Body image, self-esteem, eating and feeding behaviours in Israeli and UK women.

A two year cross-cultural comparison.

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The candidate confirms that the work submitted is her own, except where work which has formed part of jointly authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

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Thesis abstract:

Pregnancy is a time women are advised to maintain a healthy lifestyle and support the healthy development of their fetus. Research indicates that pregnancy weight gain is positively associated with BMI prior to pregnancy resulting with heavier women being advised to gain as minimum weight as possible. Women tend to accept the changes within their body and associate it with the development of their future baby. Having given birth the excessive weight gain can no longer be attributed to the development of their fetus and for most women this is a time of dissatisfaction with body and active dieting behaviours. Whiles during pregnancy negative eating behaviours affects solely the future mothers, postpartum eating behaviours are associated with feeding behaviours and negative mealtime interactions. In support, the literature suggests that mothers who restrain their own eating are likely to restrain their babies eating as well.

The studies set out in this thesis explored feelings and eating behaviours in Israeli and UK mothers from pregnancy until two years following birth and its impact on infants eating traits. The research used quantitative, qualitative and observational methods. Findings from this thesis indicate that eating behaviours remained stable during pregnancy and the postpartum with higher levels of dissatisfaction with body following pregnancy. Maternal eating behaviours and well-being were found to be associated with babies eating traits. To conclude, as eating behaviours are shaped in early life future research should identify those mothers who are at risk for unhealthy eating behaviours and provide them with sufficient support allowing a healthy development for themselves and their new-born.

1 Relating body image, self-esteem and eating behaviour during and after pregnancy to infant feeding: A review of the literature

1.1 Introduction:

This thesis explores Israeli and UK women's eating behaviours, self-esteem and satisfaction with the body from early pregnancy until two years following birth. The rationale for comparing both countries is primarily based on cultural differences. For example, the greater identification by Israeli women with US ideals of body image. Laungani (2006) notes that body dissatisfaction is more common in countries where people have a more Western lifestyle with Israeli women being exposed to Western lifestyle through media and by its close relationships with the USA (Heesacker et al., 2000). Despite Western influences Israel is considered non-western in terms of lifestyle (Heesacker et al., 2000) as being less affluent and privileged than the USA. Thus Israeli women show lower levels of body dissatisfaction compared to American women (Barak et al., 1994; Heesacker et al., 2000; Safir et al., 2005) despite the acceptance of the thin ideal in both countries.

Israel is a country in which the majority of the population is Jewish (76%) with 21% of Arabs (Muslims, Arab Christians and Druze). This thesis explored eating behaviours, well-being and body satisfaction in a sample of Jewish Israeli women and therefore more likely to be exposed to Western culture compared to Jewish Orthodox and Arab populations. Nevertheless, the exposure of Israeli culture to Western ideals affects Arabs as well. Findings from a study by Apter et al (1994) indicated a similar level of eating disorders for Israeli and Arab high school students. Thus although culture and tradition can often protect against the development of eating disorders and dissatisfaction with body, the exposure to Western lifestyle and Western body size tends to moderate such protective effects.

Israel and the UK are both western developed countries but life in Israel is very different than that in the UK. Israel is a relatively new country (established in 1948) constantly battling for recognition within a hostile climate. At the age of 18 all males and females must join the army for a duration of 36 and 18 months respectively. During this time parenting is necessarily less intense (Lavee and Katz. 2005) whereas for most young people this is a time of fulfilling their separation-individuation from their parents. Such behaviours might contribute to Israeli women's perceptions of motherhood and is further discussed in chapter 6.

The average number of children in Israel is three per family (Remennick, 2000; Israel Central Bureau of Statistics [CBS], 2007) whereas in the UK levels are 1.7 on average (Shaw, 2009). The majority of Israelis perceive childless people to have empty lives (Glickman, 2003). Studies from the UK note the increasing levels of voluntarily childless women (Shaw. 2010). It is therefore suggested that Israeli women are religiously, culturally and politically called upon to counter population threats through childbearing (Bar-Yosef and Becher, 1972; Shloim et al., 2013) and this sits in stark contrast to the lives of women in the UK.

State benefits are lower in Israel than in many other countries including the UK (Bradshaw & Finch, 2002; Gauthier, 2007; Ophir & Eliav, 2005) with a shorter duration of paid maternal leave. Nevertheless, levels of maternal employment in Israel are high (>63%. CBS. 2013) and are similar to the levels in the UK (70%. Office of National Statistics. 2013).

Thus although Israel and UK are both developed countries daily life is different and it is therefore possible that higher levels of stress in Israel, shorter duration of maternal leave and the threat of losing your child to military service all contribute to differences in levels of well-being and eating behaviours of Israeli and UK women.

This thesis aimed to identify certain characteristics (such as mother's BMI and country) associated with eating behaviours and well-being which might impact on the ways in which mothers feed their infants.
The literature review begins by identifying key research studies addressing body-image, self-esteem and eating/feeding behaviours during pregnancy and the postpartum period. Longitudinal studies were specifically reviewed alongside research exploring separately the period of pregnancy or postpartum.

The main purpose of the review is to build the rationale for this thesis by addressing previous limitations and gaps in the literature.

1.2 Body Image:

Body image is defined as a multi-faceted construct addressing the perception of self and feelings towards one's body, involving physiological, psychological and social factors (Calogero and Thompson. 2010). Research notes that women tend to demonstrate high levels of body dissatisfaction and take actions to pursue thinness (Dohnt and Tiggemann. 2006; Thompson and Stice. 2001). Body image dissatisfaction is seen across the lifespan; however, puberty and pregnancy are both specific phases of women's lives in which weight change occurs as part of the normal physiological process. Tiggemann (2004) notes a positive correlation between puberty and body dissatisfaction; others have noted that as puberty progresses the less satisfied girls become with their body (Littleton and Ollendick. 2013). The ageing process is also accompanied by weight gain but dissatisfaction with one's body tends to remain stable over the years with lower levels of the importance of appearance as a woman's age increases (Tiggemann. 2004). Thus women are generally dissatisfied with their body image and puberty and pregnancy might exacerbate existing dissatisfaction. Whilst puberty has been well studied few studies have investigated body image during pregnancy (Tiggemann. 2004). This could be due to the transient nature of weight change during this time or it could be that more emphasis has been placed on the weight changes occurring during puberty due to their link with eating disorders risk.

1.2.1 Body image during pregnancy:

During pregnancy women undergo rapid physical changes including weight gain. Although weight gain is known to take place and in western societies there has been previously an expectation of "eating for two" (Tanentsapf et al., 2011), some women show high levels of acceptance of the changes within their bodies (Loth et al., 2011; Duncombe et al., 2008; Fairburn and Welch. 1990; Shloim et al., 2013), associated with general high wellbeing; whereas for others, body changes in pregnancy are related to depression and shame (Strang and Sullivan. 1985).

Whether or not women accept these changes, it is likely that pregnancy involves the greatest deviation from their ideal body size that women are likely to experience (Strang et al., 1985; Loth et al., 2011; Boscaglia et al., 2003).

Strang et al (1985) argued that women who were satisfied with themselves and their body prior to pregnancy continued to accept the changes within their body during pregnancy. This suggests that an overall positive sense of wellbeing contributes to a positive pregnancy body attitude. As wellbeing during pregnancy is important both for the mother and for the healthy development of her foetus the limited research in this area is surprising. Kamysheva et al (2008) investigated body-related experiences during pregnancy and found that higher levels of body dissatisfaction were related to depression. Similarly, Clark et al (2009) notes that poor body image in early pregnancy was related to general negative wellbeing and higher levels of depression. A study by Skouteris et al., (2005) showed that depression scores in the second trimester predicted less physical strength in the third trimester and were strongly correlated with women feeling fat.

Pregnancy involves changes in appetite, in feelings of nausea and especially in the first trimester pregnancy sickness and food cravings are positively associated (Crystal and Bernstein. 1998). Changes in appetite and food cravings drive consumption whereas pregnancy sickness inhibits food intake. Depending on the individual experience, some women report powerful urges to eat which if satisfied lead to weight gain. Recommendations regarding weight gain during pregnancy encourage women to gain no more than 12.5 kg (http://www.nhs.uk/ ; Davies and Wardle. 1994; Shloim et al., 2013), however, some women gain more weight than recommended (Harris et al., 1997; Linne et al., 2004).
Indeed weight gain during pregnancy is an area of deep concern for healthcare professionals who have identified significant risks to mothers and their babies of excess weight gain (Catalano. 2007).

