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Predictors of Body Image During the First Year Postpartum: A Prospective Study.

Sofia Rallis, Helen Skouteris, Eleanor, H. Wertheim, and Susan J. Paxton

School of Psychological Science, La Trobe University

Bundoora (Melbourne), Victoria, Australia

Correspondence author:

Dr. H. Skouteris, School of Psychological Science, La Trobe University, Bundoora, Victoria, 3086, Australia.

E-mail: [h.skouteris@latrobe.edu.au](mailto:h.skouteris@latrobe.edu.au)

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### Abstract

This longitudinal study investigated body image changes and possible predictors of multiple dimensions of body image in the first year postpartum. Women ( $N=79$ ) who had been followed up since early pregnancy (including reporting retrospectively about pre-pregnancy and concurrently about late pregnancy) completed questionnaires at 6 weeks, 6 months, and 12 months postpartum that focussed on body image measures of feeling fat, attractiveness, salience of shape and weight, and strength and fitness. Women experienced greater body dissatisfaction in the postpartum in comparison to pre-pregnancy and late pregnancy, with 6 months postpartum being the time of most body concern. In ratings of perceived current and ideal figure size, women decreased their current size ratings over the postpartum period, however ratings of ideal figure remained stable over the three time points. The findings also revealed that higher frequency of physical comparison tendencies at 6 weeks postpartum, and depressive symptoms and dieting behaviours at 6 months postpartum were predictors of body image of different types at 12 months post birth.

Key words: pregnancy, postpartum, body image, body dissatisfaction, risk factors

During pregnancy, in addition to facing alterations in hormone levels and various psychosocial challenges, women must deal with continual changes in body shape and size that can potentially affect women's image of their body. Post birth many women express body concerns with a desire to return quickly to their pre-pregnancy shape and weight (Walker, 1998).

Body image is a multidimensional construct comprising internal representations of one's appearance (Pruzinsky & Cash, 2002; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Body dissatisfaction results when a discrepancy exists between one's perceived current figure and one's ideal, or where one becomes concerned about one's appearance (Heinberg, 1996). This dissatisfaction is often associated with negative psychological functioning and depressed affect (Kostanski & Gullone, 1998; Stice & Whitenton, 2002). Body dissatisfaction may be of particular concern in the postpartum due to its association with unhealthy dieting, which may result in impaired milk production, milk contamination, and energy deficiency (Dewey & McCrory, 1994; Wendy & Tiggemann, 1997). To date, factors leading to body concerns across the first year postpartum have not been explored systematically.

In most western societies a slender body is considered to be the ideal body shape for women (Thompson et al., 1999). During pregnancy, women experience large departures from this ideal and might be expected to become more dissatisfied with their body. However, for most women these changes are seen as unique to the childbearing process and body changes do not necessarily translate into increases in body dissatisfaction (Davies & Wardle, 1994; Fairburn, Stein, & Jones, 1992; Richardson, 1990). For example, Skouteris, Carr, Wertheim, Paxton, and Duncombe (2005) found that most pregnant women's levels of feeling fat or salience of weight and shape remained fairly stable across pregnancy, although slightly more body concern was reported at 16-23 weeks gestation than later in pregnancy. Concerns about weight gain may increase, however, in the postpartum when women have not yet lost weight gained in pregnancy, particularly as the postpartum period progresses and women can no longer say they have recently given birth.

The first aim in the current study was, therefore, to explore changes in body image as women progressed through their first year postpartum. Studies of women's postpartum body image have yielded mixed results with some finding that women were more dissatisfied with their bodies in the postpartum than during pregnancy (e.g., Carty, 1970; Jenkin & Tiggemann, 1997; Leifer, 1977) and other studies not finding this pattern (e.g., Harris, 1979; Strang & Sullivan, 1985). These inconsistencies may partly be due to differing comparison time points; postnatal weight retained immediately post-birth could lead to fewer body concerns than 6 months later, and by one year many women would have lost the weight gained and might be more satisfied with their size. Our study examined this issue at three post-partum times, comparing them to pre-pregnancy and late pregnancy.

