball emails, it is not possible to know exactly how many people received or saw

the invitation to participate in this study. The website only tracked the number of participants who viewed the informed consent page and chose to continue participating. A total of 222 participants began the survey, and only 198 women completed the survey, an 89% completion rate. This population had unique possible reasons for not being able to complete their survey. Participants were new mothers; thus they may have been caring for the baby while completing the survey. It is possible that some women may have been unable to complete the survey because they had to give attention to their child.

Measures

Demographics. An experimenter designed demographic scale was included. Questions addressed the participants' age, race, occupation, and education. In addition, it posed questions regarding the participant's child such as "Was the child planned?" and any previous diagnoses of depression, anxiety and eating disorders. (See Appendix C.)

Biomedical Factors

Participants answered questions regarding their current weight and height so that a current BMI could be calculated. In addition, they were asked their prepregnancy weight so that a change in weight could be calculated. Finally, they were asked to rate the extent of change to the shape of their bodies, using a likert-type scale of 1 (not at all) to 7 (a great deal) to assess perceived shape change. No measures currently exist to measure perceived changes to shape, yet it is possible that a participant returned to her prepregnancy weight, while feeling that her shape is different. A new mother may feel body dissatisfaction due to these shape changes, in the absence of any lasting weight changes. (See Appendix D.)

Psychological Factors

Internalization of the Thin Ideal. The General Internalization subscale of the Sociocultural Attitudes Towards Appearance Scale-3 (SATQ-3; Thompson, et. al. 2004) was used. This subscale consists of nine items regarding the internalization of different societal beauty ideals. A sample item is “I would like my body to look like people who are on TV.” Participants rated each item on a 5-point likert-type scale (completely disagree to completely agree). Total scores ranged from 8 to 40, with higher scores indicating greater internalization of the thin ideal as the ideal for their own body. The scale was normed on a sample of 175 undergraduate females, who ranged in age from 17-25, although the sample has also been shown as reliable and valid in a sample of adult women as well (Madanat, Hawks, & Brown, 2006). Validity has been demonstrated through correlations with the drive for thinness ($r = .57, p < .01$) and body dissatisfaction ($r = .40, p < .01$) subscales of the eating disorders inventory (Thompson, et. al. 2004). Test-retest data has not been reported. Cronbach’s alpha for the current sample was .96. (See Appendix E.)

Negative Affect. The negative affect subscale of the Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988) was used to measure trait affectivity. The negative affect subscale consists of ten feeling words such as “upset” or “afraid.” Participants rate the frequency with which they have felt these emotions on a 5-point likert-type scale (very slightly to extremely). Scores on the subscale range from 10 to 50, with higher scores indicating more frequent negative emotionality. Test-retest data indicated reliability over a 2-month period. In addition, the original authors demonstrated validity through significant correlations with the Hopkins Symptom Checklist (HSCL; r

= .75 for NA), and the Beck Depression Inventory ($r = .56$ for NA) (Watson, et. al., 1988). Cronbach's alpha for the current sample was .88 (NA). (See Appendix F.)

Social Factors

Pressure for Thinness. A modified version of the Perceived Sociocultural Pressure Scale (PSPS; Stice, et. al., 1996) was used to measure general pressure for thinness. This scale consists of 8 items to measure women's perceived messages about weight from others. A sample item is "I've felt pressure from my family to lose weight." The items are rated on a 7-point likert-type scale (none to a lot). Scores range from 8 to 40, with higher scores indicating greater perceived pressure for thinness. The modification was made to items five and six. These items originally ask about pressure from "people I've dated" and were changed to ask about the woman's significant other. Test-retest reliability was high ($r = .93$) over a two week period (Stice, et. al., 1996). In addition, this scale shows strong validity through correlations with "other" reports: inter-indicator correlations ranged from .50-.67 (Stice, et. al., 1996). This measure was normed on a sample of 218 high-school females and has not been validated on an adult sample. However, the measure has been used in a sample of adolescent and young adult women, with an average age of 23.3 years ($SD = 7.36$) (Tylka & Subich, 2004). Cronbach's alpha for the current sample was .82. (See Appendix G.)

Social Support. This study will use The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) to measure the perceived adequacy of support from family, friends, and significant others. It has 12 items with a 7-point likert-type scale (agree-disagree). An example item is "I can count on my friends when things go wrong". The original scale was developed on undergraduate students, who had an

overall mean of 5.80 (SD= 0.86). Validity was established through correlations with both depression and anxiety. The scale showed a significant correlation with the depression subscale of the HSCL ($r=-.25$, $p< .01$). In addition, the family subscale was significantly correlated with the anxiety subscale of the HSCL ($r=-.18$, $p< .01$). Test-retest reliability after a two to three month interval was also strong. For the overall scale the score was .85, for the significant other subscale it was .72, for the family subscale it was .85, and for the friends subscale it was .75. The scale demonstrated good reliability in the current sample with an overall Cronbach's alpha of .94. (See Appendix H.)

Outcome Variables

Body Satisfaction. The Body Shape Questionnaire-Revised-10 (BSQ-R-10; Mazzeo, 1999) was used to measure body satisfaction. This is a 10-item measure, in which participants answered questions regarding their feelings towards their body shape. A sample item is "Have you found yourself brooding about your shape?" Each item is rated on a 6-point likert-type scale (1=never, 6=always). Scores ranged from 10 to 60, with higher scores indicating greater body dissatisfaction. The authors reported a Cronbach's alpha of .96, demonstrating strong internal consistency. The scale shows strong validity through significant correlations with the Eating Attitudes test ($r = .74$), the Bulimia Test ($r = .77$), the Multidimensional Body-Self Relations Appearance Evaluation Subscale ($r = -.72$), and the weight concern subscale of the Body Esteem Scale ($r = -.78$). This measure was normed on an undergraduate sample with an average age of 19.5 years (SD=1.31), and has not been used in postpartum women to date. However, this measure was used in a sample of adolescent and young adult women, with an average age of 23.3

years ($SD = 7.36$) (Tylka & Subich, 2004). Cronbach's alpha for the current sample was .97. (See Appendix I.)

Eating Disorder Behaviors. The abbreviated Eating Attitudes Test (EAT-26; Garner et. al., 1982) was used to measure eating disorder behaviors. This measure contains 26 items that ask participants the frequency with which they engage in particular behaviors. These behaviors fall into three subscales: dieting (i.e. "... avoid foods with sugar in them?"), bulimia and food preoccupation (i.e. "...vomit after I have eaten?") and oral control (i.e. "avoid eating when I am hungry"). In scoring, the authors recommend that responses of "never," "rarely" and "sometimes" all receive a score of 0, while "often" is assigned to 1, "very often" to 2, and "always" to 3 in order to diagnose eating disorders. They suggested that only the 3 most frequent responses represent clinical levels of pathology. However, this study treated the scores as a continuous variable, as it was expected that the number of participants who would reach the cutoff for a diagnosed eating disorder would be small, thus creating a highly skewed distribution. This scoring procedure has been used in a number of studies looking at body image in non-clinical populations with success (e.g. Tylka & Subich, 2004). Garner et. al. (1982) demonstrate strong reliability for the EAT-26 through significant correlations with body-size estimates ($r = .42$), ideal body size estimates ($r = -.38$), body dissatisfaction ($r = .44$) and the HSCL ($r = .42$). Cronbach's alpha for the current sample was .90. (See Appendix J.)

Postpartum depression. The Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) was used to measure depression in the current sample. The scale consists of 10 items on a 4-point scale; the written labels of each point are different for each question. The total ranges from 4 to 40, with higher scores indicating more

depression. A sample item is “I have felt scared or panicky for no good reason.” This scale was developed on 84 mothers, 3 months after giving birth, with a mean age of 26. The split-half reliability of the scale was .88. The authors demonstrated validity in two ways. To begin, they compared postpartum depression diagnoses on their scale with diagnoses by clinicians using the Research Diagnostic Criteria (RDC). They found that there was 86% agreement of those who were depressed and 78% agreement on those who were not. They then completed 11-week follow up interviews, and found that women who were diagnosed with depression according to the RDC at time one and not at time two, showed significant differences on their EPDS scores, while women who remained depressed according to the RDC did not show a significant difference in the EPDS scores. In addition, a recent study reviewed eight measures commonly used for postpartum depression (including the BDI) and found the EPDS to be the best available (Boyd, Le & Somberg, 2005). Cronbach’s alpha for the current sample was .82. (See Appendix K.)

Additional Questions. As little research has previously addressed the psychosocial aspects of body image in new mothers, a number of open-ended questions were included to allow participants to elaborate on their experience of their bodies before pregnancy, during pregnancy and after giving birth. The first question “Please describe your body” is a “warm-up” question to stimulate thought, and was not coded. In addition, new mothers were asked about their concerns during the past month. The list of potential concerns was drawn from previous research on new mothers’ typical concerns during the first year (Fishbein & Burgraff, 1997). (See Appendix L.)

Procedure

Participants were recruited through online forums (i.e. parenting.com, epregnancy.com, babycenter.com, thenestbaby.com) as well as through snowballing emails. The posting and email explained that there was an online study of body image and satisfaction during the first year of motherhood, in which they could participate if their first (and only) child was under one year of age and if they were currently living with their partner. This announcement also included the web address of the study (<https://www.psychdata.com/s.asp?SID=123527>). Interested participants could click on the link, which directed them to the informed consent page of the survey.

Once at the website, participants read an informed consent page and clicked “agree” to indicate their agreement. Those who agreed were randomly assigned to one of two survey orders, each containing measures of body satisfaction (BSQ-R-10; Mazzeo, 1999), eating attitudes (EAT-26; Garner, et. al., 1982), postpartum depression (EPDS; Cox, et. al., 1987) social support (MSPSS; Zimet et al., 1988), internalization of the thin ideal (SATQ-3 internalization subscale), positive and negative affect (PANAS-NA; Watson, Clark & Tellegen, 1988), pressure for thinness (PSPS; Stice & Agras, 1998 and SATQ), open-ended questions, and the demographic questionnaire. After completing the survey, participants viewed a debriefing form (Appendix M) with further information about the study, resources if they had more questions or wanted to seek counseling, and were asked to refer other eligible individuals to the website for participation. In addition, participants were provided with an email address to enter them in a drawing for a \$50 gift certificate to www.spafinder.com, as an incentive for participation, which was awarded after the study was completed.

Chapter 5

Results

This chapter is divided into preliminary analyses, analysis of hypotheses and research questions, and additional analyses.

Preliminary Analyses

Descriptive data for this sample were presented in the previous chapter (See Table 1). See Table 2 for means, standard deviations, and internal consistency values for each of the measures administered. All measures had adequate internal consistency ($\alpha > .82$). In addition, bivariate correlations were calculated to examine the relationship between these variables of interest as well as their relationship with the demographic variables such as age, length of relationship, baby's age and health of the pregnancy and the baby. Because of the large number of correlations that were conducted, a more strict alpha ($p > .01$) was used to control for familywise error. See Table 3 for these correlations. The only correlation between demographic variables and the outcome variables were between current breastfeeding status and body satisfaction and disordered eating.

Analysis of Hypotheses and Research Questions

Hypotheses 1: Postpartum body satisfaction will correlate with biomedical and psychosocial variables. Specifically;

Hypothesis 1a. Postpartum body satisfaction will negatively correlate with postpartum weight retention.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and postpartum weight retention was -0.41 ($p < .01$), a medium effect.

Table 2: Means, Standard Deviations, and Internal Consistencies for Measures Used

<i>Measure</i>	<i>Possible Range</i>	<i>Sample Range</i>	<i>Scoring</i>	<i>Mean</i>	<i>SD</i>	<i>Alpha</i>
Body Satisfaction (BSQ-R-10)	10-60	10-60	Likert range 1-6 (higher = more satisfaction)	36.13	13.64	0.97
Eating Attitudes Test (EAT-26)	26-156	82-149	Likert range 1-6 (lower = more disordered eating)	123.28	17.93	0.90
Edinburgh Postnatal Depression Scale (EPDS)	10-40	10-30	Unique answers. Range 1-4 (higher = more depression)	18.37	4.50	0.82
Internalization of the Thin Ideal (SATQ-3-I)	9-45	9-45	Likert range 1-5 (higher = more internalization)	27.18	10.32	0.96
Negative Affect (PANAS-NA)	10-50	10-42	Likert range 1-5 (higher = more negative affect)	21.84	7.50	0.88
Positive Affect (PANAS-PA)	10-50	13-50	Likert range 1-5 (higher = more positive affect)	32.46	7.91	0.90
Pressure for Thinness (PSPS)	8-40	8-36	Likert range 1-5 (higher = more perceived pressure)	15.17	5.79	0.82
Multi-Dimensional Scale of Perceived Social Support (MSPSS)	12-84	12-84	Likert range 1-7 (higher=less social support) ¹	25.75	12.70	0.94
Perceived Shape Change (Single Item)	1-7	1-7	Likert range 1-7 (higher = greater perceived change)	3.67	1.52	NA
Body Mass Index (BMI)	NA	17.58-44.81	NA	25.68	5.18	NA
Postpartum Weight Retention (Current weight-Prepregnancy weight)	NA	-25lbs - 52lbs	NA	6.10	12.61	NA

¹ For ease in understanding the data, this scale has been reversed in all analyses so that higher scores mean more perceived social support

Table 3: Two-Tailed Bivariate Correlations of Measures and Demographic Variables

	BSQ-R-10	EAT-26	EPDS	Shape	BMI	Weight	PANAS-NA	SATQ-3-I	MSPSS	PSPS	M.Age	Race	Ed.	Emp	Income	Length	S.O.	B.Age	Sex	Plan	Fert.	BF	
BSQ-R-10	1.00																						
EAT-26	0.79	1.00																					
EPDS	-0.34	-0.37	1.00																				
Shape	-0.48	-0.36	0.13	1.00																			
BMI	-0.38	-0.29	0.11	0.24	1.00																		
Weight	-0.41	-0.27	0.13	0.47	0.20	1.00																	
PANAS-NA	-0.33	-0.41	0.70	<i>0.16</i>	0.14	0.10	1.00																
SATQ-3-I	-0.46	-0.52	0.28	0.24	0.00	<i>0.18</i>	0.24	1.00															
MSPSS	-0.06	-0.12	0.21	0.12	0.02	-0.01	<i>0.18</i>	0.01	1.00														
PSPS	-0.50	-0.54	0.26	<i>0.21</i>	0.14	0.13	0.22	0.45	0.14	1.00													
M.Age	0.08	0.08	-0.10	-0.01	-0.03	-0.08	-0.09	-0.12	0.01	0.06	1.00												
Race	-0.15	-0.19	0.01	-0.01	-0.02	-0.09	-0.02	<i>0.20</i>	-0.02	<i>0.19</i>	0.15	1.00											
Ed.	0.14	0.11	-0.06	-0.04	-0.33	0.01	0.00	-0.05	-0.22	-0.02	0.14	-0.03	1.00										
Emp.	0.03	-0.04	0.09	0.06	-0.12	-0.03	0.11	-0.02	0.02	-0.03	-0.14	-0.14	<i>0.16</i>	1.00									
Income	-0.01	0.06	-0.09	0.01	-0.11	-0.05	-0.04	0.04	-0.13	-0.02	0.35	<i>0.18</i>	0.22	-0.10	1.00								
Length	0.01	0.03	-0.07	0.00	0.04	-0.12	-0.07	-0.01	<i>-0.18</i>	0.05	0.31	0.23	0.10	-0.15	0.22	1.00							
S.O.	0.06	0.13	-0.06	0.00	-0.15	-0.04	0.11	-0.01	-0.11	-0.13	-0.05	-0.06	0.06	0.03	0.11	0.04	1.00						
B.Age	-0.07	-0.09	0.11	-0.04	-0.07	-0.13	-0.01	0.03	-0.03	0.05	0.11	0.03	-0.04	-0.01	0.11	<i>0.17</i>	-0.04	1.00					
Sex	0.01	0.02	-0.02	0.04	-0.08	-0.05	0.00	0.01	0.03	-0.10	0.05	0.03	0.06	-0.02	0.01	0.05	0.06	0.05	1.00				
Plan	-0.06	-0.09	0.12	0.06	0.09	0.06	0.13	-0.02	0.09	-0.06	-0.25	<i>-0.20</i>	<i>-0.21</i>	0.04	-0.27	<i>-0.17</i>	-0.01	0.05	0.09	1.00			
Fert.	0.02	-0.03	-0.15	-0.02	-0.01	-0.16	-0.09	0.06	0.09	0.04	-0.10	-0.04	-0.08	0.02	-0.05	<i>-0.20</i>	-0.06	-0.04	0.00	0.15	1.00		
BF	-0.27	-0.29	0.13	<i>0.19</i>	<i>0.16</i>	0.09	0.11	0.14	<i>0.15</i>	0.07	0.03	0.03	-0.09	<i>0.16</i>	<i>0.19</i>	0.07	-0.02	0.34	0.05	0.10	0.01	1.00	
BF.Prev.	-0.09	-0.06	-0.08	<i>0.18</i>	0.14	-0.04	0.03	0.01	0.12	-0.03	0.14	-0.03	-0.08	0.00	0.14	0.13	-0.03	0.03	0.02	-0.01	0.01	0.40	

Key to Abbreviations in Table 3: BSQ-R-10 (Body Satisfaction); EAT-26 (Disordered Eating); EPDS (Postpartum Depression); Shape (Perceived Shape Change); BMI (Postpartum BMI, formula=(lbs*703)/(inches²)); Weight (Weight change); PANAS-NA (Negative Affect); SATQ-3-I (Internalization of the Thin Ideal); MSPSS (Social Support); PSPS (Pressure for Thinness); M.Age (Mother's Age in years); Ed (Level of Education); Length (Length of Relationship); S.O (Sexual Orientation); B.Age (Baby's age in months); Sex (Sex of Baby, 1 is Male, 2 is Female); Plan (Was the pregnancy planned, 1 is yes, 2 is no); Fert. (Did you receive infertility treatments, 1 is yes, 2 is no); BF (Are you currently breastfeeding, 1 is yes, 2 is no); BF.Prev (Did you previously breastfeed, 1 is yes, 2 is no). Correlations significant at p<.01 are shown in **bold**. Correlations significant at p<.05 are *italicized*.