Eating behaviours have been widely associated with body dissatisfaction in non-pregnant populations indicating that higher levels of disordered eating correlate with less satisfaction with the body (Forbes et al., 2012). Exploring this in a pregnant sample, Davies and Wardle (1994) demonstrated that while pregnant women showed lower levels of restrained eating and weight concerns, levels of body concern remained stable. In contrast, Abraham et al (1994) suggested that dieting behaviours did not change for 73% of the women in their study compared to their pre-pregnancy dieting behaviours, indicating stability of restrained eating during pregnancy. Shloim et al (2013; 2014) followed Israeli and British women from early pregnancy until 2 years postpartum. Their findings suggest significantly higher levels of body image dissatisfaction in Israeli women compared to women in the UK. In support, Fox and Yamaguchi (1997) explored women's weight prior to pregnancy and suggested that the higher the pre-pregnancy BMI, the higher the body satisfaction during pregnancy. It is possible that for those women pregnancy acts as a justification for their increasing size, resulting in a more relaxed feeling towards their body.

Thus, the transition to motherhood involves substantial changes in life with significant physical, emotional and psychological demands (Goldstein et al., 1996). It contains personal (body image, eating behaviour), political (future proofing the population) and cultural pressures. In relation to the personal transition to motherhood women may accept the changes within their body as a bridge towards motherhood. Others may resist these changes as they embody loss of control and symbolise the importance of the body over the ability to parent as a result of an increase in body size. As motherhood and expectations regarding motherhood vary in different cultures (Shloim et al., 2014. Reviewed) it can be hypothesized that living in a culture in which motherhood is venerated results in positive pregnancy body image, as noted by Kazmierczak and Goodwin (2011).

To conclude, women who had a generally positive body image before pregnancy appear to tolerate weight gain better than those who are dissatisfied with weight prepregnancy; women who are restrained prior to pregnancy appear to remain so during pregnancy and compared to non-pregnant women, pregnant women tend to be less restrained and less worried about weight and shape. So whilst for most women there is a pressure to achieve an "ideal" body size which is both unhealthy and unrealistic, pregnancy may offer some women respite from body image dissatisfaction and the pursuit of thinness.

1.2.2 Body image following pregnancy:

The postpartum period presents a period of pressure to recover and to return to pre-pregnancy body weight. Thus this period presents a time for potentially negative body image. There can be intense pressure to lose the gained pregnancy weight rapidly made worse by media attention on celebrities who quickly return to prepregnancy weight (Gow et al., 2012). An Australian study (Roth et al., 2012) suggested that the social message arising from women's magazines is that women should strive to return to their pre-pregnancy body shape and failing to succeed in this implies weakness. In contrast, Walker (1998) and Strang & Sullivan (1985) suggest higher levels of body satisfaction following birth. However, the latter authors addressed women's perceptions of their body 2-6 weeks postpartum a time in which women lose most of their increased weight (Turner et al., 2013) potentially increasing their body esteem. Postpartum body image might be considered simply another concern that mothers face following birth and is not more important than other family issues or general stress, as suggested by Capdevila et al (2005). Similarly, Patel et al (2005) propose that the women in their study related to the transition to motherhood as a new phase in the recognition of self and the loss of the pre-pregnancy self.

To conclude, body concerns were present following birth however, for many women this period is likely to differ from pre-pregnancy concerns given the change in circumstances and the change to a new identity as "mother" and a new sense of self.

1.3 Self-esteem

The sense of self and specifically self-esteem relates to the judgment of one's own worth (Brannan and Petrie. 2011) and is usually affected by three main aspects: any positive and negative feedback one receives from society; one's specific self-view; and, the ways in which one person frames their own self-view (Pelham et al., 1989). In other words, high self-esteem reflects the extent to which a person believes themselves to be competent, successful, significant and worthy (Saigal et al., 2001) while a low self-esteem reflects self-rejection, indicating that a person is not satisfied with themselves and wishes they were otherwise (Rosenberg. 1989). Self-esteem changes over the course of life (Orth et al., 2010) and several studies have shown that the younger one is the higher the self-esteem is (Frey and Ruble. 1985; Harter. 1982; Harter and Whitesell. 2003). In contrast, other researchers have suggested that the increase in personal autonomy and the ability to better reveal one's strengths (Harter. 1999), common in adolescence, tend to increase the sense of self-worth. In support, Orth et al (2010) identified several moderators for the development of self-esteem (positive and negative), such as demographic variables, health experience and life events. For women, pregnancy is a significant life event involving a significant change in the sense of self to motherhood and in the physical changes which occur during this period.

1.3.1 Pregnancy self-esteem:

Research exploring pregnancy only as associated with physical factors has broadened to include an understanding that pregnancy involves psychosocial stress and other emotional factors which are highly correlated with both maternal and fetal health. Consequently, health visitors are now more likely to address the long term impact of pregnancy anxiety (Jomeen and Martin. 2008). Pregnancy presents a new role of motherhood and a change from being someone's wife (partner) to being both wife (partner) and mother. It is a time women seek support and acceptance both for themselves and for their child (Mercer and Ferketich, 1995).

The maternal role is predicted to produce changes in self-esteem. Nelson and Fazio (1995) noted that women communicate with their fetus by touching their abdomens and speaking to it. Such behaviours were identified by Sherman and Donovan (1991) as coping behaviours and as an attempt to reduce mothers' levels of stress. Women who are less stressed are thus more likely to possess better coping behaviours and positive self-esteem (Thoits. 2011).

A strong predictor of self-esteem in pregnancy is BMI since women attach significance to their weight, shape and appearance prior to pregnancy. In a large sample of US women (~2000) enrolled in prenatal clinics before 20 weeks' gestation pregravid weight was associated with a variety of psychosocial factors generally in a negative direction(Laraia et al,2009). This was especially strong for obese women. Thus the higher pregravid weight the lower self-esteem, and higher trait anxiety, depression and perceived stress (Laraia et al., 2009). However, in a small sample of pregnant women in the UK and Israel Shloim et al (2013) reported better self-esteem with a higher BMI, but this was within mostly healthy weight or overweight women. Thus, BMI can act as a positive or negative predictor of self-esteem, depending on the presence of other moderating factors in this case country or context. It is not clear if changes experienced during pregnancy persist post-partum.

1.3.2 Post-partum self-esteem:

Low self-esteem has been associated with depression, eating disorders and poorer parenting skills (Hall et al., 1996; Logston et al., 2001). Following pregnancy women with negative self-worth are more likely to struggle with motherhood and fail to establish a positive bond with their infants. Fontaine and Jones (1997) followed women from the third trimester of pregnancy until two and six weeks following birth and suggested that high self-esteem was strongly associated with lower levels of depression during and following pregnancy.

Dissatisfaction with the self is more likely to impact first time mothers and was found to be related to the mother's beliefs in her ability to accept the baby and mother it (Farrow and Blissett. 2007). Mothers with low maternal self-esteem were found to be angrier and to use firmer control over their infants compared to mothers with higher levels of maternal self-esteem (Lutenbacher. 2002). Finally, mothers who felt less capable generally in life and low worth struggled with parenting and felt less competent in coping with the daily stress of their infants (Gelfand et al.1996).

In conclusion, pregnancy influences self-esteem in the post-partum period as it does during pregnancy (Rogan et al., 2014). However, taking single, snapshot measures early in pregnancy or only in pregnancy fails to capture the changes which might occur from pre pregnancy to post-partum and to later in motherhood when self-esteem might improve as the transition to motherhood is made and as coping as a parent becomes easier. Thus in this thesis, it was important to follow women over time so that changes could be observed and monitored.

1.4 Eating Behaviours:

1.4.1 Eating behaviours in pregnancy:

Dietary intake is affected by life events and this is particularly true of pregnancy (Verbekea and Bourdeaudhuij. 2007). Pregnant women tend to maintain a healthier lifestyle compared to non-pregnant women, most likely motivated by the health of the developing fetus (WHO; 2014). Anderson et al (1993) identified positive changes in food consumption during pregnancy arguing that women tend to adopt a healthier life style as a result of pressure from the doctors and their family. Education was also positively associated with the ability to maintain a healthy lifestyle as suggested by Ritchie et al (2010).