A second aim was to explore factors at 6 weeks and 6 months postpartum that predicted body dissatisfaction at one year postpartum. Models of the development of body image concerns are generally multi-factorial and cover bio-psycho-social elements (Pruzinsky & Cash, 2002; Thompson et al., 1999; Wertheim, Paxton, & Blaney, 2004a). The current study examined whether psychological elements related to well-being (depression, anxiety, self-esteem), individual responses to the social context (physical comparison tendencies) and eating behaviours measured in the first half-year postpartum, as well as the biological element of increases in body size, predicted later body dissatisfaction.

The factors selected have previously been found to be associated with body dissatisfaction, although their predictiveness in the postpartum has not been examined. Psychological well-being indices of depression, anxiety and self-esteem have been associated with body concerns in various contexts (Keel, Mitchell, Davis, & Crow, 2001; Kostanski & Gullone, 1998; Paxton, Eisenberg & Neumark-Sztainer, in press; Paxton, Schutz, Wertheim, & Muir, 1999; Palladino-Green & Pritchard, 2003), including prospectively during pregnancy (Skouteris et al., 2005) and cross-sectionally in the postpartum (Walker, Timmerman, Kim, & Sterling, 2002). Physical appearance comparison, which is a specific form of social comparison (Festinger, 1954), involves the tendency to compare one's body with others. Tendencies to make appearance comparisons have been shown to predict body concerns in young

women (Durkin, Paxton, & Sorbello, in press; Jones, 2001; Tiggemann & McGill 2004) and have prospectively predicted increased salience of weight and shape and feeling fat in late pregnancy (Skouteris et al., 2005). Finally dietary restraint has been found to relate to body dissatisfaction (Dunkley et al., 2001; Ricciardelli & McCabe, 2001) including during pregnancy (Hinton, Olson, & Peregrin, 2001), suggesting that attempts to restrain one's eating may actually increase body concerns. These psychological and social variables were explored as potential predictors of body dissatisfaction over the course of the post-partum, and examined after controlling for increases in body size.

## Methods

### *Participants*

Women ( $N=79$ ) who originally volunteered for a study of body image in pregnancy (Skouteris et al., 2005) continued in the current study (61.7% of the original sample) completing data until 12-months postpartum. They were recruited from prenatal exercise classes, or through advertisements in a university newsletter or in waiting rooms of obstetricians and gynaecologists in various suburbs of Melbourne, Australia.

### *Measures*

Women completed questionnaires at 16-23 weeks gestation (mean =18.7,  $SD =1.8$ ) (reporting retrospectively on the period 3 months before pregnancy – Pre-pregnancy) and at 32-39 weeks gestation – Late Pregnancy (see Skouteris et al., 2005). Data were also collected at three postpartum times: Time 1 Postpartum (T1PP) 6 weeks, Time 2 (T2PP) 6 months, and Time 3 (T3PP) 12 months postpartum.

*Demographics.* Self-reported weight and height was used to calculate body mass index (BMI;  $\text{kg}/\text{m}^2$ ). Age, household income, parity, employment, marital status, and country of own and of parents' birth were obtained in the first pregnancy time point (Skouteris et al., 2005).

*Body dissatisfaction.* *Body Attitudes Questionnaire* (BAQ; Ben-Tovim & Walker, 1991) *Feeling Fat (FeelFat)*, *Attractiveness (Attractive)*, *Salience of Weight and Shape (Salience)*, and *Strength and Fitness (StrengthFit)* has shown good test-retest reliability and construct validity in women (Ben-Tovim

& Walker, 1991; Skouteris et al., 2005). The *Contour Drawing Rating Scale* (CDRS; Thompson & Gray, 1995) depicts drawings of nine female figures rated from 1 (very underweight) to 17 (very overweight) with odd numbers under figures and even numbers halfway between. Participants rate their perceived current size and their ideal size. Current figure rating minus ideal rating represents body dissatisfaction. The *CDRS* has shown test-retest *rs* of .71 to .84 (Thompson & Gray, 1995) and construct validity (Wertheim, Paxton, & Tilgner, 2004). In the present study the postpartum Cronbach's alphas ( $\alpha$ ) were *FeelFat* .93-.94; *Attractive* .72 - .81; *Saliency* .78-.86; *StrengthFit* .80 - .84.

*Physical comparison tendencies.* Frequency of comparing one's appearance to that of others was measured using the Weight and Shape subscale of the revised Physical Appearance Comparison Scale (PACS; Thompson et al., 1999). The scale has demonstrated a test-retest reliability of .72,  $\alpha = .78$ , and has been found to correlate strongly with body dissatisfaction, suggesting good construct validity (Schutz, Paxton, & Wertheim, 2002; Thompson et al., 1999). The current study  $\alpha$  was .80.