Hypothesis 1b. Postpartum body satisfaction will negatively correlate with postpartum BMI.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and postpartum BMI was -0.38 ($p < .01$), a medium effect.

Hypothesis 1c. Postpartum body satisfaction will negatively correlate with perceived shape change.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and perceived shape change was -0.48 ($p < .01$), a medium effect.

Hypothesis 1d. Postpartum body satisfaction will negatively correlate with internalization of the thin ideal.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and SATQ-3-internalization scores (Thompson et. al., 2004) was $-.46$ ($p < .01$), a medium effect.

Hypothesis 1e. Postpartum body satisfaction will negatively correlate with negative affect.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and PANAS-NA scores (Watson, et. al., 1998) was -0.33 ($p < .01$), a medium effect.

Hypothesis 1f. Postpartum body satisfaction will negatively correlate with pressure for thinness.

This hypothesis was supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and PSPS scores (Stice et. al., 1996) was -0.50 ($p < .01$), a large effect.

Hypothesis 1g. Postpartum body satisfaction will positively correlate with social support.

This hypothesis was not supported by the data. The Pearson correlation between BSQ-R-10 scores (Mazzeo, 1999) and MSPSS scores (Zimet et al., 1988) was 0.06 ($p = .44$).

Hypotheses 2: Postpartum disordered eating will positively correlate with biomedical and psychosocial variables. Specifically,

Hypothesis 2a. Postpartum disordered eating will positively correlate with postpartum weight retention.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and postpartum weight retention was -0.27 ($p < .01$), a small effect.

Hypothesis 2b. Postpartum disordered eating will positively correlate with postpartum BMI.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and postpartum BMI was -0.29 ($p < .01$), a small to medium effect.

Hypothesis 2c. Postpartum disordered eating will positively correlate with perceived shape change.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and perceived shape change was -0.36 ($p < .01$), a medium effect.

Hypothesis 2d. Postpartum disordered eating will positively correlate with internalization of the thin ideal.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and SATQ-3-internalization scores (Thompson et. al., 2004) was $-.52$ ($p < .01$), a large effect.

Hypothesis 2e. Postpartum disordered eating will positively correlate with negative affect.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and PANAS-NA scores (Watson, et. al., 1998) was -0.41 ($p < .01$), a medium effect.

Hypothesis 2f. Postpartum disordered eating will positively correlate with pressure for thinness.

This hypothesis was supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and PSPS scores (Stice et. al., 1996) was -0.54 ($p < .01$), a large effect.

Hypothesis 2g. Postpartum disordered eating will negatively correlate with social support.

This hypothesis was not supported by the data. The Pearson correlation between EAT-26 scores (Garner et. al., 1982) and MSPSS scores (Zimet et al., 1988) was 0.12 ($p = .13$).

Hypothesis 3: Psychosocial variables will predict additional variance in body dissatisfaction of postpartum women, above and beyond that predicted by the biomedical variables.

This hypothesis was supported by the data. A hierarchical linear regression on body satisfaction (BSQ-R-10; Mazzeo, 1999) was run. As breastfeeding (currently) significantly correlated with body satisfaction, it was entered in the first step to

statistically control for breastfeeding status. The biomedical variables (perceived shape change, weight change and postpartum BMI) were entered in the second step. The psychological (internalization of the thin ideal and negative affect) and social (pressure for thinness) variables that had demonstrated significant bivariate correlations were entered in the final step. All three steps were significant (see Table 4). The final step, which included all variables, controlled for 54.9% of the variance in body satisfaction. In addition, internalization of the thin ideal ($\beta = -.262$, $sr^2 = .051$, $p < .01$), pressure for thinness ($\beta = -.228$, $sr^2 = .040$, $p < .01$), weight change ($\beta = -.155$, $sr^2 = .019$, $p < .05$), postpartum BMI ($\beta = -.247$, $sr^2 = .053$, $p < .01$), perceived shape change ($\beta = -.206$, $sr^2 = .031$, $p < .01$) and currently breastfeeding ($\beta = -.123$, $sr^2 = .014$, $p < .05$) all were significant individual predictors. Negative affect did not account for additional variance above and beyond the other variables. Currently breastfeeding and weight change had a small effect size, while shape change, postpartum BMI, pressure for thinness and internalization of the thin ideal all had a small to medium effect size.

Hypothesis 4: Psychosocial variables will predict additional variance in disordered eating among postpartum women, above and beyond that predicted by the biomedical variables.

This hypothesis was supported by the data. A hierarchical linear regression on disordered eating (EAT-26; Garner et. al., 1982) was run. As breastfeeding (currently) significantly correlated with disordered eating as well, it was entered in the first step to statistically control for breastfeeding status. The biomedical variables (perceived shape change, weight change and postpartum BMI) were entered in the second step. The psychological (internalization of the thin ideal and negative affect) and social (pressure for thinness)

Table 4: Hierarchical Regression on Body Satisfaction (BSQ-10-R)						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.080	.074	.080	13.601		
Current BF					-7.87 (2.13)	-.282
Step 2	.375	.359	.295	24.271		
Current BF					-4.88 (1.82)	-.175
Shape Change					-2.50 (.63)	-.291
BMI					-.64 (.17)	-.256
Weight Change					-.22 (.08)	-.207
Step 3	.549	.528	.174	19.448		
Current BF					<i>-3.42 (1.58)</i>	<i>-.123</i>
Shape Change					-1.78 (.55)	-.206
BMI					-.62 (.15)	-.247
Weight Change					<i>-.16 (.07)</i>	<i>-.155</i>
PSPS (Pressure)					-.55 (.15)	-.228
PANAS-NA (Negative Affect)					<i>-.14 (.10)</i>	<i>-.076</i>
SATQ-3-I (Internalization)					-.34 (.08)	-.262

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

variables that had demonstrated significant bivariate correlations were entered in the final step. All three steps were significant (see Table 5). The final step, which included all variables, controlled for 50.5% of the variance in disordered eating. In addition, internalization of the thin ideal ($\beta = -.265$, $sr^2 = .052$, $p < .01$), negative affect ($\beta = -.193$, $sr^2 = .033$, $p < .01$), pressure for thinness ($\beta = -.322$, $sr^2 = .080$, $p < .01$), postpartum BMI ($\beta = -.148$, $sr^2 = .018$, $p < .01$), and currently breastfeeding ($\beta = -.149$, $sr^2 = .020$, $p < .05$) all were significant individual predictors. Weight change and shape change did not account for additional variance above and beyond the other variables. Postpartum BMI and currently breastfeeding had a small effect size, while pressure for thinness, negative affect and internalization of the thin ideal all had a small to medium effect size.

Table 5: Hierarchical Regression on Disordered Eating (EAT-26)						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.094	.088	.094	15.192		
Current BF					-11.61 (2.98)	-.307
Step 2	.211	.189	.117	7.060		
Current BF					-8.35 (2.90)	-.221
Shape Change					<i>-2.40 (1.01)</i>	<i>-.205</i>
BMI					<i>-.59 (.28)</i>	<i>-.170</i>
Weight Change					<i>-.13 (.12)</i>	<i>-.088</i>
Step 3	.505	.480	.294	27.701		
Current BF					<i>-5.63 (2.36)</i>	<i>-.149</i>
Shape Change					<i>-.76 (.83)</i>	<i>-.065</i>
BMI					<i>-.51 (.22)</i>	<i>-.148</i>
Weight Change					<i>-.01 (.10)</i>	<i>-.055</i>
PSPS (Pressure)					-1.02 (.21)	-.322
PANAS-NA (Negative Affect)					-.47 (.15)	-.193
SATQ-3-I (Internalization)					-.46 (.12)	-.265

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Follow-up Mediation Analyses

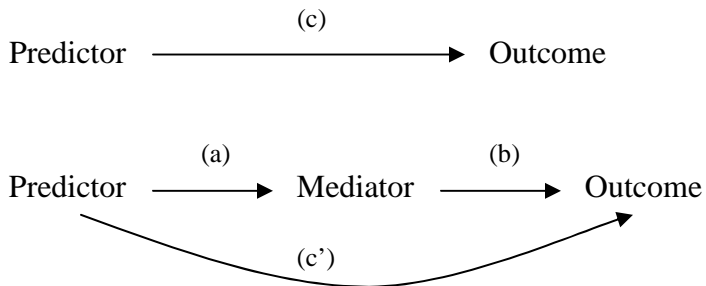
In addition to examining regressions that look at the direct effect of the biomedical and psychosocial factors (tested in hypotheses 3 and 4), it is important to examine indirect effects as well. In a special issue of *Health Psychology*, MacKinnon and Luecken (2008) emphasized the importance of understanding the underlying processes through which medical and psychosocial factors relate to health. Mediation analyses allow researchers to explore such mechanisms by identifying how or why a given factor affects an outcome. These types of analyses can be particularly important when designing interventions as the mediator can be a good variable to target (Kraemer, Kiernan, Essex, & Kupfer, 2008). In the current study, the biopsychosocial model was used to determine

which mediators would be explored. This model posits that the biomedical factors are in the outermost layer effecting health (as they are the least amenable to change), and therefore can act directly on health status, but can also act through psychosocial factors (the innermost layer), which are more amenable to intervention. For example, a woman has very little control over her shape change with pregnancy and birth, but she might be able to change the extent to which she internalizes the thin ideal.

The specific analyses tested in the current study were chosen based on significant bivariate correlations between biomedical and psychosocial variables (the potential predictor and mediator variables). Specifically, shape change (a predictor variable) correlated with internalization of the thin ideal, pressure for thinness, and negative affect (potential mediators) and weight change (another predictor variable) correlated with internalization of the thin ideal (the potential mediator). This indicated four potential mediations on both body satisfaction and disordered eating.

Following the process outlines in Frazier, Tix & Barron (2004), three regressions were run to test each mediation. In the first step, the predictor is regressed on the mediator to establish their relationship, path a (see Figure 2). In the second step, the predictor is regressed on the outcome variable to demonstrate that there is a relationship to mediate (path c). In the final step, the mediator is added to the regression of the predictor on the outcome variable. This final step provides values for the relationship of the mediator with the outcome (path b) and the mediated relationship of the predictor and outcome (path c'). A drop in the B value of the predictor from the second to the third step indicates a potential mediation, and Sobel (1982) tests are used to check the significance of this drop. See Figure 2 for a visual depiction of this process.

Figure 2: General Depiction of Mediation Pathways



The first set of regressions explored the mediation of shape change by internalization of the thin ideal. The first step, a regression of shape change on internalization of the thin ideal, was significant ($F(1,172) = 10.134, p < .01, R^2 = .056$), establishing path a. The second step, a regression, of shape change on body satisfaction was also significant ($F(1,168) = 50.116, p < .01$) (path c) and in the third step, the B value of shape change dropped from $-4.206 (p < .01)$ to $-3.388 (p < .01)$ (path c'). (See Table 6 for these regressions.) A follow up Sobel (1982) test indicated that the drop was significant ($Z = -2.937, p < .01$). See Figure 3 for a visual depiction of this process.

A similar finding emerged when disordered eating was the outcome variable. The regression of shape change on disordered eating was significant ($F(1,157) = 23.661, p < .01$) (path c), and the B value of shape change dropped from -4.332 to -2.981 when internalization of the thin ideal was added (path c'). The follow up sobel test was also significant ($z = -2.875, p < .01$). (See Table 7 for the regression analyses.) Thus, internalization of the thin ideal partially mediated the effect of shape change on body satisfaction and on disordered eating.

Table 6: Mediation of Shape Change by Internalization of the Thin Ideal on Body Satisfaction						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.230	.225	.230	50.116		
Shape Change					-4.21 (.59)	-.479
Step 2	.373	.366	.143	38.193		
Shape Change					-3.39 (.55)	-.386
SATQ-3-I (Internalization)					-.51 (.08)	-.390

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Figure 3: Shape Change Mediation (Internalization of the Thin Ideal)

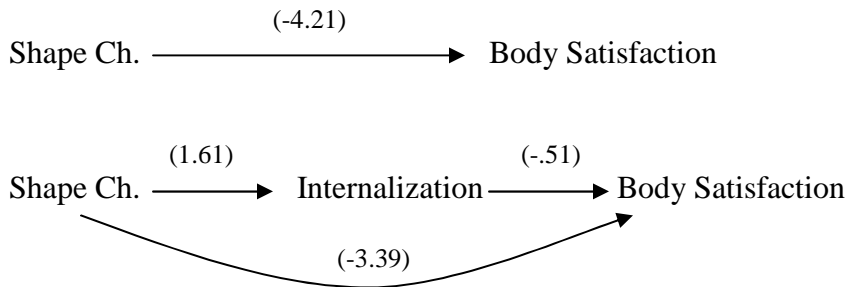


Table 7: Mediation of Shape Change by Internalization of the Thin Ideal on Disordered Eating						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.131	.125	.131	23.661		
Shape Change					-4.33 (.89)	-.362
Step 2	.326	.317	.195	45.007		
Shape Change					-2.98 (.81)	-.249
SATQ-3-I (Internalization)					-.79 (.12)	-.455

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

The second potential mediator of shape change was pressure for thinness. The first step, a regression of shape change on pressure for thinness was significant ($F(1,172)$

= 7.628, $p < .01$, $R^2 = .042$), as was the regression of shape change on body satisfaction as previously described. In the third step, in which pressure for thinness was added, the B value of shape change dropped from -4.154 ($p < .01$) to -3.510 ($p < .01$). See Table 8. A follow up Sobel (1982) test indicated that the drop was significant ($z = -2.543$, $p < .05$). See Figure 4 for a visual depiction of this process.

Again, the findings were similar when disordered eating was the outcome. When pressure for thinness was added to the regression of shape change on disordered eating, the B value of shape change dropped from -4.053 to -2.753, and the Sobel test indicated that this mediation was also significant ($z = -2.557$, $p < .05$; Table 9). Thus, pressure for thinness also partially mediated the effect of shape change on body satisfaction and disordered eating.

Mediations of shape change by negative affect were also tested. However, the results were not significant for body satisfaction or disordered eating.

The other potential mediation indicated by the bivariate correlations was of weight change by internalization of the thin ideal. The first step, a regression of weight change on internalization of the thin ideal was significant ($F(1,171) = 5.864$, $p < .05$, $R^2 = .033$). The second step, a regression of weight change on body satisfaction was also significant ($F(1,167) = 33.890$, $p < .01$), and when internalization of the thin ideal was added to the equation, the B value of weight change dropped from -.436 to -.353 (Table 10). The follow up Sobel test indicated that this mediation was also significant ($z = -2.283$, $p < .05$). See Figure 5 for a visual depiction of this mediation. The mediation was also significant for disordered eating as an outcome. The regression of weight change on

Table 8: Mediation of Shape Change by Pressure for Thinness on Body Satisfaction						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.226	.221	.226	48.713		
Shape Change					-4.15 (.60)	-.475
Step 2	.364	.377	.158	42.717		
Shape Change					-3.51 (.54)	-.402
PSPS (Pressure)					-.96 (.14)	-.405

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Figure 4: Shape Change Mediation (Pressure for Thinness)

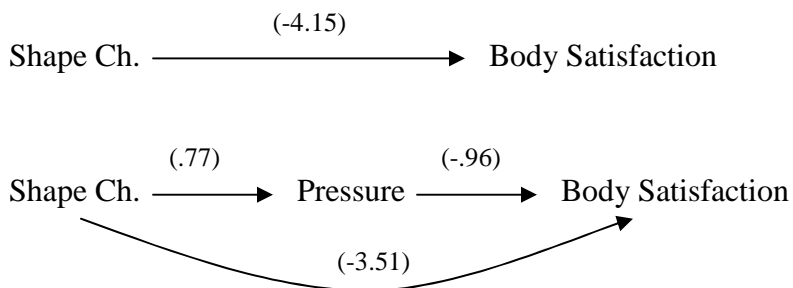


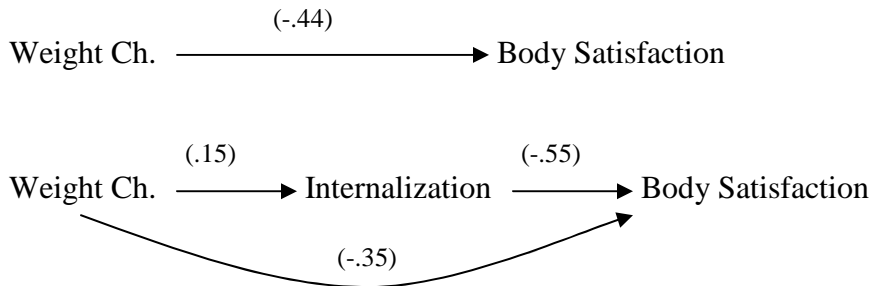
Table 9: Mediation of Shape Change by Pressure for Thinness on Disordered Eating						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.123	.118	.123	22.187		
Shape Change					-4.05 (.86)	-.351
Step 2	.323	.315	.200	46.414		
Shape Change					-2.75 (.78)	-.238
PSPS (Pressure)					-1.39 (.21)	-.461

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Table 10: Mediation of Weight Change by Internalization of the Thin Ideal on Body Satisfaction						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.169	.164	.169	33.890		
Weight Change					-.44 (.08)	-.411
Step 2	.339	.331	.170	42.679		
Weight Change					-.35 (.07)	.332
SATQ-3-I (Internalization)					-.55 (.08)	-.420

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Figure 5: Weight Change Mediation (Internalization of the Thin Ideal)



disordered eating was significant ($F(1,156) = 11.748, p < .01$), and when internalization of the thin ideal was added to the equation, the B value of weight change dropped from -.386 to -.276. The Sobel test was also significant ($z = -2.307, p < .05$; Table 11). Thus, internalization of the thin ideal also partially mediated the effect of weight change on body satisfaction and disordered eating.