In contrast, Wen et al (2010) noted low consumption of fruit and vegetables (7%-13%) and high consumption of soft drinks during pregnancy. A different study by

Wen et al (2013) showed that women tend to consume high levels of “junk food” during pregnancy which was later positively associated with higher birth weight for their infants. Discrepant findings between studies might reflect pregravid differences in health motivations. Alternatively they could indicate differences between those who change their diet to a healthier one to improve foetal health or those who in eating for two abandon restraint with the resultant high junk food intake. Without tracking women before, during and after pregnancy it is not clear whether these findings reflect existing dietary choice or changes in intake.

1.4.2 Eating behaviours in the postpartum:

The postpartum tends to be regarded as a time weight concerns increase and many women are still heavier compared to prepregnancy (Rosner and Ohlin. 1995). Whereas during pregnancy women can “justify” their increase in weight as a result of pregnancy, having given birth women can no longer attribute the weight gain to positive aspects of providing food for the healthy development of their infant (Carter et al., 2000) and experience weight concern. The literature identified only limited research exploring eating behaviours following pregnancy.

A systematic review of weight management following birth (Messina et al., 2009) identified 7 studies (five randomized control trials) which advocated limiting dietary intake (short intervention) and increasing physical activity to produce weight loss. The findings from the review indicated that interventions to manage weight gain following pregnancy were effective in the short term. An additional finding indicated that studies examining weight management in the postpartum are required in the UK. However, a later systematic review by Campbell et al (2011) noted that pregnancy weight management interventions are not useful. These authors reported on findings from both quantitative and qualitative studies that the failure to lose weight during pregnancy was related to conflicting and contradictory messages about weight control, perceived lack of control around food during this time and the changes during pregnancy being so great that dietary changes were not possible. Understanding more about weight management during pregnancy, which is a time

women tend to follow a healthier lifestyle might increase the understanding about weight management postpartum. Thus pregnancy might be the tipping point for enrolling mothers to adopt a healthy lifestyle first for themselves and their fetus, but for the future infant as well. This is further addressed in the next section of the review.

1.5 Mother's Feeding Behaviours:

Given the increase in prevalence of childhood overweight (Ogden et al., 2002) and the impact of rapid weight gain in infancy for childhood obesity (Ong et al., 2006; Baird et al., 2005), the ways in which mothers feed their infants have been scrutinized. A retrospective study by Harrington et al (2010) explored overweight and obese adolescents (mean age 12 years ±3.67) and noted that 25% of them were already overweight at the age of 3 months. Thus understanding feeding during first two years of life is crucial and since feeding decisions and practices then will influence the velocity of weight gain in infancy (Baird et al., 2005).

Babies are dependent on their caregivers to provide them with nutrition and to respond to their hunger and satiety cues. Responsive feeding is optimal to promote self-regulation of energy intake in infants and ensure they learn appetite control (Hodges et al., 2011). In a recent study, Hodges et al (2013) characterize responsive feeding in the following ways 1) perception of the cue; 2) accurate interpretation of the cue and 3) appropriate response to the cue. Most studies exploring responsive feeding concentrate on pre-school children with limited research exploring appetitive behaviours in infancy. Nevertheless, several appetitive behaviours have been associated with excess weight gain such as more avid sucking style and the tendency to empty the bottle (Stunkard et al., 2004; Li et al., 2008).

Feeding behaviours vary and Blissett (2011) notes that each mother tends to follow a different feeding style. For example, an authoritarian feeding style (a controlling type of feeding) is characterized by strict rules about food consumption whereas an authoritative (more responsive in terms of warmth) feeding style involves high expectations from the child's diet. Brown and Lee (2011) suggest that high levels of maternal control during feeding are positively associated with infant's weight gain.

Few studies have explored maternal characteristics and infant feeding behaviours. Brown and Lee (2011) explored maternal feeding style during weaning and noted that mothers with a high BMI show higher levels of concern for their child's weight therefore try to control their child's size. The findings suggest that mothers who scored high in the restraint and emotional eating sub-scales of the Dutch Eating Behaviour Questionnaire (DEBQ) were more concerned for their child's weight compared to mothers who scored lower. Interestingly enough, those mothers who saw themselves as heavy also perceived their infant's body size as larger than average. In support, Rodgers et al (2013) noted that maternal dietary restraint predicted infant's change in BMI Z scores. The authors suggest that *"mothers, who perceive foods they are trying to limit, typically high-calorie foods, as particularly desirable and rewarding, may transmit this concern to their children via both their attitudes and their feeding practices (*P.8. Rodgers. 2013)*".* This was also explored in chapter 4.

In addition, De Barse et al (2014) explored the effect of a history of maternal eating disorders on feeding practices in a sample of 4851 mothers and infants. The findings from this study suggests that mothers with a previous history of an eating disorder (AN, BN or AN and BN) used less pressuring feeding strategies while feeding their children. Nevertheless, the children of mothers with AN scored higher for the emotional eating sub-scales of the Child Feeding Questionnaire (CFQ).

The findings strengthen the claim that feeding is not only about the food content (***what infant eat***) but also about ***how*** a mother and an infant interact during the feed. Thus understanding more about the way mothers feed their infant is important and can act as a window for future understanding of their dyadic relations and attachment.

Although both the mother and the infant contribute to the feeding interaction it is the mother's responsibility to recognize infants cues (Barnard. 1990) and to lead to the development of a bond in which each part of the dyad respond to the other (Mentro et al., 2010).
For example, in the first few weeks infant communication with the environment is achieved mainly by crying (Skinner et al., 1998). However, as time passes, the ability to communicate improves as does the mother's skill in interpreting this communication.

For some mothers recognizing infant satiety cues is difficult which might result in a more controlling feeding style, positively associated with childhood obesity (Satter. 1996; Barlow and Dietz. 1998). Thus children given no control in the feeding interaction might not learn how to self-regulate their appetite.

Breastfeeding infants show higher ability to self-regulate their own intake compared to formula fed infants (Taveras et al., 2004) and as such, breastfeeding tends to be regarded as protective against childhood obesity (Hansberger et al., 2013; Rossem et al., 2011). However, Schack-Nielsen et al (2010) argued that longer duration of breastfeeding was not associated with lower levels of obesity at the age of 42. Nevertheless, the general agreement is on the positive effects of breastfeeding on mother-infant interaction (Farrow and Blissett. 2006) noting that breastfeeding mothers showed a positive mealtime interaction compared to mothers who formula fed their infants.

Breastfeeding mothers were more sensitive to their infants and pressured them less to eat. In support, Kuzela et al (1990) noted that positive interactions indicative for breastfeeding were seen during play time activities suggesting that mothers who breastfed were more touching and affectionate compared to bottle feeding mothers.

To conclude, the findings indicate the importance of a mother's ability to recognize its infant's hunger and satiety and to promote responsive feeding which have been positively associated with lower levels of childhood obesity.

1.6 Discussion:

Weight gain during pregnancy is positively associated with BMI before pregnancy (Harris et al., 1997; Linne et al., 2004) and women with higher BMI are advised to gain less weight while pregnant than women with lower BMI (www.nhs.uk; Ohlin and Rosner. 1996). Weight gain for women is a particularly difficult experience given that there is culturally acceptable pressure to be thin (Carey et al., 2013). Thus the biological inevitability of weight gain during pregnancy raises more than simply physical health issues. For some women pregnancy is a time they feel dissatisfied with their appearance and with the changes occurring within their body (Skouteris et al, 2005; Duncombe et al 2008) with other studies noting that pregnancy is associated with an improvement in body satisfaction (Davies and Wardle.1994).

Following pregnancy, the average weight retained for longer than a year is 0.5-4 Kg (Van Poppel et al., 2012; Olson et al., 2003) and women who gained less weight than recommended were lighter compared to those who gained more than recommended in a five year follow up (Rooney et al., 2002). Thus returning to the pre-pregnancy weight and shape takes time and many fail to achieve this. A recent study by Brandhagen et al (2014) noted on positive associations between weight retention and breastfeeding. Findings from the study suggested that longer duration of full time breastfeeding was significantly associated with lower weight retention up to 18 months post-partum.