*General well-being.* The *Rosenberg Self-Esteem Scale* (RSE; Rosenberg, 1965) has received support for validity,  $\alpha$  of .67 to .83 and test-retest *rs* of .77 to .85 (McCarthy & Hoge, 1982; Silbert & Tippett, 1965; Shahani, Dipboye, & Phillips, 1990). The current  $\alpha$  was .89. The *Trait subscale of the State-Trait Anxiety Inventory* (STAI: Spielberg, Gorsuch, & Lushene, 1970) has good construct validity and test-retest *rs* from .65 to .86 (Bas, Asci, Karabudak, & Kiziltan, 2004; Ravaldi et al., 2003; Spielberg, 1983). The current study  $\alpha$  was .92. The *Beck Depression Inventory* short form (BDI; Beck, Rial, & Rickels, 1974) correlates .96 with the full scale (Beck & Beck, 1972; Reynolds & Gould, 1981) and has been used extensively with test-retest reliabilities from .60 to .83 (Beck, Steer, & Garbin, 1988; Gould, 1982). (An item on suicidal thoughts was omitted.) In the current study  $\alpha = .79$ .

*Dietary restraint.* The Restraint subscale of the Dutch Eating Behaviour Scale (DEBQ-R; Van Strien, Frijters, Bergers, & Defares, 1986) assesses restriction of food intake to lose weight. It has shown a test-retest *r* of .85 and construct validity in numerous international studies (e.g., Banasiak, Wertheim, Koerner, & Voudouris, 2001; Laessle, Tuschl, Kotthaus, & Pirke, 1989). The current study  $\alpha = .92$ .

### *Procedure*

Following university ethics approval and written informed consent, women were sent a code-numbered questionnaire with reply paid envelopes at 16-23 weeks and 32-39 weeks gestation and then again at T1PP, T2PP and T3PP. The mean number of weeks since birth when the women completed questionnaires was 6.28 ( $SD = .79$ , range = 5-9 weeks), 25.6 ( $SD = 2.37$ , 22-34 weeks), and 53.2 ( $SD = 1.64$ , 48-60 weeks), respectively. At each time women completed the BAQ, CDRS and weight; in addition, at T1PP women completed demographics, the PACS and RSE, and at T2PP they completed the BDI, DEBQ-R and STAI-T.

### *Data Analysis*

Transformations of anxiety and BMI (log), and depression scores (sqrt) addressed skewness. Differences across the five time points on each of the four BAQ subscales were examined via one-way repeated measures analyses of variance (ANOVA). Eta squared ( $\eta^2$ ) effect sizes were reported. Huynh-Feldt Epsilon (HFE) adjustments addressed sphericity violations and Least Significant Difference (LSD) post-hoc comparisons conducted. A series of partial  $r$ s assessed prospective predictors of T3PP variables, partialling out a residual change score between Pre-pregnancy BMI and T3PP BMI (high scores represented more weight gain) and the relevant pre-pregnancy BAQ score. Covariates were entered into multivariable models if they were correlated with both predictors and outcomes at the  $p < 0.15$  level, BMI changes were controlled, even though pre-pregnancy BMI was only correlated with FeelFat T3PP, since in the literature BMI has been correlated with body image concerns (Wertheim et al., 2004). Pre-pregnancy BAQ was also entered first in the regression analyses to control for baseline levels of body concern (which correlated with levels at later time points). All BAQ T3 scores correlated ( $p > .05$ ) with age, family income, education, and marital status; only two  $r$ s reached  $p < .15$  but neither correlated with relevant predictors so none were controlled in multivariate models. Hierarchical regressions then examining unique variance accounted for, identifying which factors predicted the four BAQ subscales at T3PP. At step one, the relevant Pre-pregnancy BAQ subscale and BMI (Pre-

pregnancy and T3PP) residual change score were entered; at step two RSE and PACS from T1PP and BDI, ANXIETY and DEBQ-R from T2PP were entered.