Question 1a. How many mothers report that weight/shape/appearance has been a concern in the past month?

Participants were asked to view a list of potential concerns that a new mother might have, and check any that they experienced in the past month. Similar to findings in previous research, 75.2% of the participants indicated that they had been concerned with their weight, shape or appearance in the past month. Other frequently indicated concerns included “finding time for myself” (77.9%), “low energy/tiredness/fatigue” (78.8%), “being a good mother” (67.6%) and “relationship with husband/partner” (66.7%). For a complete list of the concerns and frequencies, see Table 12.

Table 11: Mediation of Weight Change by Internalization of the Thin Ideal on Disordered Eating						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.070	.064	.070	11.748		
Weight Change					-.39 (.11)	-.265
Step 2	.302	.293	.232	51.648		
Weight Change					-.27 (.10)	-.189
SATQ-3-I (Internalization)					-.84 (.12)	-.488

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

Table 12: New mothers concerns in the past month		
Item	Percent indicating the item was	
	“a concern”	“my biggest concern”
1) Finding time for myself	77.9%	13.5%
2) Low energy/not enough sleep/tiredness/fatigue	78.8%	27.0%
3) Relationship with husband/partner	66.7%	13.1%
4) Being a good mother	67.6%	11.7%
5) Finding good child care	36.0%	5.0%
6) Physical pain	18.9%	0.9%
7) My weight/shape appearance	75.2%	14.4%
8) Feeling down/sad frequently	18.0%	1.4%
9) Inability to concentrate	29.7%	2.3%
10) Relationship with friends	39.2%	0.9%
11) Relationship with extended family	21.2%	0.5%
12) Finances	53.2%	10.4%
13) Other	13.5%	5.9%

Question 1b. How many mothers report that weight/shape/appearance has been their most important concern in the past month?

When asked to choose the “biggest concern during the past month,” 14.4% of women, indicated “weight/shape/appearance.” Other frequently rated concerns were “low energy/tiredness/fatigue” (27.0%), “finding time for myself” (13.5%), “relationship with

husband/partner” (13.1%), and “being a good mother” (11.7%). For a complete list of the concerns and frequencies, see Table 12.

Question 2a. Do body satisfaction and disordered eating correlate with postpartum depression?

A bivariate correlation of postpartum depression and body satisfaction was significant ($r = -.34, p < .01$), as was the correlation of disordered eating and postpartum depression ($r = -.37, p < .01$), both with medium effect sizes.

Question 2b. To what extent do the biomedical and psychosocial variables predict depression in postpartum women?

A simultaneous regression analysis of negative affect, social support, internalization of the thin ideal and pressure for thinness on postpartum depression yielded significant results ($F(4, 159) = 45.447, p < .01$) and predicted 53.3% of the variance. These variables were chosen as they significantly correlated with postpartum depression. The biomedical variables (BMI, weight change and shape change) did not correlate with postpartum depression and were, therefore, not included. Negative affect emerged as a significant individual predictor ($\beta = .640, sr^2 = .359, p < .01$) with a large effect size, while internalization of the thin ideal emerged as a significant individual predictor ($\beta = .130, sr^2 = .013, p < .05$) with a small effect size.

Questions 3-6: How will participants respond to the open-ended questions:

To address these questions, the author and the faculty advisor read over the qualitative responses to the questions and came up with possible categories for each question. They discussed these categories and agreed on five to seven categories that broadly described participant responses. To ensure that these categories made sense to external raters and

worked for the data, eight graduate students in clinical and counseling psychology were recruited to pilot the categories. Two students were assigned to each question, and each student was provided with 40 random answers to code into categories. In addition to coding, these pilot testers were asked for feedback regarding the ease of coding, the clarity of the categories and any other general comments. Based on these comments, the author refined the categories. The entire set of responses were then sent out to three undergraduate coders (all of whom were junior or senior psychology majors, and whom had taken a course in counseling psychology), along with a brief description of the overall study and the codes. They were asked to assign each response to one category. Once the coding was returned, agreement levels and kappa statistics were calculated. When determining frequencies for each category, an answer that was coded the same by two raters was included in the “majority” category. If all three raters disagreed on coding, that particular answer was not included in the frequencies listed below. For the full description of each category that raters received, see Appendix N. Sample responses for each category are presented in the discussion.

Question 3. How did you feel about your body before your pregnancy?

Responses to this question fell into six categories. The categories and frequencies are listed below in Table 13. All three coders agreed on 80.4% of the responses, and two of the three raters agreed on 93.3% of the responses. The average kappa for the three pairs of raters was .80 (range: .79 - .82).

Question 4. How did you feel about your body during your pregnancy?

Responses to this question fell into five categories. The categories and frequencies are listed below in Table 14. All three coders agreed on 81.3% of the responses, and two of

Table 13: Categories of Qualitative Data for Research Question 3: How did you feel about your body before your pregnancy?		
Category (and description)	N	%
1. Very satisfied with body in general.	44	24.0 %
2. Okay/accepting of body in general.	82	44.8 %
3. Dissatisfied with weight (too high).	30	16.4 %
4. Dissatisfied with body and/or whole self.	10	5.5 %
5. Dissatisfied with shape/tone.	3	1.6 %
6. Dissatisfied with weight (too low).	2	1.1 %
7. Other	12	6.6 %

Table 14: Categories of Qualitative Data for Research Question 4: How did you feel about your body during your pregnancy?		
Category (and description)	N	%
1. Satisfied/very satisfied: No pressure for thinness.	31	16.9 %
2. Satisfied/very satisfied: Excitement about motherhood.	41	22.4 %
3. Loved it/satisfied. No explanation given for why.	37	20.2 %
4. Mixed/both satisfied and dissatisfied during pregnancy.	43	23.5 %
5. Dissatisfied throughout pregnancy	22	12.0 %
6. Other	9	4.9 %

the three raters agreed on 95.1% of the responses. The average kappa for the three pairs of raters was .82 (range: .81 - .83).

Question 5. How do you feel about your body now?

Responses to this question fell into six categories. The categories and frequencies are listed below in Table 15. All three coders agreed on 84.6% of the responses, and two of the three raters agreed on 94.6% of the responses. The average kappa for the three pairs of raters was .85 (range: .84 - .85).

Question 6. What types of comments have you received from people you know (i.e. your spouse, friends or family) about your body or how you look since giving birth?

Responses to this question fell into seven categories. The categories and frequencies are listed below in Table 16. All three coders agreed on 88.3% of the responses, and two

Table 15: Categories of Qualitative Data for Research Question 5: How do you feel about your body now?		
Category (and description)	N	%
1. Very satisfied: Body improved	6	3.3 %
2. Satisfied: “Back to normal”	8	4.4 %
3. Satisfied, but need for improvement.	74	40.4 %
4. Dissatisfied: Need for a specific change.	30	16.4 %
5. Dissatisfied: Global unhappiness with appearance/body.	44	24.0%
6. Dissatisfaction: Change in view of body.	9	4.9 %
7. Other	12	6.6 %

Table 16. Categories of Qualitative Data for Research Question 6: What types of comments have you received from people you know (i.e. spouse/partner, friends, family) about your body or how you look since giving birth?		
Category (and description)	N	%
1. Positive: Look better than pre-pregnancy.	6	3.3 %
2. Positive: Back to normal.	100	54.6 %
3. Positive “for having a baby.”	8	4.4 %
4. Positive, “but I don’t believe them.”	16	8.7 %
5. Neutral: No comments, or neutral comments.	19	10.4 %
6. “Suggestions” for improvement.	12	6.6 %
7. Negative	10	5.5 %
8. Other	12	6.6 %

of the three raters agreed on 94.4% of the responses. The average kappa for the three pairs of raters was .85 (range: .84 - .87).

Additional Analyses

As the initial correlations showed a significant relationship between current breast feeding status and the two body image outcome variables (body satisfaction and disordered eating), and as breastfeeding status remained a significant predictor of body image outcome variables after including all other predictors, it seemed possible that there would be an interaction of breastfeeding with pressure for thinness or with internalization

of the thin ideal. While the interaction with internalization of the thin ideal was not significant, the interaction with pressure for thinness was.

To test the interaction of breastfeeding with pressure for thinness, the process outlined in Frazier, et. al. (2004) was followed. First, pressure for thinness was standardized. Then, a regression was run on body satisfaction with the standardized pressure for thinness and breastfeeding status in the first step, followed by the interaction term in the second step. Both steps were significant and the interaction term ($\beta = -.480$, $sr^2 = .025$, $p < .05$) and breastfeeding status ($\beta = -.228$, $sr^2 = .052$, $p < .01$) emerged as significant individual predictors (Table 17). This interaction can be more thoroughly understood by examining follow-up analyses, using the quantpsy program (Preacher, Curran & Bauer, 2006), which shows that the region of significance of this interaction is when pressure for thinness is less than -7.93 standard deviations below the mean or when it is greater than -.051 standard deviations below the mean. The simple slope of breastfeeding (from currently breastfeeding to not currently breastfeeding) when pressure for thinness is 1 SD below the mean is -1.877, which is not significant ($p = .46$). However, when pressure for thinness is 0 (at the mean) the simple slope is -6.257 ($p < .01$) and at 1 SD above the mean the simple slope is -10.637 ($p < .01$). In other words, when pressure for thinness is .5 standard deviations below the mean (i.e. when women are experiencing less pressure for thinness than average), then breastfeeding status does not effect body satisfaction; women who are currently breastfeeding and those who are not, have similar levels of body satisfaction. However, when pressure for thinness is greater than .5 standard deviations below the mean (i.e. women are experiencing average levels of pressure or more), then women who are currently breastfeeding have

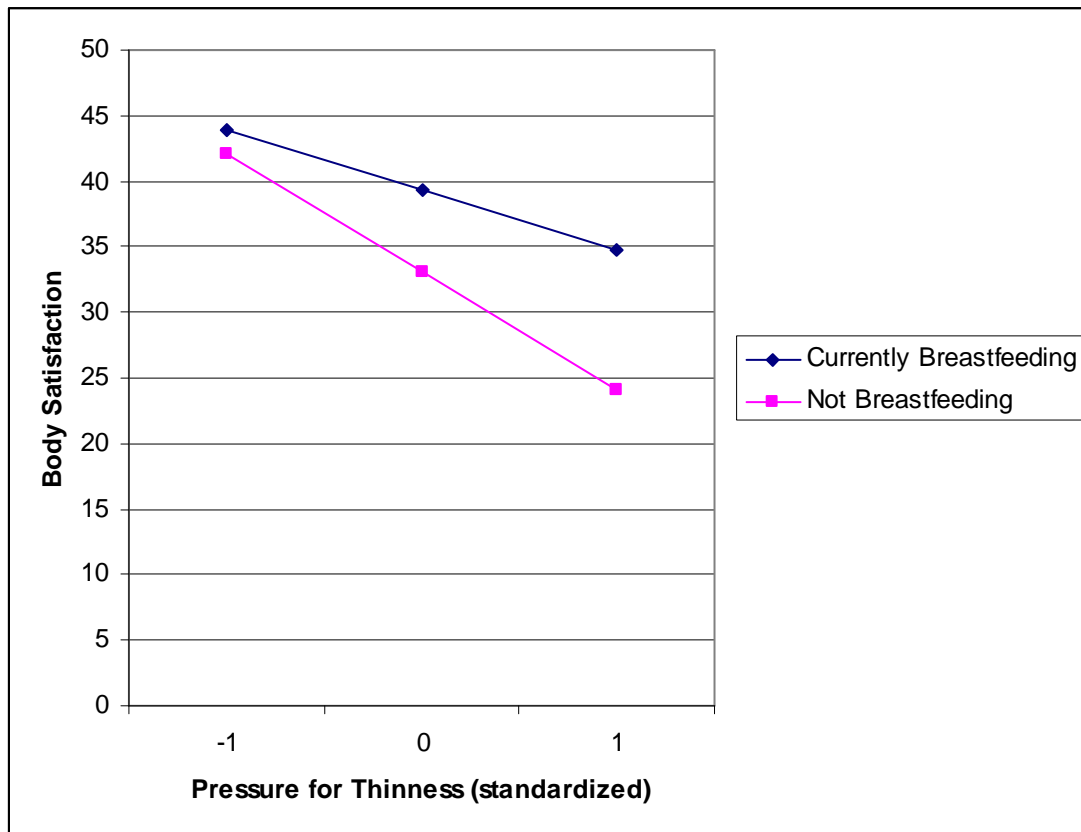
Table 17: Moderation of Pressure for Thinness by Breastfeeding on Body Satisfaction						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	B
Step 1	.279	.270	.279	32.125		
Current BF					-6.28 (1.84)	-.225
Z-Scored PSPS (Pressure)					-6.36 (.90)	-.465
Step 2	.304	.291	.025	5.888		
Current BF					-6.36 (1.81)	-.228
Z-Scored PSPS (Pressure)					-.16 (2.70)	-.012
Interaction (Current BF * Z- scored PSPS)					<i>-4.38 (1.80)</i>	<i>-.480</i>

Note. Numbers in **bold**, $p < .01$, numbers in *italics*, $p < .05$.

significantly higher body satisfaction than those who are not currently breastfeeding. See Figure 6 for a visual depiction of this effect.