Research has shown that BMI is positively associated with body satisfaction and restrained eating for the mother (Clark et al., 2009). Maternal BMI and eating behaviours were also associated with feeding behaviours suggesting that heavier

mothers show higher concern for their infants' weight and invoke more controlling feeding behaviours than leaner mothers (Blissett and Haycraft. 2008). Maternal BMI is therefore important in predicting maternal health during and following pregnancy but is also important after delivery by influencing how mothers approach infant feeding (Mulder et al., 2009).

The main findings from the review suggested that body satisfaction and body dissatisfaction during pregnancy, the post-partum and during early childhood are positively associated with similar factors such as media representations of thin ideals, eating behaviours, BMI and general well-being. Thus women are dissatisfied with their appearance and aspire for a slimmer figure during and following pregnancy. Similar findings were observed in young girls as well.

Self-esteem was affected by women's BMI and well-being, however, findings were inconsistent suggesting that for some women high BMI predicted low self-esteem whereas this was not the case in other studies.

Few studies reviewed here had a longitudinal component from pregnancy until the post-partum beyond. This limits our understanding of how these issues change with the transition to motherhood in the early and later stages. The identified literature mainly addressed women from high socio-economic status and did not identify any studies addressing how and if a mother's body image/self-esteem/eating behaviours is associated with the way she relates to her infant's body size/self-esteem/self-worth/eating behaviours. Several studies explored eating behaviours or body image during pregnancy within a population with previous history of an eating disorder. Findings from such studies note that the prevalence of eating disorders (anorexia nervosa [AN], bulimia nervosa [BN] and eating disorder not otherwise specified [EDNOS]) during pregnancy ranges from 5-7% (Micali et al., 2012) and is positively associated with negative obstetric outcomes such as lower birth weights. The estimated prevalence of an eating disorder during pregnancy is 1% compared to the general non-pregnant population) with approximately 3.5 %(Soares et al., 2009). Considering the shame, secrecy and denial that are so prevalent in situations of

eating disorders, many patients do not inform their doctor during pregnancy when an eating disorder is present.

Most studies indicate that symptoms tend to reduce during pregnancy and increase in the postpartum period (Micali et al., 2007; Bulik et al., 2009). Women who suffer from AN tend to control better their eating disorder during pregnancy, especially in the first and second trimester (French et al., 1995). However, these previous studies relied on small samples. Recently there have been studies of pregnancy and eating disorders in larger cohorts. For example, the Norwegian Mother and Child Cohort Study (MoBa) who followed 41,157 women with a prior history of ED (AN, BN and EDNOS) reported an increase in the symptoms of the ED 18 and 36 months postpartum (Reba-Harrelson et al., 2010). Thus eating disorder symptoms persisted for many women with a prior history of eating disorders.

Women with AN, BN or EDNOS gain more weight during pregnancy and are more concerned with weight gain compared to women without an eating disorder (Swan et al., 2009). Those women are likely as well to show higher levels of postnatal depression compared to women with no previous eating disorders (Morgan et al., 2006). In support, Micali et al (2011) explored the effect of past depression and past/current eating disorders on perinatal depression. The study was part of the Avon Longitudinal Cohort Study (ALSPAC). The researchers noted that at 8 months postpartum women with a prior or current experience of eating disorders were at greater risk for depressive disorder than those with no previous history of ED.

Women with an eating disorder struggle with eating and show dissatisfaction with their body regardless of their pregnancy. The enduring nature of their eating disorder re-appears postpartum followed by struggles in feeding their newborns (Squires et al., 2014). Pregnancy and the postpartum can therefore be regarded as a risk window for the return of eating disorders and although symptoms tend to decrease during pregnancy, women continue to be dissatisfied with their body and worry about their weight. Having given birth such women return to restricting food intake as they no longer need to eat for the healthy development of their fetus.

The main findings from the literature are addressed in **Error! Not a valid bookmark self-reference.** and highlight factors that can potentially link between mothers' well-being and healthy life style to her infants eating behaviours and well-being. The figure ends with a possible outcome addressing mothers who initiated breastfeeding compared to mothers who formula fed their babies. As such, and in agreement with the suggested literature, breastfeeding mothers are thought to be more in-tune with their babies. However, this is not to say that formula feeding mothers fail to respond to their babies.

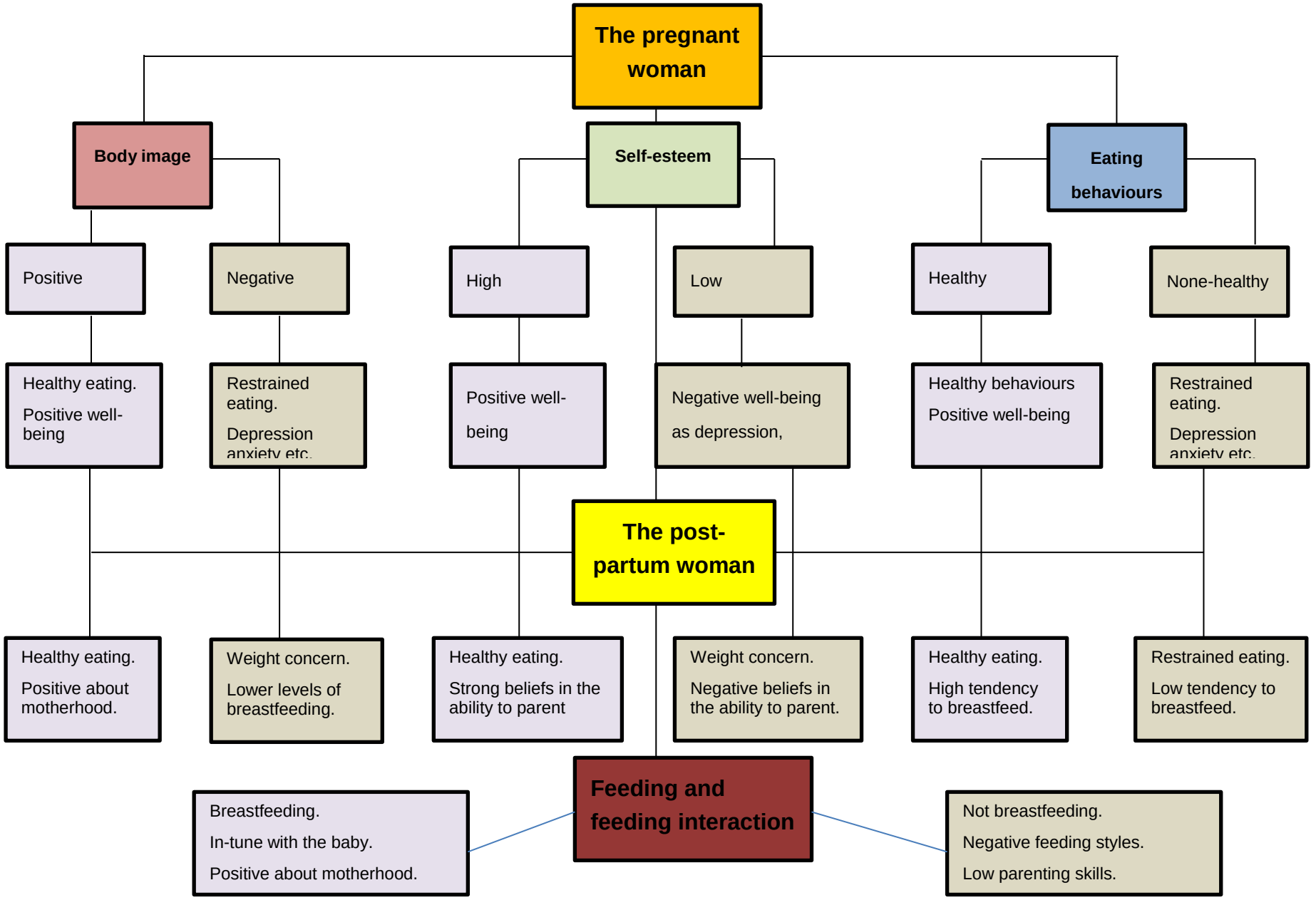


Figure 1-1; Main findings from the literature review

1.7 Aims and objectives:

The studies set out in this thesis were developed to explore Israeli and UK women feelings and eating behaviours from pregnancy until two years following birth using both quantitative and qualitative methods. The research aimed to explore if eating behaviours as identified during pregnancy (Shloim et al., 2013) remained stable or changed after women have given birth. An additional aim of this research was to explore mothers perceptions of their infant's eating and to investigate mealtime interactions. The sample consisted of Israeli and UK women thus an additional component of this research was to compare findings from both countries.