### Results

Age range was 22 and 40 years ( $M = 32.45$  years,  $SD = 3.76$ ), with 86.1% married or in a living together relationship (13.9%); 54% were primiparous. At 12 months post birth, 11.4% were fulltime mothers/home carers, with 87.4% in paid employment. Average BMI was 23.86 ( $SD = 4.25$ ) three months pre-pregnancy, 25.59 ( $SD = 4.32$ ) at 6 weeks postpartum, 24.90 ( $SD = 4.20$ ) at 6 months postpartum, and 24.12 ( $SD = 4.00$ ) at 12 months postpartum. Three months pre-pregnancy, 17.7% of the women had a BMI < 20 (underweight), 55.7% had a BMI from 20-24 (healthy range), 19% had a BMI from 25-29 (overweight) and 7.6% had a BMI  $\geq 30$  (obese). Annual family income > A\$70,000 (about US\$45,000) was reported by 78.2% of the women, 7.7% reported A\$51,000-69,000 and 12.8% reported < A\$50,000 (US\$32,500). Most women were Australia-born (87.3%); with 12.7% from Europe, USA, Canada, and South Africa. Most women's ( $n=47$ , 59.5%) parents were born in Australia; 24% of women ( $n=19$ ) had both parents born in Europe. One (1.3%) woman had both parents born in the USA and one had both born in Chile. Seven (8.8%) women had one parent born in Australia and one born in Europe. One woman had one parent born in Australia and one parent born in Fiji; another woman had one parent born in Europe and one in Asia, and finally one woman had one parent born in Samoa and one in Europe. See Table 1 for means,  $SD$ s and correlations.

Insert Table 1 about here

#### *Changes in Group Means on Body Image Scores across the First Postpartum Year*

Differences in mean BAQ scores (see Table 2) across time (Pre-pregnancy, Late Pregnancy, three post-partum times) were examined. No significant Time effect was found for Attractive,  $F(3.49, 8.58) = 1.853$ ,  $p = .13$ ,  $\eta^2 = .023$ . A significant Time effect for FeelFat,  $F(3.42, 885.78) = 23.21$ ,  $p < .0005$ ,  $\eta^2 = .229$  indicated women felt less fat at Pre-pregnancy than at T1PP,  $p < .0005$ ,  $\eta^2 = .193$ ; T2PP,  $p < .0005$ ,  $\eta^2 = .254$ ; and T3PP,  $p = .002$ ,  $\eta^2 = .120$ , but more fat Pre-pregnancy than at Late

Pregnancy,  $p=.025$ ,  $\eta^2 = .063$ . Women felt less fat at Late Pregnancy ( $p<.0005$ ) than at T1PP,  $\eta^2 = .428$ ; T2PP,  $\eta^2 = .422$ ; and T3PP,  $\eta^2 = .253$  and less fat at T3PP than at T2PP,  $p=.007$ ,  $\eta^2 = .090$ .

A significant Time effect was found for Saliency,  $F(3.68, 38.38) = 6.22$ ,  $p < .0005$ ,  $\eta^2 = .074$ . Saliency at Late Pregnancy was lower than at Pre-pregnancy,  $p<.0005$ ,  $\eta^2 = .163$ , T1PP,  $p=.001$ ,  $\eta^2 = .140$ , T2PP,  $p<.0005$ ,  $\eta^2 = .216$ , and T3PP,  $p=.004$ ,  $\eta^2 = .103$ . Saliency tended to be higher at T2PP than T3PP,  $p=.05$ ,  $\eta^2 = .048$ . Finally, for StrengthFit,  $F(3.48, 36.98) = 5.30$ ,  $p = .001$ ,  $\eta^2 = .064$ , women women indicted feeling stronger/fitter at Pre-pregnancy than at Late Pregnancy,  $p=.002$ ,  $\eta^2 = .113$ , and less strong/fit at Late Pregnancy than at T2PP,  $p=.002$ ,  $\eta^2 = .111$ ; and T3PP,  $p<.0005$ ,  $\eta^2 = .154$ .