A similar phenomenon occurs when one looks at the interaction of pressure for thinness and breastfeeding in predicting disordered eating. As with the previous analysis, both steps were significant and the interaction term ($\beta = -.426$, $sr^2 = .019$, $p < .05$) and breastfeeding status ($\beta = -.220$, $sr^2 = .047$, $p < .01$) emerged as significant individual predictors (Table 18). Once again the quantpsy program (Preacher, Curran & Bauer, 2006) was used to follow up these significant findings. The region of significance of this interaction is when pressure for thinness is greater than -.054 standard deviations below the mean. The simple slope of breastfeeding (from currently breastfeeding to not currently breastfeeding) when pressure for thinness is 1 SD below the mean is -3.174, which is not significant ($p = .35$). However, when pressure for thinness is 0 (at the mean) the simple slope is -8.099 ($p < .01$) and at 1 SD above the mean the simple slope is -13.024 ($p < .01$). As with body satisfaction, when pressure for thinness is .5 standard

Figure 6: Moderation of Breastfeeding by Pressure for Thinness (Body Satisfaction)



	R ²	Adj. R ²	R ² Change	F Change	B(SE)	β
Step 1	.320	.311	.320	36.898		
Current BF					-8.26 (2.43)	-.224
Z-Scored PSPS (Pressure)					-8.74 (1.16)	-.499
Step 2	<i>.339</i>	<i>.326</i>	<i>.019</i>	<i>4.543</i>		
Current BF					-8.10 (2.41)	-.220
Z-Scored PSPS (Pressure)					-1.69 (3.50)	-.097
Interaction (Current BF * Z-scored PSPS)					-4.93 (2.31)	-.426

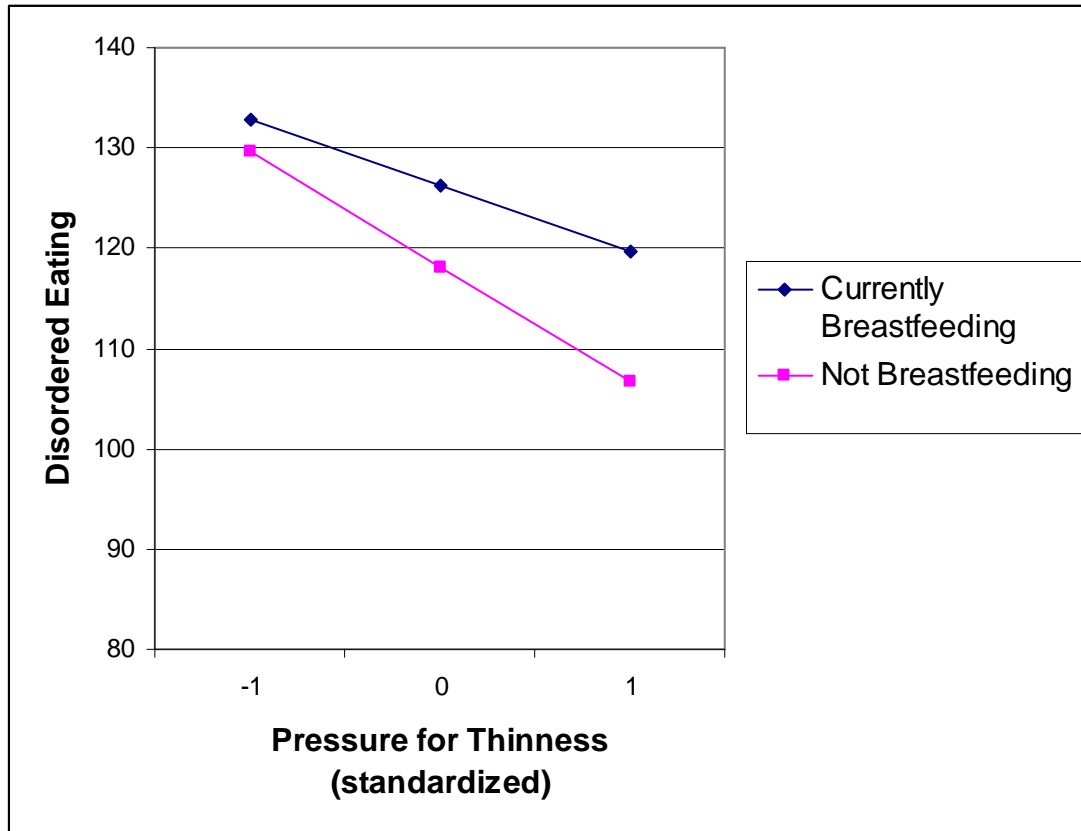
Note. Numbers in **bold**, p<.01, numbers in *italics*, p<.05.

deviations below the mean, then breastfeeding status does not effect disordered eating; women who are currently breastfeeding and those who are not, have similar levels of disordered eating. However, when pressure for thinness is greater than .5 standard deviations below the mean, then women who are currently breastfeeding have significantly lower levels of disordered eating than those who are not currently breastfeeding. See Figure 7 for a visual depiction of this effect.

Finally, as breastfeeding status correlated with postpartum BMI and shape change, and as its B value dropped from step 1 to step 2 of the hierarchical regressions run for hypotheses 3 and 4, some mediation analyses were run as well to explore possible physical mechanisms through which breastfeeding might effect body satisfaction and disordered eating. Once again, the process outlines in Frazier et. al. (2004) were used.

The first set of regression explored the mediation of breastfeeding by shape change on body satisfaction. The first step, a regression of breastfeeding on shape change, was significant ($F(1,177) = 6.390, p < .05, R^2 = .035$), establishing path a. The second step, a regression of breastfeeding on body satisfaction was also significant ($F(1,172) = 13.309, p < .01$) and in the third step, the B value of breastfeeding dropped from $-7.527 (p < .01)$ to $-5.356 (p < .01)$. (See Table 19 for these regressions.) A follow up Sobel (1982) test indicated that the drop was significant ($Z = 2.365, p < .05$). When this same mediation was tested on disordered eating, the results were also significant. The regression of breastfeeding on disordered eating was significant ($F(1,162) = 15.237, p < .01$) and in the third step, when shape change was added, the B value of breastfeeding dropped from $-10.874 (p < .01)$ to $-8.300 (p < .01)$. (See Table 20). A follow up Sobel test for this mediation was also significant ($Z = 2.174, p < .05$).

Figure 7: Moderation of Breastfeeding by Pressure for Thinness (Disordered Eating)



	R ²	Adj. R ²	R ² Change	F Change	B(SE)	β
Step 1	.072	.066	.072	13.309		
Current BF					-7.53 (2.06)	-.268
Step 2	.261	.253	.289	43.841		
Current BF					-5.36 (1.88)	-.191
Shape Change					-3.92 (.59)	-.442

The second potential mediation was of breastfeeding by BMI. However, when this mediation was tested on body satisfaction and on disordered eating, the Sobel test was not significant.

Table 20: Mediation of Breastfeeding by Shape Change on Disordered Eating						
	R ²	Adj. R ²	R ² Change	F Change	B(SE)	β
Step 1	.086	.080	.086	15.237		
Current BF					10.87 (2.79)	-.293
Step 2	.177	.167	.091	17.891		
Current BF					-8.30 (2.72)	-.224
Shape Change					-3.63 (.86)	-.310

In sum, one can apply a biopsychosocial framework to body image in new mothers, as biomedical and psychosocial variables show meaningful influence and effects on body satisfaction and disordered eating, and psychosocial variables account for variance above and beyond biomedical variables. Moreover, psychosocial factors help explain one way through which biomedical factors act, as explored in the mediations. As the vast majority of women are reporting that they feel concerned about their weigh/appearance, these findings are important to the health of many new mothers. These results will be discussing in greater depth in the following chapter.

Chapter 6

Discussion

The purpose of this study was to examine the relationship of biopsychosocial factors to body image in new mothers. Specifically, this study examined the relationship of multiple biomedical (postpartum BMI, weight change and perceived shape change), psychological (internalization of the thin ideal and negative affect) and social (pressure for thinness and social support) factors with body satisfaction and disordered eating. This study was unique in its use of the biopsychosocial framework, as previous research had focused primarily on the biomedical contributors to body image in new mothers.

This section will discuss the findings of this study. It will begin by reviewing the descriptive information about the sample and compare it to the most recent CDC statistics (Martin, et. al., 2005) to determine generalizability. It will then present a brief discussion of the individual relationships between the biomedical, psychological and social factors and body image. Third, the findings of the hierarchical regressions and mediational analyses on body satisfaction outcomes are discussed, along with the importance of these issues to new mothers. This discussion is followed by a discussion of the post-hoc analyses, which provide a more in depth exploration of the findings regarding breastfeeding. Fifth is a discussion of the contribution of these psychosocial factors to postpartum depression. Finally, it will discuss the qualitative findings, limitations of the study, and implications for future research and practice.

Sample

This sample was predominantly White/European American (65.8%) and highly educated (37.4% had a college degree and an additional 35.1% had a graduate degree). In

addition, the mothers in this sample had an average age of 30.47. The average age of their children was 6.63 months. Meanwhile, the most recent CDC report (Martin, 2005) shows that approximately 55% of new mothers are white (non-Hispanic) and that the average age for a woman's first birth was 25.2. In addition, only 27.8% of women who gave birth had a bachelor's degree.

Based on these basic criteria, this sample is not entirely representative of the typical first time mother in the United States. One difference is the racial make up. The sample has a higher percentage of white participants than exists in the population. By posting the survey on multiple websites, some targeted at particular minority groups, researchers hoped to increase the racial diversity; the study did not reach the exact population demographic, but it is a more racially diverse sample than previous research looking at new mothers. The age and education level of the sample are also different than those of the population from which it was drawn. This bias is probably due to the nature of recruitment and who is interested and willing to participate in research. The snowball sampling method uses friends and colleagues of the researcher to create an extended network of possible participants. However, as the researcher was enrolled in graduate school, many of her colleagues were as well. The higher average age of the current sample might also explain some of the discrepancy in education level. The CDC report (2005) shows that approximately 42% of mothers over 30 (the average age of the current sample) have a bachelor's degree.

Other demographic statistics for this sample are more similar to that of the general population. According to the CDC (2005), 55% of women return to work within one year of giving birth and in the current sample, 50.9% reported returning to work and

an additional 5.9% reported being students. In addition, the full spectrum of socioeconomic status was represented. Finally, recent reports (Harris, 2008) have suggested that the number of mothers who breastfeed for some period is rising, and surveys of new mothers have found breastfeeding rates between 74 and 77%. In the current sample, 63.3% were currently breastfeeding, but 71% indicated that they had breastfed at some point. Finally, the sample also provided rich variability on the key variables (e.g. body image, postpartum depression, etc.) for this study. The variability on the outcome measures is a particular strong point considering the current study was not testing a clinical population.

Biomedical Contributors

The current study explored the relationship of the three biomedical factors, BMI, weight change, and shape change with body satisfaction and disordered eating. An individual's postpartum BMI is an indication of their weight to height ratio, and is related to size in a more general way. Weight change was calculated by subtracting participants' estimated prepregnancy weight from their current weight; this variable indicated the change in weight (retention or weight loss) that women experienced. Finally, as some women might change in weight distribution, but not actual weight, a single item question asked women to rate the extent to which they thought their shape had changed. Thus, each biomedical variable touched on a difference aspect of one's body and weight.

As hypothesized, findings indicated that women with higher BMI's, greater weight change and greater perceived shape change reported lower body satisfaction and more disordered eating. The effect size of the relationships between BMI and weight retention with body image were slightly larger than the effect sizes of the relationships

between BMI and weight retention with disordered eating. These findings are consistent with previous research, which has demonstrated a negative correlation of postpartum BMI and body satisfaction (e.g. Walker, 1998). In addition, these findings make intuitive sense given the nature of pregnancy and birth. Women are advised to gain an average of 25-35lbs with pregnancy and typically retain 2 lbs of that weight one year postpartum (IOM, 1990). It seems that women who retain weight, who have higher BMI's overall or who feel that their stomach, hips or thighs have gotten larger since having their baby, might feel badly about these changes or attempt to diet (and even go to extremes of disordered eating) as a means of weight control. This dissatisfaction with ones body and attempts to control ones food might be exacerbated by other aspects of new motherhood, especially feeling tired or having less energy to exercise, difficulty getting enough rest, or difficulty making time to eat a healthy diet.

Psychological Contributors

Internalization of the thin ideal. As hypothesized, internalization of the thin ideal was negatively correlated with body satisfaction and positively correlated with disordered eating. Thus, women who reported higher internalization of the thin ideal (i.e. they were more likely to endorse that they should and can look thin) also reported lower body satisfaction and more disordered eating, both with a large effect size. Previous research had indicated that internalization of the thin ideal was a significant predictor of poor body image and eating disorders in adolescent women (e.g. Tylka & Subich, 2004); however, no research had yet examined this variable in postpartum women. One qualitative study reported that pregnant women indicated awareness of the thin ideal, as something to strive for after giving birth (Johnson, et. al. 2004), but this study did not

look at postpartum women specifically. The current study shows that postpartum women do continue to internalize the thin ideal. Unfortunately, after having children, the thin ideal becomes even less natural and less attainable; it makes sense that this internalization would have a significant relationship with body dissatisfaction and with disordered eating. Given that these correlations had a large effect size, internalization of the thin ideal is clearly an important issue to consider for postpartum women.

Negative affect. This study also found the hypothesized correlations of negative affect with body satisfaction and disordered eating. Women who reported greater negative affect also reported lower body satisfaction and more disordered eating, both with a medium effect size. These findings are consistent with previous research demonstrating the relationship of negative affect and body image (e.g. Stice, et. al. 1996), although once again this previous research had only looked at adolescent and college aged women. One previous study had explored somewhat related variables in new mothers (self esteem and depression) and demonstrated significant correlations with postpartum BMI (Walker, 1997). However, this study did not look specifically at negative affect. The current study showed that negative affect and negative body image are related in postpartum women. Once again, this finding makes intuitive sense. As described in the literature review, someone who is higher in negative affectivity experiences subjective stress and aversive moods more frequently; one way in which these negative emotions might manifest themselves is through negative feelings towards oneself or one's body. In addition, it is possible that a new mother might have access to fewer traditional coping mechanisms when feeling down (e.g. she might not have time to take for herself, or the energy to think of a solution), or might find that previous ways of

coping are less effective; as previous research has suggested that disordered eating behaviors can serve as a way to control or soothe negative affect (e.g. Heatherton & Baumeister, 1991), a new mother might also use food or dieting to help soothe her negative affectivity.

Social Contributors

Pressure for thinness. As hypothesized, perceived pressure for thinness was negatively correlated with body satisfaction and positively correlated with disordered eating, such that women reporting greater pressure for thinness also reported lower body satisfaction and greater levels of disordered eating. This finding demonstrates that postpartum women experience pressure for thinness from family, friends, significant others and the media, and that this pressure is tied to their feelings towards their bodies. Once again, these findings replicated previous research with different populations, which show similar correlations between pressure for thinness and body image and eating disorders in adolescent girls (e.g. Stice & Agras, 1988). The findings of two previous studies suggested that pressure for thinness might be an issue for postpartum women as well, as in both studies pregnant women reported a keen awareness of pressure to return to their prepregnancy figure after giving birth. However, this study demonstrates that women continue to report that pressure after birth. While the measure used for the current study measures “perceived” pressure and not voiced pressure from others, as it is a self-report measure, the scale chosen has demonstrated correlations with “other-reports” (Stice, et. al., 1996). In addition, participants in the current study did provide examples of actual pressure from others to lose weight in their qualitative responses. Specifically, many women mentioned that their partner or their family emphasized the importance of

returning to their prepregnancy figure, dieting or exercising. These findings are discussed further in the discussion of the qualitative data.

Social support. Despite previous findings that demonstrated the positive effect of social support on body image in adolescent women (e.g. Grisset & Norvell, 1992), this study did not find a significant correlation between social support and body satisfaction or disordered eating. This finding is particularly surprising given the numerous studies indicating the positive effect of social support on postpartum adjustment (e.g. Paykel, et. al. 1980). However, there are a number of possible explanations for these results.

One possible issue is the type of social support measured. The scale used for this study (MSPSS; Zimet, et. al, 1998) is a measure of satisfaction with perceived social support; it measures how content an individual is with their support network. Previous research on new mothers has demonstrated large effect sizes when using this form of measurement (e.g. Crinic, et. al. 1993). An alternative way to measure social support is to measure instrumental support, or the amount of tangible help/advice/assistance that one receives from others. Some previous work on new mothers had shown smaller effect size using this form of measurement (e.g. Cutrona, 1984). However, Walker (1997) used a measure of instrumental support and found a significant correlation with postpartum weight change. It is possible that a new mother dealing with body image issues does not benefit from her social support network in the same way. She may need tangible help from others (to care for the baby while she exercises, to help cook nutritious food, etc.) in order for social support to help with her body image.

It is also possible that social support might feel more distant during such a large change in ones life. A woman might feel that her childless friends simply do not

understand the stress of having a new child, or that her spouse does not understand what it is like for one's body to go through such drastic changes. In their qualitative responses, a number of women mentioned that their friends or family would tell them that they "looked good," but that the women themselves did not believe them, or felt that the compliment was given out of obligation. While these comments might feel supportive in another context, new mothers might feel these comments are simply politeness. In addition, a new mother might feel that being in the presence of her friends is actually disheartening. She has experienced body changes, while her friends have not. Even if she feels that they are being supportive, seeing them might actually make her feel worse about her body.

Finally, while the full range of possible scores on the social support scale was represented, the mean was indicative of overall high levels of social support; the middle possible score on the scale was actually greater than one standard deviation below the mean in the current sample. Thus, the vast majority of women reported good social support, making it more difficult to detect its effects. Unfortunately, it is impossible to know which of these factors, if any, are responsible for the lack of significant correlations between social support and body image variables.

A Biopsychosocial Model of Postpartum Body Image

Once the bivariate correlations were run, this study tested a biopsychosocial model of body image in new mothers. In order to test this model, two hierarchical regressions were run, one on body satisfaction and one on disordered eating. As current breastfeeding status had correlated with both outcomes, it was statistically controlled for by entering it separately in the first step of the regression. Biomedical contributors (BMI,

weight change, and shape change) were entered in the second step, as previous research had already demonstrated their effect on postpartum body image. Finally, the psychosocial contributors (internalization of the thin ideal, negative affect and pressure for thinness) were entered as a group in the third step. As previously addressed, social support did not significantly correlate with body satisfaction nor disordered eating, and was not included in either set of analyses.

As hypothesized, all steps were significant in both regressions. In the regression on body satisfaction, the first two steps accounted for 37.5% of the variance, and when the psychosocial variables were added, 54.9% of the variance was accounted for. In addition, pressure for thinness and internalization of the thin ideal both accounted for additional variance individually, above and beyond all of the other included variables, with a small to medium effect size. Shape change and postpartum BMI also had a similar effect size, indicating the biomedical factors and psychosocial factors play unique, important roles in body satisfaction.

In the regression on disordered eating, the first two steps accounted for 21.1% of the variance, while all three steps accounted for 50.5% of the variance. Moreover, all three psychosocial variables (internalization of the thin ideal, pressure for thinness, and negative affect) accounted for unique, individual variance, above and beyond the others, with a small to medium effect size.