Chapter 2 describes in details the methodology and measures used in this research. It fully describes the questionnaires and the rational for choosing certain questionnaires to assess body image, self-esteem, eating and feeding behaviours. It contains as well a description of the Simple Feeding Element Scale (SFES) to assess feeding interactions in infancy.

Chapter 3 details quantitative research and explore self-esteem, eating behaviours, and body image following pregnancy. The chapter relates to four time points and compares findings from each follow-up to previous findings, mothers BMI and country. The chapter provides an in-depth understanding about the main predictors associated with women's well-being and eating behaviours following pregnancy.

In chapter 4 the focus of the analysis shifts from addressing mainly the mother and her own well-being and eating behaviours to her perceptions and attitudes towards her infant's eating. Similar to the analysis in chapter 3, mothers perceptions of their infant's eating behaviours were measured on four occasions, until the baby reached the age of two years. This chapter contains an integration of the findings from chapter 3 thus explores the associations between mothers own eating behaviors and well-being to their perceptions of their infant eating.

This thesis contains an in-depth study and women were approached and asked to be filmed while feeding their infant. Chapter 5 explores mealtime interactions and is divided into four follow-ups. The Simple Feeding Elements Scale (SFES) is presented in this chapter and its feasibility is discussed.

Having addressed mothers feeling and eating behaviours in chapter 3, learning about their perceptions of their infant's eating behaviours in chapter 4 and then filming the mealtime interactions, as fully addressed in chapter 5, a natural continuity of this research was to interview a sample of those mothers and address their experience as mothers, body image and eating behaviours following pregnancy. Forty one interviews were conducted on four occasions resulting in a sample of 160 interviews from Israel and the UK. In this thesis only findings from the first interviews (2-6 months following pregnancy) are presented and fully assessed in chapter 6 of this thesis.

The final chapter of this thesis (chapter 7) provides a synthesis of the main findings from chapters 3-6 and explore these findings in relation to the literature which have previously been discussed. The chapter continues to address the significance and contribution of this research followed by its limitations. The chapter ends by implications for future research.

Figure 1-2; summarizes the studies addressed in this thesis.

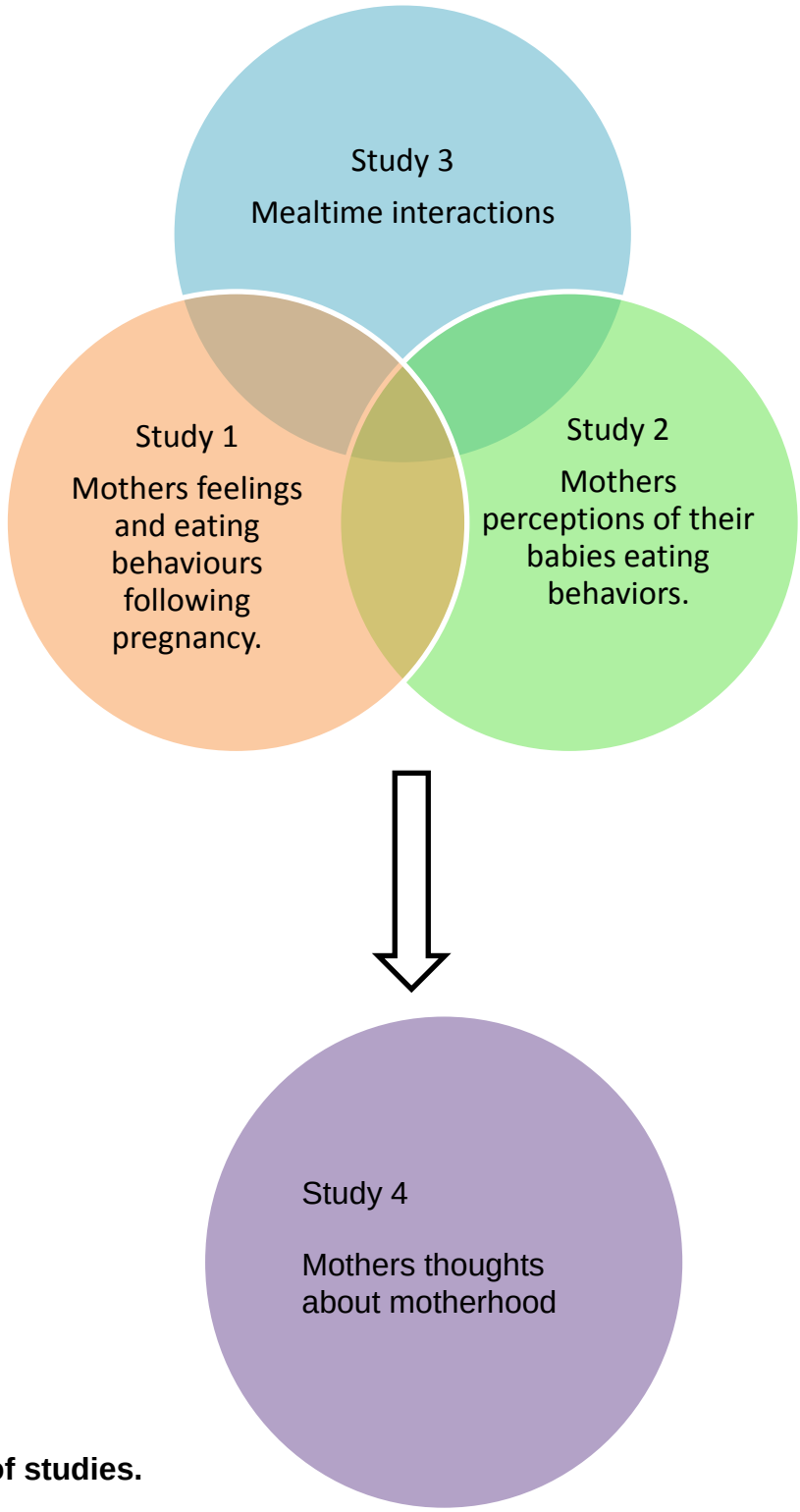


Figure 1-2; Summary of studies.

Questionnaires assessing mothers wellbeing and eating behaviours. Similar to the pregnancy questionnaires.

Questionnaires assessing babies eating behaviours.

The Simple Feeding elements Scale (SFES) +Questionnaires assessing mothers wellbeing and eating behaviours+ Questionnaires assessing babies eating behaviours.

Interviews.

2 Methodologies:

Given the main aims of this research and the mixed method approach adopted, the following section provides a detailed narrative describing the participants, how they were recruited, the procedures used for quantitative and qualitative approaches and the rationale for using specific measures across the 4 large scale studies and pilot. The mixed methods approach is described in Table 2-1

Table 2-1:Summary of methods

Study (Chapter)	Methods	Included Questionnaires/assessment tools
Mothers feelings and eating behaviours following pregnancy (Chapter 3)	Emailed/Postal Questionnaires	RSEQ DEBQ BIS BIDQ
Mothers perceptions of their babies eating behaviours (Chapter 4)	Emailed/Postal Questionnaires	IFQ BEBQ CEBQ
Mother-Baby mealtime interactions (Chapter 5)	Observational; Filming a feeding	SFES
Mothers thoughts about motherhood (Chapter 6)	Interviews	Semi-Structured interview

RSEQ (Rosenberg self-esteem questionnaire); DEBQ (Dutch Eating Behaviours Questionnaire); BIS (body Image Scale); BIDQ (Body Image Disturbance Questionnaire); IFQ(Infant Feeding Questionnaire); BEBQ (Baby Eating Behaviours Questionnaire); CEBQ (Child Eating Behaviours Questionnaire); SFES (Simple Feeding Elements Scale).