Insert Table 2 about here

#### *Changes in Ideal and Current Figure Ratings across the First Postpartum Year*

For the current figure ANOVA (see Table 3), a significant Time effect was found,  $F(1.57, 128.29) = 12.29$ ,  $p < .0005$ ,  $\eta^2 = .146$  (HFE adjustment made). Current size ratings became smaller over all three postpartum time points (T1PP size > T2PP size,  $p<.0005$ ,  $\eta^2 = .182$ , and T2PP size > T3PP size,  $p=.012$ ,  $\eta^2 = .078$ ). All three postpartum ratings were larger than Pre-pregnancy ratings (Pre-pregnancy > T1PP,  $p<.0005$ ,  $\eta^2 = .253$ ; T2PP,  $p=.004$ ,  $\eta^2 = .112$ ; T3PP,  $p=.048$ ,  $\eta^2 = .053$ ). An ANOVA assessing changes in ideal size,  $F(1.53, 23.03) = 3.61$ ,  $p = .042$ ,  $\eta^2 = .048$  (HFE adjustment), indicated ideal size tended to become larger in the postpartum, however only one comparison was significant: T1PP ideal size > Pre-pregnancy ideal,  $p=.024$ ,  $\eta^2 = .069$ .

For current-ideal (discrepancy) ratings a significant Time effect,  $F(2.01, 41.50) = 11.67$ ,  $p<.0005$ ,  $\eta^2 = .139$  indicated discrepancy scores decreased from T1PP to T2PP,  $p<.0005$ ,  $\eta^2 = .238$ ; and from T2PP to T3PP,  $p=.013$ ,  $\eta^2 = .077$ ). Discrepancy scores for T1PP and T2PP were significantly lower than Pre-pregnancy scores (T1PP < Pre-pregnancy,  $p<.0005$ ,  $\eta^2 = .235$ ; T2PP < Pre-pregnancy,  $p=.015$ ,  $\eta^2 = .079$ ) but T3PP scores were not less than Pre-pregnancy scores ( $p=.344$ ,  $\eta^2 = .012$ ).

Insert Table 3 about here

### *Factors Predicting Body Dissatisfaction*

In a regression predicting T3PP FeelFat, at step one greater Pre-pregnancy FeelFat and BMI residual change scores were both significant predictors,  $F(2, 76) = 45.3, p < .0005$ . At step two the psychological variables added 13.5% to the prediction,  $F \Delta(5, 71) = 5.94, p < .0005$  with greater weight gain, Pre-pregnancy FeelFat and PACS as the only significant predictors (although partial  $r$ s showed self-esteem, anxiety, BDI and DEBQ-R were also predictive at a univariate level). See Table 4.

Insert Table 4 about here

In a regression predicting Attractiveness, at step one greater Pre-pregnancy Attractive and BMI residual change scores were both predictors,  $F(2, 76) = 39.2, p < .0005$ . The psychological variables added a further 8.3% to the prediction,  $F \Delta(5, 71) = 2.90, p < .05$  with pre-pregnancy Attractive as the only significant predictor (although PACS, anxiety and BDI had predicted in partial  $r$ s). For Saliency, at step one greater Pre-pregnancy Saliency and BMI residual change were both predictive,  $F(2, 76) = 14.12, p < .0005$ . The psychological variables added another 23.4% to the prediction,  $F \Delta(5, 71) = 6.72, p < .0005$  with only PACS and DEBQ-R being significant. For StrengthFit at regression step one higher scores on Pre-pregnancy StrengthFit and BMI residual change score were both significant predictors,  $F(2, 76) = 37.8, p < .0005$ . The psychological variables added a further 8.6% to the prediction,  $F \Delta(5, 71) = 2.95, p < .05$  with Pre-pregnancy StrengthFit, PACS, DEBQ-R and BDI predicting significantly.

### Discussion

This study's first aim was to explore changes in body image across pregnancy and the first year postpartum. Findings revealed changes in all body attitude subscales except attractiveness. In the first year postpartum women felt fatter and less strong and fit and reported a greater discrepancy between their perceived current size and ideal size than they reported prior to pregnancy. Women also reported weight and shape being more salient in the year after the birth of their baby than in late pregnancy. This latter finding is particularly interesting given that late in pregnancy women are larger than they are in the

postpartum, especially by 12 months postpartum. Late pregnancy may provide a temporary reprieve from the usual body concerns and the strict standard of idealized figure normally held (Pruzinsky & Cash, 2002; Skouteris et al., 2005); concerns about feeling fat appear to reignite in the postpartum and these concerns were reported to be even greater than they were prior to the pregnancy. Women reported feeling most fat at 6 months postpartum. By this point in the postpartum women may no longer see themselves as being within a unique phase associated with birth, and thus may no longer consider a larger figure 'acceptable'. Interestingly, women felt most fat at this time despite weighing less on average than at 6 weeks postpartum. At 6 weeks postpartum women may perceive their current figure in light of a recent pregnancy and are not yet too concerned about weight gained in pregnancy.