Not only do these findings support a biopsychosocial model of body image, in that biomedical and psychosocial factors significantly contribute to body image, but they also suggest that certain psychosocial factors are important unique contributors, which merits greater attention. While the majority of previous research focused on physical

changes, and suggested that the major reason for women's poor postpartum body image was the weight retained after birth, this study demonstrates that psychosocial factors are important as well. Essentially, internalization of the thin ideal, pressure for thinness, and negative affect have effects on body satisfaction and disordered eating beyond the effects of biomedical factors, illuminating an important potential area of intervention with new mothers. In addition, as these variables accounted for approximately 50% of the variance in outcomes, it is conceivable that other psychosocial factors, such as work environment or peer norms, might also play a role.

It is also interesting to note the differences between the regressions on body satisfaction and disordered eating. Body satisfaction is a more affective measure; items address how women feel about their bodies or feel in their bodies. In contrast, disordered eating is a more cognitive and behavioral measure; items primarily address specific behaviors (dieting, bingeing, etc.) and cognitions or thoughts about weight and food. All three biomedical factors accounted for unique variance in body satisfaction; two of them (BMI and shape change) had a similar effect size to pressure for thinness and internalization of the thin ideal. Meanwhile, only one biomedical factor (BMI) was a significant individual predictor of disordered eating, whereas all three psychosocial factors were significant individual predictors, and all three had larger effect sizes than BMI. It seems that actual body size and shape are bigger factors in determining whether women *feel* badly about their postpartum bodies than in whether they act on those feelings. This is an important distinction to make; disordered eating behaviors are dangerous to the mother, and potentially the child, and these are more influenced by psychosocial factors that have received very little attention in previous research.

Mediations. The present study also sought to examine the mediation of biomedical variables by psychosocial variables, as proposed by the biopsychosocial model. Mediation analyses allow one to examine the indirect effects of a variable, or a mechanism through which a variable acts. More specifically, the biopsychosocial model suggests that biomedical variables have a direct effect on health status, but also act *through* psychosocial variables (a partial mediation). In the current study, four mediations were tested on body satisfaction and on disordered eating, as indicated by the bivariate correlations. As postpartum BMI did not significantly correlate with any of the psychosocial variables, no mediations of postpartum BMI were indicated. In addition, negative affect was not a significant mediator of any of the psychosocial variables.

As predicted by the biopsychosocial model, there were three significant mediations on both body satisfaction and disordered eating: perceived shape change was partially mediated by internalization of the thin ideal and pressure for thinness, and weight change was partially mediated by internalization of the thin ideal, all on both body satisfaction and disordered eating. In other words, shape change has a direct effect on body satisfaction and disordered eating, such that women who report a greater degree of change to their shape, also report lower body satisfaction and higher disordered eating. However, shape change also has an impact through internalization of the thin ideal and pressure for thinness. Thus, one reason that someone who reports higher perceived shape change and also reports lower body satisfaction is that they are reporting higher pressure for thinness and internalization of the thin ideal. This mediation makes intuitive sense: a woman who perceives more pressure for thinness and internalization of the thin ideal, is more likely to see a negative impact of shape change on body image following an event

such as pregnancy. It is important that one realizes these are still correlational analyses and do not prove causation; we cannot say that higher perceived shape change causes higher pressure for thinness, as it is entirely possible that a woman with higher pressure for thinness might perceive her shape to have changed more. However, while further research would be necessary to determine causality, these are still important findings, as they explain that part of the reason shape changes effect a new mother is because she feels pressure to be thin or has internalized the thin body as ideal.

Weight change was also partially mediated by internalization of the thin ideal. Thus, weight change has a direct effect on body satisfaction (women reporting higher weight change report lower body satisfaction) and on disordered eating (women reporting higher weight change report more disordered eating). However, it also has an impact through internalization of the thin ideal; one reason that women feel badly about their bodies with greater weight change is because they are reporting greater internalization of the thin ideal.

It is interesting to note that weight change is only partially mediated by internalization of the thin ideal and not pressure for thinness. One possible explanation is that weight change looks at something that might be private to the individual. For example, in their qualitative answers, many women indicated that they had retained a few pounds since giving birth, but that others did not notice, while other women reported being able to disguise their weight gain with the clothing they wore. The weight change from pre-pregnancy to post-pregnancy might not be something that others see, especially as the two weights are separated by the pregnancy itself. If others do not realize that a woman has gained weight, the woman might not experience any increase in pressure for

thinness. If others do not know a woman has gained a few pounds, they cannot pressure her to lose that weight, or they might perceive that it is typical to gain a few pounds after pregnancy and may not perceive it as problematic. Meanwhile, shape change might be something more noticeable to others. For example, some women spoke of having smaller breasts and a larger stomach or hips. Regardless of whether a woman's weight has changed, if her shape appears different to her, others might perceive this change and pressure her to lose weight. However, as a woman is aware of her own weight change, she will be vulnerable to her own ideas of thinness and what she "should" weigh.

Overall, these mediational analyses are consistent with the theory behind the biopsychosocial model; the biomedical factors of shape change and weight change have both a direct and indirect on health status outcomes (body satisfaction and disordered eating, in this case). Mediation effects have not typically been studied for this model or in studies on postpartum women specifically. Yet, mediations help provide potential areas of intervention as the psychosocial contributors are often seen as more malleable and amenable to change. It might be inevitable that a woman's shape or weight will change with pregnancy and birth. However, one can intervene around internalization of the thin ideal and pressure for thinness so that these biomedical factors have less of an impact on a new mother's body image.

Importance to new mothers. One possible reaction to the findings thus far might be that these are helpful for women facing body image concerns, but that they are only applicable to a small subset of new mothers. However, this study found that the overwhelming majority of women reported that they were concerned about their weight, shape or appearance in the past month. Research questions 1a asked participants to

indicate which of a list of 12 issues had been a concern to them in the past month. This list had drawn from previous research regarding new mothers concerns (Fishbein & Burgraff, 1997), and 75.2% of women indicated that they were concerned about their appearance. More women endorsed body concerns than concerns over being a good mother, finding child care or relationships with their partner, friends or family. In addition, question 1b asked new mothers to choose their “biggest concern” from the same list. One’s weight/shape/appearance was second only to low energy and fatigue. These findings suggest that the majority of women do feel concerned over their postpartum figure and that almost 15% indicate that their bodies are their most important concern.

Breastfeeding and Postpartum Body Image

When examining potential relationships between demographic factors and the variables of interest for the current study, researchers found a significant correlation between both body satisfaction and disordered eating and breastfeeding status. No hypotheses had been made about this relationship, as what little research existed on the topic was mixed. Foster (1996) found that pregnant women who voiced the intention to breastfeed were more satisfied with their shape than those who did not intend to breastfeed. However, this study focuses on breastfeeding intention and body satisfaction during pregnancy rather than on actual breastfeeding post-pregnancy. In addition, Larsson and Andersson-Ellstron (2003) found that women who had previously been diagnosed with an eating disorder were less likely to be breastfeeding their child at three months. However, both Tzuriel and Weller (1986) and Johnson-Robledo and Fred (2008) found that body image was not significantly different in those who chose to breastfeed and those who did not. It is also important to note that these four studies look at mothers

who breastfeed and those who do not. This variable was *not* significantly related to any other variables in the current study; instead, the related variable was whether a new mother was currently breastfeeding. Thus, those who had breastfed for some time, but had since stopped, did not respond differently at any point on the variables of interest than women who never breastfed.

In the hierarchical regressions on body satisfaction and disordered eating, breastfeeding was entered as a first step, and continued to significantly account for variance in both outcomes after all other variables were entered, such that women who were currently breastfeeding had higher body satisfaction and reported less disordered eating. While the effect size was small, it seems that breastfeeding does have a direct effect on body image outcomes. There are many possible explanations for this finding. For example, a woman that is currently breastfeeding may still be losing weight because of the calories needed for breastfeeding, and feel content that the number on the scale is going down. In addition, a woman who is currently breastfeeding might see her body as something more functional for the time being, and might be less concerned over her appearance, or she may believe that by the time she stops breastfeeding that her body shape and weight will have returned to her prepregnancy level. Further exploratory analyses helped shed some light on why and how breastfeeding affects body image.

As one previous study showed that body objectification was related to less comfort with breastfeeding (although not to actually breastfeeding) (Johnson-Robledo & Fred, 2008), the first exploratory analyses in the present study looked at whether breastfeeding interacted with pressure for thinness or internalization of the thin ideal. Body objectification involves the concept that one sees her body from a somewhat

external view; the body is understood in the manner that others see it. Both internalization of the thin ideal, in which one imposes an external, thin aspiration on oneself, and pressure for thinness, in which one perceives other people's opinion that thinness is important, relate to body objectification. The interaction of internalization of the thin ideal and breastfeeding was not significant, indicating that internalization of the thin ideal affects women the same, regardless of whether they are currently breastfeeding.

However, the interaction of breastfeeding and pressure for thinness was significant when looking at both body satisfaction and disordered eating, as was the direct effect of breastfeeding in general. This interaction suggests that when pressure for thinness is less than average (-.5 standard deviations below the mean or lower), then there is not a significant difference in body image or disordered eating between those who are breastfeeding and those who are not. However, when pressure for thinness is average or greater than average (higher than -.5 standard deviations above the mean), then women who are currently breastfeeding have higher body satisfaction and lower disordered eating than those who are not currently breastfeeding.

Another way to think of this finding is that breastfeeding provides a "buffer" against the negative effects of pressure for thinness. It is possible that women who are currently breastfeeding have a continued defense against pressure for thinness. One possible explanation for this buffer is that one must continue to intake enough calories to create milk, and thus cannot diet too severely. Another possible explanation is that the functionality of breastfeeding takes precedence over body perceptions. Meanwhile, once a woman has stopped breastfeeding (or if she did not breastfeed at all), she might

experience pressure to return to her prepregnancy figure immediately, and thus feel bad about her body or resort to drastic dieting.

The other set of follow-up analyses examined potential mediations of breastfeeding. In the hierarchical regressions, breastfeeding dropped in significance when the biomedical factors were entered. As both BMI and shape change also significantly correlated (at the .05 level) with currently breastfeeding, mediations were tested. The mediation of breastfeeding by BMI was not significant on body satisfaction or disordered eating. However, breastfeeding was significantly partially mediated by shape change on the two body image outcomes. This finding suggests that part of the reason that women who are currently breastfeeding report higher body satisfaction and lower disordered eating is that they are also reporting lower perceived shape change. There are a number of possible explanations for this finding. First, it is possible that women who are currently breastfeeding actually experience less shape change, whereas women who have stopped breastfeeding experience their shape as changing more, for the worse. However, it is also possible that women who are currently breastfeeding simply pay less attention to the shape of their bodies, do not notice the change to their shape or believe that their body will continue to return to its prepregnancy shape once they stop breastfeeding.

Overall, these findings regarding breastfeeding provide some interesting insight into postpartum body image. In general, they suggest that currently breastfeeding does have a direct effect on postpartum body image and women who are breastfeeding seem to have better body image. In addition, previous research had found mixed results for the relationship of breastfeeding and postpartum body image. The finding in this study that *current* breastfeeding relates to body image variables, but not whether one breastfed

previously suggests that the effects of breastfeeding might be more nuanced than previous research had considered. It might be that the positive benefits, in terms of body image are somewhat transitory. Finally, the moderation and mediation analyses provide some insight into the mechanism through which breastfeeding works; women who are currently breastfeeding perceived less change to their shape, and are less affected by pressure for thinness.

Postpartum Depression

As eating disorders and depression are often comorbid (Devlin & Walsh, 1989), this study also sought to explore how body image and the tested biopsychosocial variables related to postpartum depression. The bivariate correlations of postpartum depression with body satisfaction and disordered eating were significant with a medium effect size. This finding is extremely important; a great deal of research looks at postpartum depression, as it can have an effect on the future health of the mother and the child (CDC, 2000). However, body image in postpartum women has not received as much attention, despite its significant correlation with depression.

In addition, this study explored whether any of the variables tested in the biopsychosocial model of body image also had predictive power for postpartum depression. As none of the biomedical variables correlated with postpartum depression, they were not included in the regression. A simultaneous regression of the remaining variables (internalization of the thin ideal, pressure for thinness, social support, and negative affect) on postpartum depression was significant and accounted for 53.3% of the variance. Negative affect was a unique predictor of postpartum depression with a large effect size. This finding is not surprising, given previous research demonstrating

correlations of negative affect and depression (e.g. Watson, et. al., 1988). However, internalization of the thin ideal also accounted for unique variance above and beyond the other variables, with a small effect size. This finding adds to the importance of addressing psychological variables such as postpartum body image; as much of the previous research focused on the importance of biomedical changes in postpartum women, those working with new mothers might assume that weight and shape were the only contributing factors. However, these findings regarding postpartum depression show that psychological factors related to body image, which might be easily overlooked, are also related to postpartum depression. Gaining a better understanding of postpartum body image might also lead to a better understanding of postpartum depression.

Qualitative Findings

Not all participants answered the open ended questions; however, those who did were quite open with their experiences. Responses revealed that women have very different feelings towards their bodies before pregnancy, during pregnancy and after pregnancy, and experience different reactions from others as well. These findings will be discussed in greater detail below.

How did you feel about your body before your pregnancy? This question was assigned six codes, which ranged from satisfied to dissatisfied, although there were multiple categories of dissatisfaction, as women indicated they were dissatisfied with different aspects of themselves. The most frequent category (44.8%) was “okay/accepting of body in general.” For example, one woman remarked “I felt okay about my body. I’d never been thin, but being curvy never bothered me...Of course I had my insecurities, but nothing out of the ordinary.” An additional 24% reported feeling very satisfied with their

bodies, and they truly liked the way that they looked; one woman said “I was the bomb before getting pregnant! Seriously!” However, some women did indicate that they were dissatisfied with their bodies pre-pregnancy, and the most frequent reason for their dissatisfaction was feeling too heavy (16.4%). Some women described lengthy histories of feeling fat or struggling with dieting, while others were quite succinct about their body dissatisfaction. For example, one woman remarked, “I didn't like it. I wanted very much to lose weight.” Overall, while some women indicated feeling very unhappy with their bodies, most women reported feeling okay, or even happy with their bodies before pregnancy. Of course, as this question was retrospective, it is difficult to know if women looked back with a more positive view than what they had at the time. One woman even commented that she did not like her body at the time, but that looking back, she felt she looked good. However, it does provide a general sense that women remember feeling good, or at least okay, about how they looked pre-pregnancy.

How did you feel about your body during your pregnancy? Women responded more broadly in their reactions to their bodies during pregnancy. This question had five categories, also ranging from very satisfied to dissatisfied. However, for this question, there were three categories of satisfaction and only one category of dissatisfaction. Overall, 59.5% of the participants indicated that they were satisfied with their bodies. Some women (20.2%) did not indicate the reason for their satisfaction, simply indicating that they “loved it.” However, there was a notable distinction for those that did indicate a reason. Some reported feeling satisfied because of the meaning behind the changes, i.e. they were going to be a mother (22.4%). They reported awe at watching their bodies grow and pride that they could create a child; “I was excited to have another life growing

inside of me...I felt sexy as a pregnant woman.” However, another group indicated their satisfaction was because they felt it temporarily removed pressure for thinness (16.9%). Some felt that pregnancy legitimized changes in shape and diet, while others felt that being pregnant camouflaged or hid any “problems” that they saw with their bodies. One woman responded, “fabulous. I knew I'd get fat so I didn't care. It was so wonderful and freeing to not feel guilty about eating and not fitting in clothes. I loved it.” This latter group seems to be consistent with the women interviewed in Johnson’s, et. al. (2004) qualitative study of pregnancy; they also spoke of feeling aware of a thin beauty standard, and feeling that pregnancy allowed them to veer from the standard.

The most frequent category, by a small margin (23.5%) was “mixed/both satisfied/dissatisfied during pregnancy.” Most of the women in this category felt satisfied during one part of their pregnancy, and dissatisfied during another, although the direction was not consistent. Some women felt insecure at first, and worried that others viewed them as “fat” and rather than pregnant; “at first it was difficult, because until I started to really show, I just felt fat. My regular clothes didn't fit, but maternity clothes didn't yet fit either. But then as my belly got rounder, I just felt fabulous -- I loved my belly!” However, others felt okay with their bodies at first, but did not feel satisfied as they grew; one woman commented that she felt “OK at the beginning then embarrassed as I got fatter.”

The final group indicated that they were dissatisfied throughout their pregnancy (12.0%). These women often indicated feeling that their weight was out of control or that they did not like gaining. One woman responded, “absolutely horrible. I was terrified that I would gain too much weight and I was disgusted that I couldn't exercise.”

An interesting issue also came out, regarding expectations of what a pregnant women should look like. A few women, some of who felt dissatisfied with their bodies, and some who had mixed feelings, and even some who felt satisfied with their bodies, reported that there was a “good” or “cute” way to be pregnant, and compared themselves to that ideal. For example, one woman commented that she “wanted one of those cute little baby tummies...instead the weight I gained distributed evenly throughout my body.” Thus, while pregnancy allows some women to ignore sociocultural or internal standards for how to look, there are new pregnant standards to which they might feel they should conform, which seems to dictate that “evidence” of the pregnancy should be primarily in the abdomen rather than in a general spread of the body or overall increase in size.