2.1 Recruitment:

In phase one (not reported here. See Shloim et al., 2013), participants were women of childbearing age. Women were recruited from Israel and the UK. Participants were recruited from both countries as the researcher was originally from Israel. Having living in the UK and exposed to a different culture and eating behaviours the researcher expected to identify differences between both countries. Inclusion criteria were women in good health, with no major complications including gestational diabetes and pregnant. Most of the women were in their first trimester when they agreed to participate. Women were recruited through distribution of posters and flyers in community centres in both countries and via university email circulation lists (Shloim et al., 2013).

However, by focusing mainly in recruiting women via university emails and posters resulted in a sample of highly educated women. As such, and although not measured directly, our sample is likely to be from a relatively high socio-economic status as well. The limitations and possible bias in our findings are addressed separately in each chapter of the thesis.

In phase 2, those participating in phase one were asked to continue in a follow-up study for the duration of two years (Shloim et al., 2014). In total, seventy three women (N=73) from Israel and the UK continued to participate in the study after giving birth. Figure 2-1 provides an overview of the recruitment process. Appendix A contains a sample of the information sheet .

A power calculation was conducted to detect effects at the 5% level of significance. The calculations were repeated for each outcome variable separately, i.e. for self-esteem, eating behaviours, satisfaction with body and feeding perceptions.

Results indicated that for the Rosenberg Self-Esteem Questionnaire (RSEQ), the power was relatively weak for the given sample size. Nevertheless, the levels remained stable between follow-ups and ranged from 30-40%.

Despite this, our findings showed that a sample size of 70 women (n=50 healthy-weight; n=20 overweight and obese) was still sufficient to detect the reported changes in levels of self-esteem when comparing between healthy weight and overweight or obese women at each follow-up point.

Similar power levels were apparent for the questionnaires assessing mothers eating behaviours, satisfaction with body and feeding perceptions. Thus although findings for this study indicate a relatively low statistical power, it is important to aim for higher power levels (e.g. 80-90%) in order to detect meaningful differences. This point is further addressed in the limitations part of the thesis in chapters 3-7.

2.1.1 Procedures:

The study was ethically approved by the Joint School of Medicine Research Ethics Committee; reference number HSLTLM/10/021.
Prior to participating (phase 1), all participants received an information sheet and were asked to read it and to provide written informed consent. The consent form included a question asking participants if they were willing to receive a summary of the pregnancy part of the research and provide contact details for future contact.
A second ethics application was then submitted to the Institute of Psychology and Sciences in Leeds University for the follow up study. The study was approved by the Ethics committee at the institute of Psychological Sciences at the University of Leeds, reference no. #11-0137.
In phase two, September 2011-September 2012, women were re-contacted and provided with a summary sheet containing the main findings from the pregnancy part and an information sheet regarding the follow-up study. The information sheet explained the nature of the study and also stated that participants were free to withdraw from the study at any time and their data removed. Details about confidentiality were fully addressed (participant ID, data protection). The information sheet also offered the possibility of participating in an in-depth part of the study (chapter 5) involving filming feeding interactions (see Appendix A).

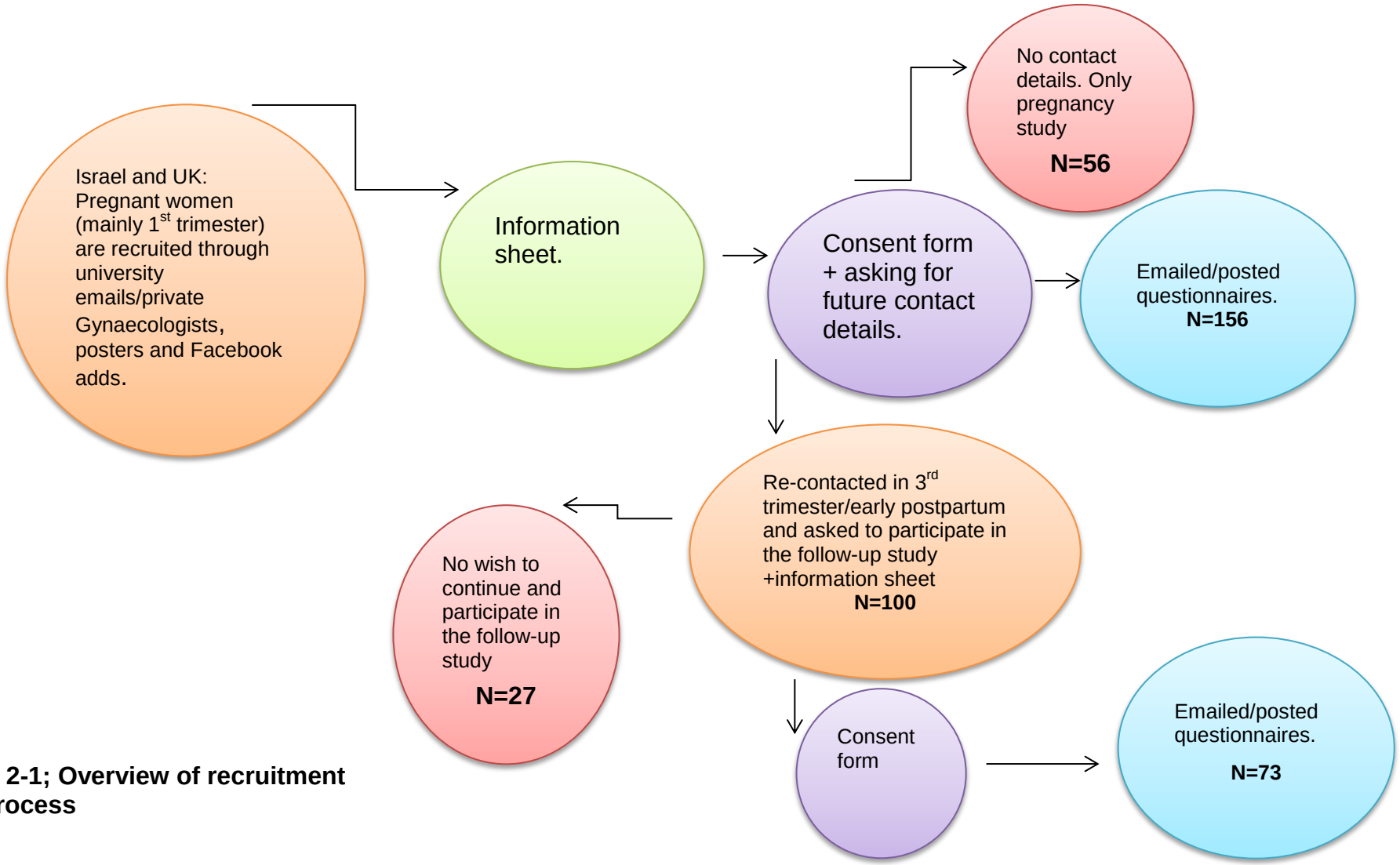


Figure 2-1; Overview of recruitment process

2.1.2 Materials:

Four different research approaches were followed in this thesis. The first approach involves questionnaires mothers were asked to fill out during and following pregnancy. The second involved interviews with the mothers so that a more in-depth qualitative approach could be used to complement and enrich scores from the questionnaires. The third involved a feeding interaction scale, developed by Mohebati (2014. In prep) which was used in the analysis of more than 150 meals. Finally, the fourth approach was experimental in nature and provides a description of a picture book aimed at addressing body perception in infancy.

2.1.2.1 Quantitative research:

The quantitative research, discussed in chapter 3, used previously validated questionnaires assessing body-image, self-esteem and eating behaviours (RSEQ; DEBQ; BIS and the BIDQ). The questionnaires have been widely used in research exploring non-pregnant populations but were rarely used during pregnancy. Thus several questions should be asked of the mothers during pregnancy. For example, whether restrained eating in pregnancy might be associated with an attempt to restrict certain foods such as high energy dense foods for the purpose of health rather than weight loss.

The rationale for choosing the questionnaires was based on the following:

- The questionnaires have been previously validated and showed high internal consistency in studies exploring restrained eating in non-pregnant women.
- The questionnaires were piloted with a group of pregnant mothers and found acceptable and did not cause any emotional stress or anxiety.
- The questionnaires were relatively short and in total took no more than 20 minutes to fill out.