The present findings also indicated that, while women's ideal body size was relatively stable over the postpartum, the discrepancy between current and ideal figure ratings decreased from 6 weeks to 6 months postpartum, and then to one year postpartum. This decrease was accounted for by women's reported body size decreasing over this period. Unlike in pregnancy when women appear to adapt to body changes over time and shift to a more realistic ideal as their body grows larger (Skouteris et al., 2005), women's perceptions of their ideal figure, for the most part, were relatively similar at pre-pregnancy and in the first year postpartum (an exception being at 6 weeks postpartum when the ideal was slightly higher than at pre-pregnancy).

The second aim of the study was to explore whether measures of well-being, physical comparison tendencies and dietary restraint in the first half-year postpartum predicted body image at 12 months post birth, after controlling for pre-pregnancy body image and body size changes. Results showed that the strongest predictor was prior body image, supporting a stability model. In addition, women who had gained more weight between pre-pregnancy and late pregnancy also reported greater increases in feeling fat over that time, and tended to feel less attractive.

Depressive symptoms, greater physical comparison tendencies and dieting tendencies also predicted body image of different types at 12 months post birth in regressions. These findings

correspond with previous findings when adolescents and non-pregnant and pregnant women have been participants (Heinberg & Thompson, 1992; Schutz et al., 2002; Skouteris et al., 2005). The replication of these findings in postpartum women suggests that the factors are related closely to body image, and that women in different stages of their life are susceptible to their influences (Tiggemann, 2004).

The tendency to compare one's body to others at 6 weeks postpartum predicted Feeling Fat, Strength and Fitness and Salience of Weight /Shape one year postpartum. Women in the study probably (due to a lack of similar comparison targets) compared themselves most often to dissimilar others, e.g., non-postpartum women or media figures. It is also notable that celebrity mothers often receive positive considerable media attention for rapid post pregnancy weight loss which possibly promotes notions that this is desirable. Since we did not assess actual type of comparison made (i.e., similar or upward), future research should explore what types of comparisons lead to postpartum body concerns postpartum.

Depressive symptoms at 6 months postpartum predicted feeling less strong and fit at one year. This result accords with Skouteris et al.'s (2005) finding that depressive symptoms at 16-23 weeks gestation predicted feeling less strong and fit in late pregnancy, supporting a directional relationship between such symptoms and body concerns. The negative thinking associated with depression may partly explain these findings, or possibly sleep disturbances/fatigue that often accompany depression (Llewellyn, Stowe, & Nemeroff, 1997) and the postpartum (Groer et al., 2005) might lead to feeling less fit. Future research could examine components of depression as possible predictors of postnatal body concerns, and possible bi-directional relationships between body image and depression. In relation to two other measures of well-being, while lower self-esteem predicted increases in feeling fat and greater anxiety predicted increases in feeling fat and decreases in attractiveness in prospective partial correlations, they did not account for unique variance in regressions, suggesting they do not add to the prediction when depression and body comparison tendencies have been accounted for.

Dietary restraint at 6 months postpartum predicted Salience of Weight and Shape and Strength and Fitness at 12 months postpartum. This is consistent with the idea that attempts to restrain eating may

lead to a greater perceived importance of shape and weight over time. While greater salience can be positive if it leads to healthy behaviours, it can be problematic if too much emphasis is placed on the body. Given that previous research has found that negative body image contributes to the onset of dietary restraint (Stice & Whitenton, 2002), again this may be a bi-directional relationship.

This study's findings point to possible interventions to prevent women from becoming overly dissatisfied with their body. First, women may benefit from being alerted to the 'trap' of comparing their body to others, especially to inappropriate comparison targets (e.g., women who have not recently given birth) during the postpartum. Education about expected perinatal body changes and methods to avoid unrealistic expectations might also be of benefit. Future research could examine these processes.