How do you feel about your body now? Once again, responses to this question were coded into six categories, ranging from very satisfied to dissatisfied, with three categories of dissatisfaction. Only 7.7% of women reported feeling wholly satisfied with their bodies after giving birth. The largest group of women (40.4%) reported feeling satisfied, with the caveat that something about their body needed to change, or that they needed “improvement” in some area. For example, one woman commented “Fine. It is me and that's good enough. Would like to have a better mid section though.” Some women in this category also cited being a mother as the reason that they are not more upset over their “problem areas.” One woman responded, “Not bad. Like I said, I'm not as thin as I'd want, but I AM SO PROUD of any way my baby girl has altered my body.”

Unfortunately, 45% of the women indicated that they were dissatisfied with their body after having a baby. Some women mirrored the women described above, in that they also found some specific thing(s) about their bodies that they wanted to change

(16.4%). However, these women differed in that they were dissatisfied with their appearance because of it; “Not good. Wish I could loose the rest of the fat around my lower abs and hips but no matter what it won't go away.” In addition, another 24% of the women replied that they were globally (and some, very) dissatisfied with their bodies. One woman expressed, “I feel disgusted and ashamed by my body. I hate my c-section scar, I hate my flabby tummy, and I hate to see myself naked. I hate for my husband to see me naked even more. I think about my body all the time.” Overall, there were many women who were quick to point out what is “wrong” with their bodies; some were satisfied in spite of these problems, while others felt dissatisfied. In addition, there were far more women who expressed shame, guilt and even hatred towards themselves and their bodies postpartum, than those who expressed happiness.

When viewed together, it seems that the general pattern was that women reported mixed feelings about their body pre-pregnancy, although the majority reported feeling satisfied. This was followed by a range of reactions to pregnancy, with a large number of women feeling satisfied at some point during the 9 months. In the postpartum period, the vast majority of women reported some dissatisfaction. While there were certainly individuals who veered from this general trajectory, the predominant pattern did at least indicate decreased body image postpartum.

What types of comments have you received about your body or how you look since giving birth? This question revealed seven categories. Four of the categories primarily reflected positive comments. A few women reported that they were told that they looked better than they had before pregnancy (3.3%), and the majority of women (54.6%) said that they were usually told that they looked good because they were “back to normal” or

because they did not look like they had had a baby. For example, one woman remarked “My husband, who found my pregnancy body a mixture of attractive and fascinating, is pleased to have the regular "me" back and regularly makes comments on how good I look :). The general consensus from family, friends, and random strangers is that I look great and you would never know I just had a baby.”

The other two positive categories both came with caveats. For a few women, they felt that they only received positive feedback with the added comment “for having a baby” (4.4%); “Everyone says I look great with the caveat always of "having given birth 2 months, 3 months, 4 months... "ago.” For other women, they received positive comments, but reported that they did not believe them or that others do not see their true flaws. For some, this might have reflected their own dissatisfaction. One woman responded “OH! People say I look great! It's just a shame that I don't believe them more.” For others, they explained that they believed people were just being polite. “Everyone is always nice and tells you how great you look after giving birth. People aren't going to tell you, you look like you swallowed a ham.”

One woman in this category also made the very important point that any comments, positive or negative, make one aware of the focus on appearance. “I hate how everyone always feels they have to say "You look great." or something like that. It puts so much emphasis on how the mother, who just had a baby and isn't sleeping, looks. Of course she doesn't FEEL like she looks good, so it makes her (or at least this was true for me) feel like the person is just saying that....and that she wishes they would stop focusing on and even thinking about how she looks. Look at my baby, not me, right now! And why do I have to look good?” Women in a focus group conducted in designing this study

also mentioned this phenomenon; during and after pregnancy, others seem to feel freer to comment on how a woman looks, which might make her more aware of pressure for thinness even if the comments are positive.

There were also two categories that reflected negative comments. Some women reported that others made blatant negative comments about their weight (5.5%). One woman reported that, “When my son was 2 months old my father in law asked me ‘when are you going to start dieting, since all your friends are so skinny.’” Another group of women reported that the negative comments they received were a bit more subtle, or couched as helpful suggestions/offers (6.6%). For example, one woman explained “I just feel that my husband wouldn't mind if I was thinner - he encourages me going to the gym...so I just assume that he thinks that I am chubby.”

Overall Summary of Findings

In order to understand the large number of findings presented in this study, it is helpful to once again return to the original biopsychosocial model as presented in chapter two. Essentially, health outcomes have three potential contributors: biomedical factors (biological or genetic; often viewed as fixed or difficult to change), biosocial factors (factors that have both biological and socially constructed aspects, such as gender or race), and psychosocial factors (psychological, social and behavioral; often viewed as the most amenable to change). Each type of factor can have a direct effect or an indirect effect on health status. The current study explored a biopsychosocial model of body image in new mothers, as measured by body satisfaction and disordered eating, focusing on biomedical factors (postpartum BMI, weight change and shape change) and

psychosocial factors (internalization of the thin ideal, negative affect, pressure for thinness and social support)

Overall, the biopsychosocial model was supported. All tested biomedical factors contributed to body satisfaction and disordered eating, and three of the four tested psychosocial factors (internalization of the thin ideal, negative affect, and pressure for thinness) accounted for additional variance above and beyond the biomedical factors. In addition, as predicted by the biopsychosocial model, there were significant mediation effects; shape change was partially mediated by internalization of the thin ideal and pressure for thinness, and weight change was partially mediated by internalization of the thin ideal.

The second major finding was the importance of body image and appearance to new mothers. The overwhelming majority of mothers reported feeling concerned with their weight and appearance postpartum. A third important, and related finding, was that body image and postpartum depression are significantly correlated, with a large effect size. In addition, negative affect and internalization of the thin ideal, two psychosocial predictors of postpartum body image, were also significant individual predictors of postpartum depression. Thus, not only are women concerned with their appearance, these concerns can contribute to postpartum depression.

A fourth significant, but unexpected, finding was the role of currently breastfeeding in predicting body image. Women who were currently breastfeeding had higher body satisfaction and lower disordered eating, an effect that was partially mediated by shape change. In addition, breastfeeding served as a buffer against the negative effects of pressure for thinness. However, there were no significant findings

when comparing those who breastfed at some point with those who did not breastfeed at all.

Finally, and perhaps most importantly, the qualitative data demonstrated that there is not one typical reaction to the pregnancy and postpartum periods. Women expressed varying degrees of satisfaction with their bodies pre-pregnancy, during pregnancy and in their first postpartum year. While there is a general pattern of decreasing body image postpartum, women have varying reactions and experiences of their bodies throughout their pregnancy and postpartum time periods.

Limitations

There are several limitations of this study. To begin with, this research is limited by the fact that it only looked at mothers' self reports; there is no way to determine the accuracy of their perceptions. For example, while an attempt was made to get factual information on current weight and BMI, a mother might underestimate her pre-pregnancy weight if she is feeling badly about her body or she might perceive pressure for thinness from her partner while her partner is not exerting any pressure. Unfortunately, it is not possible to look at all of these sources of information in one study. Due to the exploratory nature of the current study, it only used self-report. Future research should look how the reports of others (including partners, friends and even doctors) relate to mothers' self reports.

The cross sectional nature of this research is also a limitation. While a cross sectional study gives an important glimpse of how women are feeling at the moment of completing the survey, and this study did look at women who are at different points in the first postpartum year, it is also important to look at how women fare over time.

Longitudinal research would help researchers to examine the predictors of postpartum body image and perhaps trace them from pre-pregnancy through the postpartum period.

Another set of limitations is due to the nature of internet research. One such limitation is the ability to calculate a response rate. Because subjects were recruited via forum postings and snowball sampling, it was not possible to determine how many people saw the request or how many were eligible to participate. The only response rate researchers could provide was the number of people who actually went to the website to begin the survey; however, this does not indicate the number of eligible people who heard about the survey and chose not to visit the website. Related to this limitation, there may have been some respondent bias. It is not possible for researchers to determine differences between those who replied to the study and those who did not. Finally, because the researchers recruited subjects via the internet, all the participants needed computer access, which may have limited the diversity of the sample. The current sample was older and better educated than the general population (although older mothers are more likely to have a higher degree), and had a greater proportion of white participants. However, the sample did represent a range of income levels and was representative in terms of employment and breastfeeding rates. Future research should consider additional modifications to internet surveys in order to account for these limitations.

Implications for Research

There has been very little research regarding adult women's body image, much less postpartum women. Thus, the current study contributes to the literature on body image and eating disorders in postpartum women, but also adds to the scant literature on these issues in adult women overall. It demonstrates the importance of previously ignored

psychosocial variables (especially internalization of the thin ideal and pressure for thinness) in postpartum body image, beyond variance accounted for by biomedical variables. However, these findings also lead to additional questions for further research.

One direction for future research would be to establish more nuanced and directional paths between the variables explored here. While the correlational analyses of the current study show relationships between variables, and the mediations provided more information than regressions alone by looking at mechanisms of action, they are not directional and one cannot make any claims regarding causation. Thus, future research could look at similar variables using structural equation modeling, to establish directional pathways between the predictor variables. This would provide more insight into the biopsychosocial model of body image, and of the relationship between body image and postpartum depression. Another future study could explore the relationship of these variables over time. For example, one could explore whether levels of internalization of the thin ideal or pressure for thinness predict postpartum body image or depression. In addition, while studies have looked at the trajectory of body image over the course of pregnancy and after birth, studies have not looked at the trajectory of the predictor variables over time. For example, if a woman reports high internalization of the thin ideal pre-pregnancy, does she continue to hold herself to the thin ideal even when pregnant? Finally, as this study looked only at first time mothers, it might be interesting to explore these factors in women having additional children.

Another direction for future research would be to examine individual variables more closely. For example, pressure for thinness was shown to be an important variable in predicting postpartum body image, especially for women who were not breastfeeding.

Previous research had demonstrated correlations of perceived pressure for thinness with actual pressure for thinness (as rated by others) in adolescent women (e.g. Stice, et. al, 1998), and the qualitative data in the current study provided examples of direct and more subtle pressure for thinness. However, it would be interesting to explore the relationship of what women perceive and what pressure others are aware of exhibiting. A dyadic study of pressure for thinness (with a rating provided by a significant other), and postpartum body image might provide further insight into how others can effect a woman's feelings towards her body. In addition, it might be interesting to study the source of pressure in a more explicit way. The measure used in the current study asks about pressure from one's significant other, family, friends and the media, but lumps them all together as one construct. Future research could examine how each source affects postpartum body image, as the effect might differ.

Another individual variable that might need more research is social support. Most previous research on the transition to motherhood that includes social support finds that it does have a significant relationship with postpartum adjustment (e.g. Crinic, et. al. 1983), but the current study did not find a significant relationship between social support and postpartum body image. A number of possible explanations for the lack of significant findings are outlined in the discussion; however, future research could explore these possible explanations and gain further insight as to ways in which social support might be helpful or unhelpful for postpartum women struggling with body dissatisfaction. A good place to begin might be a qualitative study, exploring the type and sources of support that new moms seek, especially as some women expressed concerns about their bodies that might have been embarrassing to discuss with others.

Future research should also explore the role of breastfeeding in more depth. Only a handful of studies have looked at the relationship of breastfeeding and body image, with mixed results. The current study found no relationship between breastfeeding (overall) and body image, but did find that currently breastfeeding continued to have an impact of body image variables even when all of the additional biomedical and psychosocial variables were included. Future research should explore breastfeeding intention and follow up with women to see if they did end up breastfeeding and for how long. In addition, the current study reflected the number of women in the general population that breastfeed, but this led to unequal cell sizes of women who never breastfed, women who did but were not currently breastfeeding, and women who were currently breastfeeding. Future research could seek out equal numbers of women in each group and explore differences between them. Finally, as breastfeeding is a biological variable as well, and changes hormone levels in new mothers that can relate to emotions, future research could explore how these hormonal changes associated with breastfeeding might relate to psychological variables.

Finally, future research should begin to explore the effectiveness of various interventions with new or expectant mothers. Research has developed a number of ways to help prevent eating disorders in children and adolescents. However, it is unclear whether these types of interventions would be effective with new mothers. One would have to consider the schedule of new mothers; while children and adolescents are often a “captive” audience in schools, new mothers might only see a doctor for a brief time, with a focus primarily on physical health. One would also have to consider the more advanced cognitive level of adult women, and the length of time that they have been exposed to the

sociocultural messages surrounding thinness. Future research could also explore positive variables related to body image, and look at how to encourage those factors in new mothers.

Implications for Practice

In addition to implications for future research, this study has a number of implications for practice as well. Perhaps the most important finding for practitioners is that 75% of women reported being concerned with their appearance and that it was the biggest concern for almost 15% of the participants. This was the second most often reported concern, after “low energy/fatigue.” Those who work with new or expectant mothers should be aware that many will be worried about returning to their prepregnancy figure. In addition, practitioners should be aware that, because of this concern, new mothers might be at risk for unhealthy eating behaviors. In the qualitative data, one woman explained that she was currently on a crash diet because she wanted to get back to her prepregnancy figure very quickly, and did not feel she had time or energy to exercise. In addition, looking at individual items of the EAT-26 (Garner, et. al., 1982), 31.3% of participants reported often, very often or always engaging in dieting behaviors and 4.8% of participants reported that they had (rarely or sometimes) purged after eating a meal. These behaviors can be dangerous to the mother’s health, but can also be dangerous to the child and his/her development of healthy eating habits. While it is recommended that physicians ask about previously diagnosed eating disorders (March of Dimes, 2008), women are at risk for low body satisfaction and unhealthy eating behaviors after pregnancy, even without a previous diagnosis. Physicians and mental health clinicians need to address body image and related behaviors in new mothers.

Clearly, the physical changes that occur with pregnancy and birth can account for variance in body image outcomes for new mothers, and those working with new mothers should address how new mothers feel about these changes. However, in addition to the biomedical variables, this study provides evidence that psychosocial factors are equally, if not more, important in postpartum body image. In addition, shape change and weight change are partially mediated (or partially explained) by internalization of the thin ideal, and shape change is partially mediated by pressure for thinness. These findings suggest that practitioners should focus on these psychosocial variables when working with expectant and new mothers. A new mother might attribute the bulk of her body dissatisfaction to her new weight/shape, when other factors are contributing to how she perceives these aspects of her body. Practitioners can help expectant mother be aware of what they might experience after giving birth, and can help new mothers alter their ideal body and cope with perceived pressure for thinness.

It is also extremely important to note that body satisfaction and disordered eating both strongly correlate with postpartum depression, yet are often overlooked in the research. Those working with new mothers who are suffering from postpartum depression should make an effort to talk to mothers about their body image as well, and should pay special attention to the degree the new mother internalizes the thin ideal, as it was a significant individual predictor of body image and postpartum depression.

Yet another finding for practitioners to note is the importance of breastfeeding in body image. While this study did not set out to look at the role of breastfeeding in postpartum body image, it did make some interesting findings. When a woman is currently breastfeeding, she has higher body satisfaction and lower disordered eating. She

is also less affected by pressure for thinness. These add to the list of healthy benefits of breastfeeding and should be discussed with new mothers. In addition, should a woman not desire or not be able to breastfeed, practitioners should be aware of the potential impact on her body image. In addition, practitioners should pay attention to the transitory nature of this finding and prepare breastfeeding women for potential changes in their body image once they stop.

Finally, the qualitative data helps practitioners see the varying ways in which women react to pregnancy and their postpartum figures; there is not one common path or reaction, as many previous studies have sought to imply. Some women loved their pregnant bodies, while others hated the rapid changes. While many women despised their postpartum figures, others felt they looked better than ever, or at least felt motherhood changed their perspective. The participants' open and honest answers regarding their body image helps give clinicians a broader schema for what a woman experiences as her body goes through the major changes of pregnancy and birth.

The voices of the women in this study provide, perhaps, the most important "take-home" point of the current study; each woman is unique and has her own path. While many studies demonstrate that women, in general, face lowered body satisfaction postpartum, and that seemed to be the predominant reaction in the current study, some women report an increase in satisfaction. It is unclear if postpartum increases in satisfaction are based on viewing one's body through the same prepregnancy lens or if the lens one uses changes because of what the body has accomplished. Future research should draw on the experience of these women, to develop preventative programming for expectant mothers. In addition, body image is not simply a matter of weight or shape.

This study demonstrates that how a woman feels about her postpartum figure is far more nuanced, and effected by a number of psychological and social factors. Both researchers and clinicians can use these findings to stimulate new research to address the multiple contributing factors of postpartum body image, and to help expectant and new mothers feel positive about the changes that occur because of pregnancy.