- ✓ **General demographic and anthropometric questions:**

Women in the study were asked to provide details about their marital status; levels of education, number of previous pregnancies and general information to seek clarity on social and economic status (Appendix B). The women were also asked to report their weight and height to enable calculation of their body mass index (BMI). Several studies have shown that levels of education are positively associated with obesity (Monterio et al., 2001) and knowing if mothers are in stable relationships with social support can impact upon pregnancy outcome (Stapelton et al., 2012). Thus, it was important to have a record of general family characteristics of the mothers enrolled in the study. For the analysis of each study in this thesis demographic characteristics such as levels of education, marital statuses etc. were controlled for within the regression models.

- ✓ **Rosenberg self-esteem questionnaire (RSEQ):**

In order to obtain a measure of maternal self-esteem the RSEQ was used. This scale consists of ten elements, five positive and five negative, rated on a four-point Likert scale (Rosenberg, 1965) and is widely used. The scoring scale ranges from 0-30 and higher score indicates a higher level of self-esteem. An example of a question is “on the whole, I am satisfied with myself” or “I certainly feel useless at times”.

The Cronbach’s alpha in a study exploring self-esteem in women aged 14-25 years was 0.87 (Lckovics et al., 2010).

No study was identified using this scale within a sample of pregnant women.

Cronbach’s alpha in this thesis was calculated in the first follow-up and was 0.84 for the Israeli sample and 0.87 in the UK.

- ✓ **Dutch Eating Behaviour Questionnaire (DEBQ):**

The questionnaire was developed to measure eating styles and contains 33 items rated on a Likert scale ranging from 1 (Never) to 5 (Very often; Jansen et al, 2011; Van-Strein et al., 1986). The questionnaire assesses restrained eating (the tendency to restrict food intake for weight loss or maintenance); emotional eating (overeating in response to negative emotions) and external eating (eating in response to food related stimuli regardless of hunger). Cronbach's alpha in a study exploring restraint eating before, during and after pregnancy was >0.90 (Duncombe et al., 2008).In a different study validating the DEBQ for Spanish women the Cronbach alpha was > 0.85 for all the sub-scales (Cebolla et al., 2014).
In this thesis for the DEBQ-R, Cronbach's alpha was 0.51 for the Israeli sample and 0.81 for the UK. For the DEBQ-Em it was 0.75 in Israel and 0.84 for the UK and for the external subscale 0.73 for Israel and 0.84 in the UK.

- ✓ **Stunkard figure rating scale (BIS):**

The Stunkard figure rating scale (Figure 2-2) is a pictorial scale assessing perceptions of body shape, image and size. It contains nine body shapes, from the slimmest (1) to the largest (9); Stunkard et al., 1983; Thompson and Altabe. 1991). Women in the study were asked to select the figure that best describes how they see themselves and then to choose the one which best represents their desired body size. Positive scores indicate that current body size is greater than the desired one.

The scale is easy to use and rate; however, a limitation of using silhouettes is that they are not realistic representations of human form and lack facial features (Thompson et al., 1995). Thus, in this thesis body dissatisfaction was measured by a figure rating scale and by a questionnaire (BIDQ; Cash et al., 2004) which has been validated and showed high internal consistency.
Cronbach alpha is this research was 0.77 in Israel and 0.84 for the UK sample.

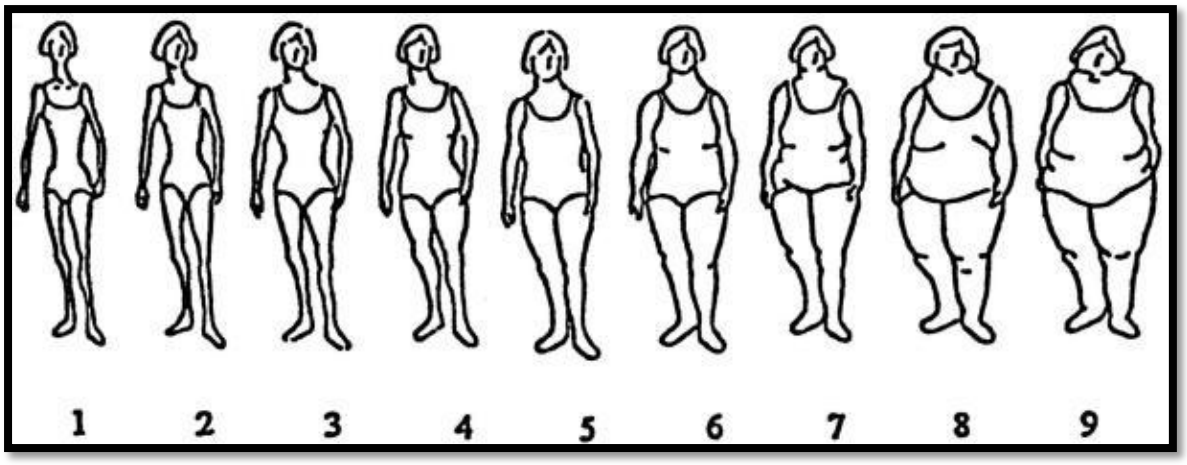


Figure 2-2; Stunkard figure rating scale (BIS).

- ✓ **Body Image Disturbance Questionnaire (BIDQ):**

The questionnaire is a revised questionnaire of the Body Dysmorphic Disorder Questionnaire (Dufrense et al., 2001) and measures level of disturbance in body image. It contains seven statements on a five-point Likert scale (Cash et al., 2004) and a range of scores from 1-5. For example, one of the statements explores the tendency to avoid things because of one's appearance. Higher scores indicate higher levels of body dissatisfaction. The validity of this questionnaire was measured with a non-clinical population and showed internal consistency of 0.89 (Dufrense et al., 2001).

The questionnaire have never been used within a sample of pregnant women. Cronbach alpha was 0.90 and 0.92 respectively for the Israeli and UK sample in this research.

✓ **The Baby Eating Behaviors Questionnaire (BEBQ):**

The BEBQ (Llewellyn et al., 2011) is completed by parents during the milk feeding period to asses infant appetite. It is based on the CEBQ and contains 18 items which are divided into 5 eating traits:

- Enjoyment of food: The levels of subjective pleasure experienced from eating, for example: *my baby seems contented while feeding*; *my baby enjoyed feeding time* etc.
- Food responsiveness: The baby's willingness to eat. For example: *if given the chance my baby would always be feeding* or *even when my baby had just eaten well s/he was happy to feed again if offered* etc.
- Slowness in eating: The pace of the eating, such as *my baby sucked more and more slowly during the course of a feed*.
- Satiety responsiveness: Measures the baby's fullness during the meal, as *my baby could easily take a feed within 30 minutes of the last one*.
- General appetite. Address baby's general levels of appetite during a meal. For example*: my baby had a big appetite*.

The scoring is on a 5 point Likert scale, from never (1) to always (5). It was used in the GEMINI birth cohort study (Llewellyn et al., 2011) and indicated that for all eating traits Cronbach's alpha was greater than 0.72.

✓ **The Child Eating Behaviors Questionnaire:**

The child eating behaviour questionnaire was designed to measure eating behaviours in children and was validated while assessing eating behaviours within a sample of 2-6 years old (Wardle et al., 2001). It is based on the assumption that eating traits vary for different individuals and that certain eating behaviours are more likely to be associated with obesity (Wardle et al., 2001). The questionnaire contains 35 items which are divided into 8 scales with high internal and external validity.

The following eating behaviours are addressed:

- Food responsiveness (FR): *My child is always asking for food*.
- Enjoyment of food (EF): *My child enjoys eating*.
- Emotional overeating (EOE): *My child eats more when anxious*.
- Desire to drink (DD): *If given the chance my child would always be having a drink*.
- Satiety responsiveness (SR): *My child gets full up easily*.
- Slowness in eating (SE): *My child eats slowly*.
- Emotional under eating (EUE): *My child eats less when he/she is upset*.
- Food fussiness (FF): *My child refuses new foods at first*.

A recent study by Mallan et al (2013) validated the CEBQ in three ethnically diverse populations (immigrant Indian mothers, Chinese mothers and community group of first time mothers) and showed that for all elements the Cronbach alpha was higher than 0.78 after amending one item addressing satiety responsiveness and one item from the food fussiness scale.