Replication with a larger, more demographically diverse sample is also needed, since this sample was mainly tertiary educated and in married (or de-facto) relationships. Similarly, the sample size was not large enough to assess interactions between variables. Future research should also consider variables such as socioeconomic status and education to determine whether body concerns during pregnancy are predicted by environmental factors. Finally, the possibility of selection and volunteer biases exists in the present sample, due to the modest participation rate (62% of original sample) and since selected women volunteered for the original study of pregnancy (Skouteris, et al., 2005). However, the women who participated in the postpartum phase of this research and those who decided not to continue participation did not differ on any of demographic variables (e.g., age, income, education, parity) nor did their scores on key predictors (e.g., BDI, BAQ, and BMI) differ significantly ( $p > .05$  for analyses).

In summary, the present findings suggest that body concerns are heightened during the first year postpartum in terms of feeling fat, salience of weight and shape and how strong and fit a woman feels. Moreover, while current body size ratings increased from pre-pregnancy to the first year postpartum, ideal figure ratings were only elevated at 6 weeks postpartum compared to pre-pregnancy. Body image at 12 months postpartum was accounted for strongly by pre-pregnancy body image. Furthermore, the

current results supported the importance of psychological factors including depression, body comparison tendencies and dietary restraint in predicting body dissatisfaction at the end of the first year postpartum.

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Table 1  
*Intercorrelations, Means and Standard Deviations for Study Variables Entered in the Regression Analyses*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 BMI Pre.	-	.38**	-.03	.06	-.03	-.17	-.06	-.03	-.10	-.04	.92**	.23*	.19	.02	.07
2 BAQ-FF Pre		-	-.17	.68**	-.25*	.47**	-.25*	.24*	.27*	.37**	.34**	.71**	-.11	.41**	-.06
3 BAQ- Att Pre			-	-.01	.49**	-.07	.29**	.29**	.38**	-.02	-.05	-.19	.66**	.13	.29**
4 BAQ-Sal Pre				-	.10	.59**	-.11	.13	.19	.34**	.14	.55**	-.05	.52**	-.07
5 BAQ – SF Pre					-	.29	.27*	-.34**	-.41**	.14	-.07	-.24*	.43**	-.05	.68**
6 PACS-1						-	-.13	.22	.21	.43**	-.14	.55**	.24*	.61*	-.28*
7 SEI-1							-	-.48**	-.58**	-.10	-.14	-.41**	.36**	-.25*	.32**
8 BDI-2								-	.76**	.10	.10	.47**	-.50**	.26*	-.47**
9 ANX-2									-	.07	-.04	.43**	-.48**	.26*	-.39**
10 DEB-2										-	-.01	.39**	-.01	.51**	.16
11 BMI – 3											-	.33**	.06	.07	-.03
12 BAQ-FF3												-	-.45**	.63**	.27*
13 BAQ-AtT3													-	-.32**	.42**
14 BAQ-Sal3														-	-.10
15 BAQ-SF3															-
<i>Range</i>	-	12-60	5-25	5-25	6-30	5-25	10-40	0-36	20-80	10-50	-	12-60	5-25	5-25	6-30
<i>M</i>	23.80	33.84	18.01	12.29	21.42	13.69	33.70	3.16	33.88	25.58	24.12	36.23	17.59	11.57	20.67
<i>SD</i>	4.12	9.26	2.59	4.01	4.75	3.88	4.85	3.14	9.55	8.15	4.00	11.24	3.21	3.71	4.69

Note: Cases were excluded pairwise and correlations were performed on transformed variables; n=79.

\*\* Correlation is significant at the 0.01 level; \* Correlation is significant at the 0.05 level

Note: BMI – Body Mass Index; BAQ-FF – Body Attitudes Questionnaire Feeling Fat subscale; BAQ-Att – Body Attitudes Questionnaire Attractiveness subscale; BAQ-Sal – Body Attitudes Questionnaire Salience subscale; BAQ-SF – Body Attitudes Questionnaire Strength and Fitness Subscale; PACS – Physical Appearance Comparison Scale; SE – Self-Esteem Inventory; BDI – Beck Depression Inventory; ANX – Anxiety Inventory; DEB – Dutch Eating Behaviours Questionnaire;  
 Pre – Pre-pregnancy; 1 – T1PP; 2 – T2PP; 3 – T3PP.

Table 2.