To conclude, this study furthers the literature on postpartum women, and expands the body image literature to include an adult population. It finds that the overwhelming majority of women are concerned about their postpartum appearance, and that this concern correlates with higher levels of postpartum depression. It is unique in its exploration of body image in a new population, and in its use of the biopsychosocial framework. In using this framework, it depicts a more nuanced and holistic picture of body image and how it might change over time, as women's bodies continue to change in appearance and function throughout their lives. The findings not only provide rich new areas for continued research, but also provide important areas for interventions, which can help those who work with pregnant and postpartum women provide more effective treatment.

Appendix A

List of Websites for Recruitment

National Groups

www.babycenter.com

www.modernmom.com

www.thenestbaby.com

www.epregnancy.com

www.craigslist.org

www.parents.com

www.parenthood.com

www.latinamami.com

www.southernmomsonline.com

Regional Groups

www.indymoms.com

www.cincymoms.com

www.parkcitymoms.com

In addition, the recruitment email was sent to a number of listserves in which the researcher's family and friends were members and reached women in New York, NY, Boston, MA, and Washington, DC.

Appendix B

Recruitment email/posting

NEW MOMS STUDY!

Are you a new mother? If you have had a baby within the last year, PLEASE consider completing a questionnaire designed to examine the experiences of new mothers during the transition to parenthood. Specifically, we are looking at how new mother's body image changes over the first year of parenthood and factors that might relate to body image.

Your participation will assist researchers interested in understanding more about the reasons for body satisfaction or dissatisfaction in new moms. It may also prove interesting for you as you reflect on some of your answers to the questions!

Also, Participants can enter a drawing to win a \$50 gift certificate to spafinder.com, redeemable at thousands of locations throughout the country!!!

The questionnaire should take you about 15-30 minutes to complete and can be accessed by visiting the following web site:

<https://www.psychdata.com/s.asp?SID=123527>

Whether or not you qualify, please consider passing this email along to others who do.

Thank you,

Anne C. Welsh, M.A.
Doctoral Candidate, Counseling Psychology
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Mary Ann Hoffman, Ph.D.
Professor, Counseling Psychology
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Appendix C

Demographics

Instructions: Please provide the following information about yourself.

1. Age: _____

2. Race/Ethnicity

- _____ African-American/Black
- _____ Asian-American/Pacific Islander
- _____ Asian-Indian/Pakistani
- _____ Biracial/multiracial
- _____ Hispanic/Latino(a)
- _____ Middle Eastern/Arab
- _____ Native American/Native Alaskan
- _____ White/European American
- _____ Foreign National (please specify): _____
- _____ Other (please specify): _____

3. Highest level of education completed:

- _____ Grade school _____ College
- _____ High School _____ Grad School

4. Employment status:

- _____ Not employed _____ Employed part-time
- _____ Employed full-time _____ Student

5. What was your employment status before the birth of the baby?

- _____ Not employed _____ Employed part-time
- _____ Employed full-time _____ Student

6. What is your annual household income?

- Less than 30,000
- 30,000-59,999,
- 60,000-99,999
- 100,000-149,999
- 150,000 or higher

8. Please indicate the number of years and months that you have been in your current relationship (round to the nearest year):

_____ Years

9. Please indicate your sexual preference using the following scale:

Prefer Same Sex Only							Prefer Other Sex Only
1	2	3	4	5	6	7	

10. How old is your baby? _____ (in months)

11. What is the sex of your baby? _____ Male _____ Female

12. Was the pregnancy planned? _____ Yes _____ No

13. Did you receive infertility treatments? _____ Yes _____ No

14a. Are you currently breastfeeding you baby? _____ Yes _____ No

15b. If not, did you breastfeed previously? _____ Yes _____ No

16. Have you ever been diagnosed with depression? _____ Yes _____ No

17. Have you ever been diagnosed with anxiety? _____ Yes _____ No

18a. Have you ever been diagnosed with an eating disorder? _____ Yes _____ No

18b. If so, have you ever received treatment? _____ Yes _____ No

Appendix D

Biomedical Factors

- 1) What is your current height in inches?
- 2) What is your current weight?
- 3) What was your approximate weight before pregnancy?
- 4) Please think about the shape of your body currently. Also think about the shape of your body pre-pregnancy. Click on the number that best represents how different your current shape is from your pre-pregnancy shape.

No Change/
Completely the same

1

2

3

4

5

6

Extreme Change/
Completely Different

7

Appendix E

Internalization of the Thin Ideal

Sociocultural Attitudes Towards Appearance Scale-3 (SATQ-3; Thompson, et. al. 2004)

Please indicate the extent to which you agree/disagree with each statement below.

- 1 = Completely disagree
- 2 = Somewhat disagree
- 3 = Neither disagree or agree
- 4 = Somewhat agree
- 5 = Completely agree

1. I would like my body to look like the people who are on TV.
2. I compare my body to the bodies of TV and movie stars.
3. I would like my body to look like the models who appear in magazines.
4. I compare my appearance to the appearance of TV and movie stars.
5. I would like my body to look like the people who are in the movies.
6. I compare my body to the bodies of people who appear in magazines.
7. I wish I looked like the models in music videos.
8. I compare my appearance to the appearance of people in magazines.
9. I try to look like the people on TV.

Appendix F

Negative Affect

Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few months:

1	2	3	4	5
very slightly	a little	moderately	quite a bit	extremely

- ___ irritable
- ___ distressed
- ___ ashamed
- ___ upset
- ___ nervous
- ___ guilty
- ___ scared
- ___ hostile
- ___ jittery
- ___ afraid

Appendix G

Perceived Sociocultural Pressure Scale (PSPS; Stice & Agras, 1998)

Please click the circle/response that best captures your own experience.

1 = None

3 = Some

5 = A Lot

1. I've felt pressure from my friends to lose weight.
2. I've noticed a strong message from my friends to have a thin body.
3. I've felt pressure from my family to lose weight.
4. I've noticed a strong message from my family to have a thin body.
5. I've felt pressure from my spouse/partner to lose weight.
6. I've noticed a strong message from my spouse/partner to have a thin body.
7. I've felt pressure from the media (e.g. TV, magazines, etc.) to lose weight.
8. I've noticed a strong message from the media to have a thin body.

Appendix H

Social Support

Multidimensional Scale of Perceived Social Support (Zimet, 1988)

Please rate the extent to which you agree with the following statements, on a scale of 1 to 7:

- 1 = very strongly agree
- 2 = strongly agree
- 3 = agree
- 4 = neutral
- 5 = disagree
- 6 = strongly disagree
- 7 = very strongly disagree

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share my joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

Appendix I

Body Dissatisfaction

The Body Shape Questionnaire-Revised-10 (BSQ-R-10; Mazzeo, 1999)

Please click on the circle that best indicates how often you felt the following ways in the past month.

- 1 = Always
- 2 = Very Often
- 3 = Often
- 4 = Sometimes
- 5 = Rarely
- 6 = Never

1. Have you been so worried about your shape that you have been feeling that you ought to diet?
2. Have you noticed that shape of other women and felt that you own shape compared unfavorably?
3. Has being naked, such as when taking a bath, made you feel fat?
4. Has eating sweets, cakes, or other high calorie food made you feel fat?
5. Have you felt excessively large and rounded?
6. Have you felt ashamed of your body?
7. Has seeing your reflection (e.g. in a mirror or a shop window) made you feel bad about your shape?
8. Have you been particularly self-conscious about your shape when in the company of other people?
9. Have you found yourself brooding about your shape?
10. Has seeing thin women made you feel badly about your own shape?

Appendix J

Disordered Eating

Eating Attitudes Test (EAT-26; Garner et. al., 1982)

Please click on the circle that best indicates how often you have engaged in the following behaviors during the past month.

- 1 = Always
- 2 = Very Often
- 3 = Often
- 4 = Sometimes
- 5 = Rarely
- 6 = Never

1. Engage in dieting behavior
2. Eat diet foods
3. Feel uncomfortable after eating sweets
4. Enjoy trying new rich foods
5. Avoid foods with sugar in them
6. Particularly avoid foods with high carbohydrate content
7. Feel preoccupied with a desire to be thinner
8. Like my stomach to be empty
9. Think about burning up calories when I exercise
10. Feel extremely guilty after eating
11. Am terrified of being overweight
12. Am preoccupied by the thought of having fat on my body
13. Am aware of the calorie content of foods that I eat
14. Have the impulse to vomit after meals
15. Vomit after I have eaten
16. Have gone on eating binges where I feel that I may not be able to stop
17. Give too much time and thought to food
18. Find myself preoccupied with food
19. Feel that food controls my life
20. Cut my food into small pieces
21. Take longer than others to eat meals
22. Other people think that I am too thin
23. Feel that others would prefer if I ate more
24. Feel that others pressure me to eat
25. Avoid eating when I am hungry
26. Display self-control around food

Appendix K

Depression

Edinburgh Postnatal Depression Scale (EPDS; Cox, et. al., 1987)

Please click on the answer that comes closest to the way you have felt in the past 7 days, not just how you feel today.

In the past 7 days:

- 1) I have been able to laugh and see the funny side of things
 - a. As much as I always could
 - b. Not quite so much now
 - c. Definitely not so much now
 - d. Not at all
- 2) I have looked forward with enjoyment to things
 - a. As much as I ever did
 - b. Rather less than I used to
 - c. Definitely less than I used to
 - d. Hardly at all
- 3) I have blamed myself unnecessarily when things went wrong
 - a. Yes, most of the time
 - b. Yes, some of the time
 - c. Not very often
 - d. No, never
- 4) I have been anxious or worried for no good reason
 - a. No, not at all
 - b. Hardly ever
 - c. Yes, sometimes
 - d. Yes, very often
- 5) I have felt scared or panicky for no very good reason
 - a. Yes, quite a lot
 - b. Yes, sometimes
 - c. No, not much
 - d. No, not at all
- 6) Things have been getting on top of me
 - a. Yes, most of the time I haven't been able to cope at all
 - b. Yes, sometimes I haven't been coping as well as usual
 - c. No, most of the time I have coped quite well
 - d. No, I have been coping as well as ever
- 7) I have been so unhappy that I have had difficulty sleeping
 - a. Yes, most of the time
 - b. Yes, sometimes
 - c. Not very often
 - d. No, not at all

- 8) I have felt sad or miserable
- a. Yes, most of the time
 - b. Yes, sometimes
 - c. Not very often
 - d. No, not at all
- 9) I have been so unhappy that I have been crying
- a. Yes, most of the time
 - b. Yes, quite often
 - c. Only occasionally
 - d. No, never
- 10) The thought of hurting myself has occurred to me
- a. Yes, quite often
 - b. Sometimes
 - c. Hardly ever
 - d. Never

Appendix L

Qualitative Questions and “Concerns”

1) Having a baby can create a number of concerns for a woman. Which of the following have been a concern for you in the past month?

- 1) Finding time for myself
- 2) Low energy/not enough sleep/Tiredness/Fatigue
- 3) Relationship with Husband/Partner
- 4) Being a good mother
- 5) Finding good child care
- 6) Physical Pain
- 7) My weight/shape/appearance
- 8) Feeling down/sad frequently
- 9) Ability to concentrate
- 10) Relationships with friends
- 11) Relationships with extend family
- 12) Finances
- 13) Other (please list)

2) Of the concerns you chose above, which would you say has been your biggest concern in the past month?

3) Please describe your body

4) How did you feel about your body before your pregnancy?

5) How did you feel about your body during your pregnancy?

6) How do you feel about your body now?

7) What types of comments have you received from people you know (i.e. your spouse, friends or family) about your body or how you look since giving birth?

Appendix M

Debriefing Form

Thank you very much for participating in this study.

Women who give birth face a large variety of biological changes and new demands on themselves and their relationships. Some of these changes involve drastic short and long term changes to their bodies. In fact, women often gain 2.2 pounds with each child (IOM, 1990). In a culture that values thinness and an immediate return to prepregnancy weight, shape and functioning, this change can have major effects on a new mothers psyche.

Although previous research has shown that postpartum women report weight and shape concerns (i.e. Walker, 1998), as well as a relationship between weight retained and depression (Walker, 1997), no study has included psychological or social factors when looking at the body image of new mothers. The purpose of the current study is to investigate the biopsychosocial predictors of body satisfaction, disordered eating behaviors and depression in new mothers during the first year of parenting. Gaining an understanding of the relationship of these variables will also help clinicians in making interventions with postpartum women. This research will help provide a more nuanced picture of body image in new mothers and help clinicians make better interventions with this group.

Please be certain that your responses to the questionnaires will be held in strict confidentiality. Under no circumstances will this be violated.

Due to the fact that many individuals have not yet participated in this study, we must ask you not to discuss this study with anyone. This is crucial to maintaining the study's validity.

If you would like additional information on maintaining a healthy relationship with your partner, please visit <http://www.apa.org/topics/>. If you are interested in locating a psychologist to discuss any of the concerns that may have arisen for you while completing this questionnaire, please visit <http://helping.apa.org/> or call **1-800-964-2000**.

Please contact us if you have any questions or concerns about your participation in this study. We are appreciative of your time and effort in assisting us with this important study.

Sincerely,

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Appendix N

Qualitative Coding Categories

QUESTION 1: How did you feel about your body before your pregnancy?

Codes:

- A) Very Satisfied with body in general. This category includes feeling satisfied with shape and size, feeling fit, looking good in clothing, feeling happy with body after losing weight/exercising
- B) Okay/Accepting of body in general. This category includes people who feel “okay” with their body, although they might mention that they “could have exercised more”, a body part “could be better,” they felt okay in clothing, but not naked, or they had some “insecure days” or “little insecurities”
- C) Dissatisfied with weight (too high). This category included people who are dissatisfied with their bodies, with a focus on feeling overweight. The focus is on size/weight being too big/too much. Some might mention that they always wanted to lose weight or that they had always been heavy.
- D) Dissatisfied with body and/or whole self. This category includes people who are overall dissatisfied and have overall negative body image, rather than a specific problem such as weight or tone (or are dissatisfied with many things, i.e. weight AND tone). They might mention not “being happy” with their bodies, having never “been happy,” or comparing themselves to other women
- E) Dissatisfied with Shape/Tone. This category included people who are dissatisfied with the tone or shape of their bodies. They might report that they do not exercise enough, that they were out of shape/wanted to be in better shape, or that they did not have any muscle mass
- F) Dissatisfied with weight (too low). This might be a small category, but includes women who were dissatisfied with their bodies for weighing too little or for being too small/too thin.

QUESTION 2: How did you feel about your body during your pregnancy?

Codes:

- A) Satisfied/Very Satisfied: No pressure for thinness. This category included women who felt pregnancy legitimized weight gain or “camouflaged” their “fat.” They reported enjoying “not worrying about being big,” being able to have a big stomach and not worry about others seeing them as fat, it was okay to feel huge
- B) Satisfied/Very Satisfied: Excitement about motherhood. This category included women who were in awe of their bodies and the changes that motherhood brought. They reported not worrying about being big because it meant they would get to be a mom. They felt proud of their changing body and even felt beautiful.
- C) Loved it/Satisfied. No explanation given of why happy/satisfied.
- D) Mixed/Both Satisfied and Dissatisfied during pregnancy. This category includes women who liked some aspects of pregnancy and not others (i.e. some women

- reported enjoying watching their stomach grow, but were unhappy with stretch marks) and women who were happy during one phase and not during others (i.e. women who felt fat/dissatisfied during the first trimester, but felt happy once they “started to show” or women who liked it first, but felt too big/uncomfortable during the third trimester)
- E) Dissatisfied. This category includes women who were overall dissatisfied with their bodies throughout pregnancy. Some women reported feeling out of control, a constant fear they would gain too much, feeling unhappy with weight gain and stretch marks, etc.

QUESTION 3: How do you feel about your body now?

Codes:

- A) Very Satisfied: Body Improved. This category includes women who like their body now better than their pre-pregnancy body, whether it’s because of awe at the what their body did or because they feel they look better than before having the baby
- B) Satisfied: “Back to Normal.” This category includes women who are satisfied with their bodies, because they feel that they have returned to their pre-pregnancy weight/shape/size, etc.
- C) Satisfied, but need for improvement. This category includes women who reported feeling satisfied/happy/okay with their bodies, but also felt that their bodies needed some sort of work (i.e. lose 10 more lbs, tone up a bit). Some also appear to be able to take a step back or look at their bodies philosophically- they report that the “problem” with their bodies seems minor, given that they just had a child, or that they are not bothered because they love being a mom.
- D) Some dissatisfaction: Need for a specific change. Unlike the women in the previous category, these women felt that something specific in their body needed to change, and were therefore dissatisfied or unhappy with their bodies. These women reported feeling unhappy with flabby stomachs/lack of tone/stretch marks/extra weight (5-10lbs)/shape change/inability to fit into clothes, etc. but it was a specific thing that needed to change.
- E) Dissatisfaction: Global. These women are globally dissatisfied with their bodies. They report feeling that they do not look the way they used too (beyond just one thing like stretch marks or stomachs). They report feeling bigger overall or being a bigger size, feeling like their body is completely different or their shape has changed, they feel embarrassed or ashamed to be naked, unattractive, fat, or not feeling their body is their own.
- F) Dissatisfaction: Change in view of body. This category includes women who do not see their bodies in the same way after becoming a mom, and are unhappy. They report feeling asexual or utilitarian (because of breastfeeding), they feel older, more tired, not sexy, “like a mom” etc.