*Means (and Standard Deviations in Parentheses) for the BAQ Subscales at 3 Months Pre-Pregnancy, Late Pregnancy and at Each Postpartum Time Point: Time 1 (T1PP: 6 weeks postpartum), Time 2 (T2PP: 6 months postpartum), Time 3 (T3PP: 12 months postpartum)*

Time Point	Subscale			
	Feeling Fat (range 12-60)	Attractiveness (range 5-25)	Saliency (range 5-25)	Strength and Fitness (range 6-30)
Pre-pregnancy	33.84 <sup>a</sup> (9.30)	18.01 (2.55)	12.29 <sup>b</sup> (3.90)	21.42 <sup>a</sup> (4.26)
Late Pregnancy	31.06 <sup>b,c</sup> (9.70)	17.45 (3.09)	10.50 <sup>a</sup> (3.04)	19.55 <sup>b,c</sup> (3.30)
T1PP	37.67 <sup>b,d</sup> (10.92)	17.68 (3.35)	11.76 <sup>b</sup> (4.34)	19.92 (4.37)
T2PP	38.14 <sup>b,d,e</sup> (10.72)	17.24 (3.45)	12.16 <sup>b,c</sup> (4.33)	20.38 <sup>d</sup> (4.82)
T3PP	36.23 <sup>b,d,f</sup> (11.24)	17.59 (3.21)	11.57 <sup>b,d</sup> (3.72)	20.67 <sup>d</sup> (4.69)

Note: Significant differences were found between variables labelled a compared to b, variables labelled c compared to d and variables labelled e compared to f; n = 79

Table 3

*Percentage of Women Satisfied With Their Body and the Means (and Standard Deviations) for Current Figure, Ideal Figure and Current-Ideal Discrepancy at 3 Months Pre-pregnancy and at the Three Postpartum Time Points.*

	3 months		Postpartum Time Points		
	Pre-pregnancy	T1PP 6 weeks	T2PP 6 months	T3PP 12 months	
Satisfied	20.2%	2.5%	7.6%	10.1%	
Want a smaller body	75.5%	97.5%	91.1%	87.4	
Want a larger body	4.3%	0%	1.3%	2.5%	
Current figure mean	10.03 (3.15) <sup>a</sup>	12.43 (2.34) <sup>b c</sup>	11.64 (2.77) <sup>b d e</sup>	11.10 (2.95) <sup>b f</sup>	
Ideal figure mean	7.97 (2.35) <sup>a</sup>	8.83 (2.36) <sup>b</sup>	8.79 (2.31)	8.69 (2.46)	
Discrepancy score mean	2.05 (1.94) <sup>a</sup>	3.59 (1.90) <sup>b c</sup>	2.84 (1.77) <sup>b d e</sup>	2.40 (1.87) <sup>f</sup>	

Note: Significant differences were found between variables labelled a compared to b, variables labelled c compared to d and variables labelled e compared to f; n = 79

Table 4

*Summary of Hierarchical Regression for Variables Predicting Body Dissatisfaction at 12 Months Postpartum.*

Dependent Variable	Predictor	$\beta$	Partial $r^a$	$\Delta R^2$
BAQ Feeling Fat	BMI Change	.16		.14***
	BAQFF Pre	.45***		
	PACS 1	.21**	.36**	
	SEI 1	-.13	-.32**	
	BDI 2	.15	.38**	
	ANX 2	.04	.35**	
	DEB 2	.11	.25*	
BAQ Attractiveness	BMI Change	-.17		.08*
	BAQAtt Pre	.56***		
	PACS 1	-.16	-.25*	
	SEI 1	.03	.17	
	BDI 2	-.22-	.35**	
	ANX 2	-.03	-.30*	
	DEB 2	.08	-.03	
BAQ Salience	BMI Change	.09		.23***
	BAQSal Pre	.17		
	PACS 1	.34**	.44***	
	SEI 1	-.09	-.22	
	BDI 2	-.01	.22	
	ANX 2	.08	.19	
	DEB 2	.30**	.43***	
BAQ Strength and Fitness	BMI Change	-.06		.09*
	BAQSF Pre	.55***		
	PACS	-.19*	-.17	
	SEI 1	.10	.15	
	BDI 2	-.34**	.29*	
	ANX 2	.19	-.14	
	DEB 2	.19	.07	

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .0005$

<sup>a</sup>partial one-tailed correlations partialling out a residual change score between Pre-pregnancy BMI and T3PP BMI, and the relevant pre-pregnancy BAQ score;  $n = 79$ .

Note: Cases were excluded pairwise and correlations were performed on transformed variables;  $n = 79$