QUESTION 4: What types of comments have you received from people you know (i.e. spouse/partner, friends, family) about your body or how you look since giving birth?

Codes:

- A) Positive: Look better than pre-pregnancy. Women in this category reported receiving comments from others that they looked better than they did before pregnancy.
- B) Positive: Back to normal. Women in this category reported receiving comments from others that it was good that they were back to their pre-pregnancy shape, that they look good, or that “you can’t tell you had a baby”
- C) Positive “for having a baby.” Women in this category reported receiving comments from others that they looked, but always with the caveat of “for having had a baby” or “for a mom.”
- D) Positive, but “I don’t believe them.” A number of women mentioned that they received compliments on their body, but that they did not believe them, or they wished they could believe them. Some women in this category implied that people were being “polite” or only saying something because they “had to.”
- E) Neutral. Women in this category reported not getting comments on their appearance, or that the comments were neither positive nor negative.
- F) “Suggestions” for improvement: These women reported comments that were often couched as being helpful, but were often about how to tone up, lose weight or change their looks.
- G) Negative. These women reported getting negative comments, being teased or made fun of for their bodies, or being told to exercise, or lose weight

Glossary

Biopsychosocial Model: A model or framework for understanding physical or psychological health. This model consists of three types of predictors (biomedical, biosocial and psychosocial) that can all have direct or indirect effects on health status. The three factors are conceived of as concentric circles with health status in the center; the further out the layer, the less control we have over it. For a visual depiction, see Figure 1.

Biomedical Contributors: The outermost layer of the biopsychosocial model. These contributors are biologically determined (i.e. by disease, genetics, etc.). Individuals have little to no control over the biomedical variables, and they can act on health directly, or through biosocial or psychosocial contributors. For the purposes of the current study, the biomedical variables were weight change, shape change and postpartum BMI.

Biosocial Contributors: The second layer of the biopsychosocial model. These contributors have a biological base, but are also partially socially constructed. These variables might be somewhat amenable to change, but are not wholly flexible. Examples include gender, race, ability and sexual orientation.

Psychosocial Contributors: The innermost layer of the biopsychosocial model. These contributors have a psychological or social basis, and can be behaviors, beliefs, thoughts or attitudes. They often act directly on health, or serve as mediators of the outer layers. For the purposes of the current study, the psychosocial variables were internalization of the thin ideal, negative affect, pressure for thinness, and social support.

Internalization of the Thin Ideal: A psychological variable that includes not only the extent to which an individual is aware that a thin body type is an ideal body type, but also the extent to which she believes that it is an acceptable and attainable way for her to look.

Pressure for Thinness: A social variable, that refers to the amount of pressure (covert or overt) that one perceives from multiple sources, including family, friends, significant others, and the media.

References

- Baker, C.W., Carter, A.S., Cohen, L.R., & Brownell K.D. (1999). Eating attitudes and behaviors in pregnancy and postpartum: Global stability versus specific transitions. *Annals of Behavioral Medicine, 21*, 143-148.
- Boyd, R.C., Le, H.N., & Somberg, R. (2005). Review of screening instruments for postpartum depression. *Archives of Women's Mental Health, 8*, 141-153.
- Brewton, T.D., & Steiger, H. (2004). Neurotransmitter dysregulation in anorexia nervosa, bulimia nervosa and binge eating disorder. In Brewerton, T.D. (Ed.) *Clinical Handbook of Eating Disorders: An Integrated Approach* (pp. 257-281). New York: Marcel Dekker Inc.
- Cash, T.F., Gillen, B., Burns, D.S. (1977). Sexism and beautyism in personnel consultant decision making. *Journal of Applied Psychology, 62*, 301-310.
- Center for Disease Control (2000). Pregnancy Risk Assessment Monitoring System (PRAMS): PRAMS and Postpartum Depression. Retrieved on April 21, 2007 from www.cdc.gov/PRAMS/PPD.htm.
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300-314.
- Cools, J., Schotte, D. E., & McNally, R. J. (1992). Emotional arousal and overeating in restrained eaters. *Journal of Abnormal Psychology, 101*, 348-351.
- Costa P.T., & McCrae, R.R. (1992). *The Revised NEO Personality Inventory*. Odessa, FL: Psychological Assessment Resources.

- Cowan, C. P., Cowan, P. A., Heming, G., Garrett, E., Coysh, W. S., Curtis-Boles, H., & Boles III, A. J. (1985). Transitions to parenthood: His, hers, and theirs. *Journal of Family Issues*, 6, 451-481.
- Cox, J.L., Holden, J.M., & Sagovsky, R. (1987). Detection of postnatal depression: Development of the 10-item Edinburgh postnatal depression scale. *British Journal of Psychiatry*, 150, 782-786.
- Crinic, K.A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M. & Basham, R. B. (1983). Effects of stress and social support on mothers of premature and full term infants. *Child Development*, 54, 209-217.
- Cutrona, C. E. (1984). Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology*, 93, 378-390.
- Devlin, M.J. & Walsh, B.T. (1989) Eating disorders and depression. *Psychiatric Annals*, 19, 473-476.
- Engel, G.L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196, 129-136.
- Fishbein, E.G. & Burgraff, E. (1997). Early postpartum discharge: How are mothers managing? *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 27, 142-148.
- Foster, S.F. (1996). Body image, maternal fetal attachment and breastfeeding. *Journal of Psychosomatic Research*, 41, 181-185.
- Frazier, P.A., Tix, A.P., & Barron, K.E.(2004) Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51, 115-134

- Fredrickson, B.L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21*, 173-206.
- Garner, D.M., Olmstead, M.P., Bohr, Y. & Garfinkel, P.E. (1982). The eating attitudes test: psychometric features and clinical correlates. *Psychological Medicine, 12*, 871-878.
- Garner, D.M., Olmstead, M.P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*, 15-34.
- Glaser, J., Russell, V., De Villiers, A.S., Searson, J.A. & Taljaard, J.J.F. (1990). Rat brain monoamine and serotonin S2 receptor changes during pregnancy. *Neurochemical Research, 15*, 949-956.
- Grisset, N.I., & Norvel, N.K. (1992). Perceived social support, social skills, and quality of relationships in bulimic women. *Journal of Consulting and Clinical Psychology, 60*, 293-299.
- Harris, G. (2008, May 1). More mothers breastfeed, in first months at least. *New York Times*, online edition.
- Hay, P. (1998). The epidemiology of eating disorder behaviors: An Australian community-based survey. *International Journal of Eating Disorders, 23*, 371-382.
- Heatherton, T.F., & Baumeister, R.F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin, 110*, 86-108.

- Hesse-Biber, S., Marino, M., & Watts-Roy, D. (1999) A longitudinal study of eating disorders among college women: Factors that influence recovery. *Gender & Society, 13*, 385-408.
- Hirsch, T.G. (1999). *Relational identity, psychological differentiation, perceived social support and eating attitudes in college women*. Unpublished doctoral dissertation, Temple University.
- Hisner, P. (1986). Concerns of multiparas during the second postpartum week. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 16*, 195-203.
- Hoffman M. & Driscoll, J. (2000). Health promotion and disease prevention: A concentric biopsychosocial model of health status. In S.D. Brown & R.W. Lent (Eds.) *Handbook of Counseling Psychology* (pp 532-570). New York: John Wiley.
- Howell, E.A., Mora, P. Leventhal, H. (2006). Correlates of early postpartum depressive symptoms. *Maternal & Child Health Journal, 10*, 149-157.
- Hsu, G. & Zimmer, B. (1988). Eating Disorders in old age. *International Journal of Eating Disorders, 7*, 133-138.
- Institute of Medicine. (1990). *Nutrition during pregnancy*. Washington DC: National Academy Press.
- Irving, L.M. (1990) Mirror images: Effects of the standard of beauty on the self- and body-esteem of women exhibiting varying levels of bulimic symptoms. *Journal of Social and Clinical Psychology, 9*, 230-242.
- Jenkin, W., & Tiggemann, M. (1997). Psychological effects of weight retained after pregnancy. *Women and Health, 25*, 89-98.

- Johnson, S. Burrows, A. & Williamson, I. (2004) 'Does my bump look big in this?' The meaning of bodily changes for first-time mothers-to-be. *Journal of Health Psychology, 9*, 361-374.
- Johnston-Robledo, I., & Fred, V. (2008). Self-objectification and lower income pregnant women's breastfeeding attitudes. *Journal of Applied Social Psychology, 38*, 1-21.
- Jordan, K., Capdevila, R., & Johnson, S. (2005). Baby of beauty: A Q study into post pregnancy body image. *Journal of Reproductive and Infant Psychology, 23*, 19-31.
- Kraemer, H.C., Kiernann, M., Essex, M., & Kepfer, D.J. How and why criteria defining moderators and mediators differ between the Baron and Kenny and MacArthur approaches. *Health Psychology, 27*, S101-S108.
- Kuczmarski, R. J., Flegal, K. M., Campbell, S. M. & Johnson, C. L. (1994). Increasing prevalence of overweight among US adults. The national health and nutrition examination surveys, 1960 to 1990. *Journal of the American Medical Association, 272*, 205-211.
- Larsson, G. & Andersson-Ellstrom, A. (2003). Experiences of pregnancy-related body shape changes and breast feeding in women with a history of eating disorders. *European Eating Disorders Review, 11*, 116-124.
- Leon, G.R., Fulkerson, J.A., Perry, C.L., & Cudeck, R. (1993). Personality and behavioral vulnerabilities associated with risk status for eating disorders in adolescent girls. *Journal of Abnormal Psychology, 102*, 438-444.
- MacKinnon, D.P., & Luecken, L.J. (2008). How and for whom? Mediation and moderation in health psychology. *Health Psychology, 27*, S99-S100.

- Madanat, H.N., Hawks, S.R., & Brown, R.B. (2006). Validation of the Sociocultural Attitudes Towards Appearance Questionnaire-3 among a random sample of Jordanian women. *Body Image*, 3, 421-425.
- Maine, M. & Kelly, J. (2005). *The Body Myth: Adult Women and the Pressure to be Perfect*. New York: Wiley.
- Mangweth-Matzek, B., Rupp, C.I., Hausmann, A., Assmaye, K., Mariacher, E., Kemmler, G., Whitworth, A.B., & Biebl, W. (2006). Never too old for eating disorders or body dissatisfaction: A community study of elderly women. *International Journal of Eating Disorders*, 39, 583-586.
- March of Dimes (2008). Preconception screening and counseling checklist. Retrieved September 27, 2008 from http://www.marchofdimes.com/professionals/19583_4182.asp.
- Martin, J.A., Hamilton, B.E., Sutton, P.D., Ventura, S.J., Menacke, F., Kirmeyer, S., & Munson, M.L. (2005). Births: Final data for 2005. *National Vital Statistics Reports*, 56, 1-104.
- Mazzeo, S.E. (1999). Modification of an existing measure of body image preoccupation and its relationship to disordered eating in female college students. *Journal of Counseling Psychology*, 46, 42-50.
- Milkie, M.A. (199). Social comparisons, reflected appraisals, and mass media: The impact of pervasive beauty ideals on black and white girl's self-concepts. *Social Psychology Quarterly*, 62, 190-210.

- Mintz, L.B., & Betz, N.E. (1988). Prevalence and correlates of eating disordered behaviors among undergraduate women. *Journal of Counseling Psychology, 35*, 463-471.
- Mintz, L.B., O'Halloran, M.S., & Mulholland, A.M. (1997). Questionnaire for Eating Disorder Diagnoses: Reliability and validity of operationalizing DSM--IV criteria into a self-report format. *Journal of Counseling Psychology, 44*, 63-79.
- Monge, P. & Contractor, N. (1988). Communication networks: Measurement techniques. In C. Tardy (Ed.), *A handbook for the study of human communication: Methods and instruments for observing, measuring, and assessing communication processes* (pp. 107-138). Norwood, NJ: Ablex.
- Paykel, E. S.; Emms, E. M.; Fletcher, J (1980). Life events and social support in puerperal depression. *British Journal of Psychiatry, 136*, 339-346.
- Pike & Rodin (1991). Mothers, daughters, and disordered eating. *Journal of Abnormal Psychology, 100*, 198-204.
- Schupak-Neuberg, E., & Nemeroff, C.J. (1993) Disturbances in identity and self-regulation in bulimia nervosa: Implications for a metaphorical perspective of 'body as self.' *International Journal of Eating Disorders, 13*, 335-347
- Shisslak, C.M., Crago, M., & Estes, L.S. (1995). The spectrum of eating disturbances. *International Journal of Eating Disorders, 18*, 209-219.
- Silber, T.J. (2005). Anorexia nervosa among children and adolescents. *Advances in Pediatrics, 52*, 49-76.

- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology* (pp.290-312). San Francisco: Jossey-Bass.
- Sohlstrom, A. & Forsum, E. (1995). Changes in adipose tissue volume and distribution using reproduction in Swedish women as assessed by magnetic resonance imaging. *American Journal of Clinical Nutrition*, *61*, 287-295.
- Stein, A. & Fairburn, C.G. (1996). Eating habits and attitudes in the postpartum period. *Psychosomatic Medicine*, *58*, 321-325.
- Stice, E. (2001). A prospective test of the dual pathway model of bulimic pathology: Mediating effects of dieting and negative affect. *Journal of Abnormal Psychology*, *110*, 124-135.
- Stice, E. & Agras, W.S. (1998). Predicting onset and cessation of bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy*, *29*, 257-276.
- Stice, E., Mazotti, L, Krebs, M., & Martin, S. (1998). Predictors of adolescent dieting behaviors: A longitudinal study. *Psychology of Addictive Behaviors*, *12*, 195-205.
- Stice, E., Nemeroff, C., & Shaw, H.E. (1996). Test of the dual pathway model of bulimia nervosa: Evidence for dietary restraint and affect regulation mechanisms. *Journal of Social and Clinical Psychology*, *15*, 340-363.
- Stice, E., Schupak-Neuberg, E., & Shaw, H.E. (1994). Relation of media exposure to eating disorder symptomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology*, *103*, 836-840.

- Strang, V.R., & Sullivan, P.L. (1985). Body image attitudes during pregnancy and the postpartum period. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 14*, 332-337.
- Sumner, A., Waller, G., Killick, S., & Elstein, M. (1993). Body image distortion in pregnancy: A pilot study of the effects of media images. *Journal of Reproductive and Infant Psychology, 11*, 203-208.
- Terry, D. J. (1991). Stress, coping and adaptation to new parenthood. *Journal of Social and Personal Relationships, 8*, 527-547.
- Thompson, J.K., Coovert, M.D., Richards, K.J., Johnson, S., & Cattarin, J. (1995). Development of body image, eating disturbance and general psychological functioning in female adolescents: Covariance structure modeling and longitudinal investigations. *International Journal of Eating Disorders, 18*, 221-236
- Thompson, J.K., Heinberg, L.J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Association.
- Thompson, J.K., Van den Berg, P., Roehrig, M., Guarga, A.S., & Heinberg, L.J. (2004). The sociocultural attitudes towards appearance scale-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders, 35*, 293-304.
- Tietjen, A. M., & Bradley, C. F. (1985). Social support and maternal psychosocial adjustment during the transition to parenthood. *Canadian Journal of Behavioral Science, 17*, 109-121.

- Tiller, J.M., Sloane, G., & Schmidt, U. (1997). Social support in patients with anorexia nervosa and bulimia nervosa. *International Journal of Eating Disorders, 21*, 31-38.
- Tylka, T.L., & Subich, L.M. (2004). Examining a multidimensional model of eating disorder symptomatology among college women. *Journal of Counseling Psychology, 51*, 314-328.
- Tzuriel, D., & Weller, L. (1986). Social and psychological determinants of breast-feeding and bottle-feeding mothers. *Basic and Applied Social Psychology, 7*, 85-100.
- Walker, L.O. (1997). Weight and weight-related distress after childbirth: Relationships to stress, social support, and depressive symptoms. *Journal of Holistic Nursing, 15*, 389-405.
- Walker, L.O. (1998). Weight-related distress in the early months after childbirth. *Western Journal of Nursing Research, 20*, 30-44.
- Walker, L., Timmerman, G.M., Kim, M., & Sterling, B. (2002). Relationships between body image and depressive symptoms during postpartum in ethnically diverse, low-income women. *Women & Health, 36*, 101-121.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Watson, D., Suls, J., & Haig, J. (2002). Global self-esteem in relation to structural models of personality and affectivity. *Journal of Personality and Social Psychology, 83*, 185-197.

- Webster, J. & Tiggemann, M. (2003). The relationship between women's body satisfaction and self-image across the lifespan: The role of cognitive control. *Journal of Genetic Psychology, 164*, 241-252.
- Wyatt, H.R., Peters, J.C., Reed, G.W., Grunwald, G.K., Barry, M., Thompson, H., Jones, J., & Hill, J.O. (2004). Using electronic step counters to increase lifestyle physical activity: Colorado on the move. *Journal of Physical Activity and Health, 1*, 181-190.
- Zimet, G. Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*, 30-41.