✓ **The Infant Feeding Questionnaire:**

The IFQ questionnaire (Baughcum et al., 2001) was developed to assess factors which are potentially associated with the development of later childhood obesity. It was originally validated within a sample of mothers and their infants aged 11-23 months. The questionnaire assesses feeding in the first year of an infant's life and contains 28 items which are divided into 7 traits:

- Concern about child under- eating/underweight (α=0.71*): I worry that my baby is not eating enough.*
- Concern about infants' hunger (α=0.74): *I put cereal in my baby's bottle so he will stay full longer*.
- Awareness of infants' cues (α=0.65): *My baby known when he is hungry*.

- Concern about infants becoming overweight/ overeating (α=0.55): *I worry that my baby is eating too much*.
- Feeding the infant on schedule (α=0.48): *I only allow my baby to eat at set times*.
- Using food to calm fussiness (α=0.44): *Feeding my baby is the best way to stop his fussiness*.
- Social interaction while feeding (α=0.24): *I talk or sing to my baby while feeding him*.

The scoring is on a 5 point Likert scale from never (1) to always (5).

A sample of all the questionnaires can be seen in appendix A

2.1.3 Analysis:

The primary aim of this research was to explore if the selected measured variables (self-esteem, body image etc.) change according to time of measurements (first, second follow-up etc.), according to country (Israel or the UK) or according to mothers BMI. Thus, this analysis explored the recent collected data and compared it with previous measurements.

✓ **Anthropometric analysis**

Maternal BMI was calculated as weight (kg) divided by height (m) squared from self-report measures. Mothers were then categorized as underweight (BMI<18.5 kg/m^2), healthy weight (25kg/m^2>BMI ≥18.5kg/m^2), overweight (30kg/m^2>BMI ≥25kg/m^2) or obese (BMI ≥30 kg/m^2) using WHO classifications (WHO. 2014). A possibility of reported weight bias was identified and a sensitive analysis was conducted. This was carried out by creating a dummy variable where 2kg were added and subtracted to weights, and the BMI categories were re-checked. This analysis resulted in no

difference in the distribution across the categories providing confidence that the use of reported rather than measured BMI was acceptable.

Babies' weight, length/height and age at measurement were recorded from the Child Health Parent Held Records ('red book' in the UK and equivalent in Israel). Standardized Z-scores for weight (WHO. 2014) were calculated for all infants and are presented as mean Z-scores for weight.
Due to a low number of participants who were either underweight or obese, underweight participants were grouped with healthy weight participants (BMI<25 Kg/m^2) and overweight with obese (BMI≥25 Kg/ m^2). Further details are stated in chapter 3.

- ✓ **Questionnaires**

Stata version 12 was used for all statistical analysis. Graphs and figures were produced in Stata version 12 and in Excel. Mean (SD) and median scores were calculated for all participants combined, for each country separately and finally divided into each BMI category (BMI<25 Kg/m^2 vs. BMI≥25 Kg/ m^2). The process was repeated for all questionnaires and for each follow up. Most data are summarised as median scores as they pertain to ordinal categorical variables.
Individuals' scores were explored as well including the changes in scores for each follow up.

Prior to deciding if the analysis required either parametric or non-parametric tests, the following action was taken: for each time point that data were collected and for each outcome variable (self-esteem, body-image, eating behaviours and feeding perceptions) tests were assessed for normality. Histograms and boxplots were plotted to assess skewness and kurtosis (Lix et al., 1996). The findings indicated that data were normally distributed in relation to regression analysis and were able to account for confounders as well.
The Wilcoxon matched pairs test was used to compare changes in scores between pregnancies and follow up. Pearson's correlation test was applied to

determine the existence of any linear association between the questionnaire scales and babies' weight.

For each follow up analysis, a mixed model linear regression reflecting the multilevel data structure (responses nested within participants, participants nested within country) was applied (Rice and Leyland. 1996).

- ✓ **Choosing the best fit model:**

Our analysis aimed to identify any significant relationships between our outcomes (the dependent variables: levels of self-esteem, body image and maternal and babies eating behaviours) and independent variables namely BMI, breastfeeding, country and levels of education. In the first follow up and while exploring the pregnancy data, linear regression modelling was applied. However, as the research progressed each participant had four different occasions of which its data has been collected and hence four different possibly changes in scores. Multilevel models explore data which is organised in more than one level. It takes into account the correlated structures in the dataset and provide accurate estimation of the standard errors thus leading to correct statistical inferences . For the data which is represented and discussed in chapter 3, the first and lowest level which was explored was the questionnaires scores, for example levels of self-esteem. The second level is accounted by the participants in the study.

Prior to commencing the analysis several model specifications were explored aiming to choose the best fitting model for the data based on likelihood ratio tests and the Akaike Information Criterion (AIC), such that lower values indicate the most parsimonious model (Akaike, 1973). Second, all the variables which might potentially impact on the questionnaires coefficient and significance levels were explored.

The process of choosing the best fitting model explored firstly whether a multilevel model (with random effects) was a better fit than ordinary linear regression (i.e. a traditional fixed effects model). This was then extended to consider increasingly flexible multilevel models, beginning with a variance components model and then models with random intercepts and random coefficients (Leyland and Goldstein, 2004).
Agreeing on the best fit model, the analysis aimed to detect as well the interaction between the outcome (questionnaires scores) and other variables (such as country and BMI).

2.1.3.1 Qualitative research:

Semi-structured interviews were used to explore mothers' feelings about motherhood, their body-image and eating behaviours. The purpose of the interviews was to better understand mothers' well-being and eating behaviours following pregnancy.

For example, in the first follow-up, taking place 2-6 months following birth, the first question mothers were asked was ***"how was your pregnancy"*** followed by ***"how were your eating behaviours during pregnancy…"*** and ***" and now, while you are not pregnant, can you please tell me a bit about your eating…"*** .

The rationale for asking such questions was based on the general aims of this research assessing via questionnaires (quantitative research) mothers eating behaviours and well-being during pregnancy and the postpartum.

The researcher is a trained psychotherapist and aimed to create a general positive environment during the interview prior to asking mothers questions which are less structured and maybe less straightforward such as ***"how is it for you being a mother…Is it similar/different than what you expected it to be…".***

Interview Protocol:

The following protocol of the interview describes the list of questions (as approved by the ethics committee) which women were asked in each follow-up while being interviewed. The researcher did her best to follow the order of the questions but was sensitive to the context, mother's mood and wellbeing and would ask for clarification or expansion on topics as they emerged.

In each follow-up the researcher updated the mothers regarding the progress of her work (the research) since their last meeting and reminded mothers that during the feed the researcher will remain silent allowing the feeding to be representative of usual feeding.

- Nice to meet you. I would like to thank you for participating in the study. Would you like me to tell you a bit about the research?

The research addresses maternal eating behaviours and well-being from pregnancy and until two years postpartum. Following pregnancy I also address babies eating behaviours. I have found it interesting that there is less research which explored how we, women, feel during pregnancy and the postpartum. Are we always happy? Is pregnancy always a fantastic experience and becoming a mother is very natural? Is it sometimes challenging? How do we feel with the changes within our body? How are our eating habits? May I please ask if you have any questions so far? Just maybe a bit about myself. I am a trained psychotherapist and I have another MSc in nutrition. I moved to the UK to undertake my PhD in the Institute of Psychology and Sciences in Leeds University. I have been always interested in the associations between physical and emotional well-being. Again, thank you for participating in the study. I would only like to remind you now that all the filmed data will only be available to see for my supervisors and myself. When I will submit my thesis I will send you all your films. When you wish to feed please do so. While you are feeding I will not ask

you any questions so it will be as similar as possible to your usual feeding routine.

- Can I ask how were your eating behaviours during pregnancy?
- Where your eating behaviours different than usual? And now, while you are not pregnant?
- How did you feel during pregnancy? And now, how do you feel?
- Some of the questions you have previously replied via the questionnaires addressed your self-esteem. Can you please tell me a bit about this? Do you feel your self-esteem is higher/lower now compared to pregnancy? Maybe it is the same?
- And your body image? Is it higher/lower/the same?
- Are you breastfeeding?
- Have you always known you will breastfeed?
- Do you have joint family meals during the week/weekend?
- Can I please ask about your daily schedule? You can start with when the baby usually wakes up etc.
- Have you been working prior to pregnancy? Do you plan to return to work?
- Do you have any questions?
- Can I please ask you about your experience of motherhood? Is it similar, different than what you have expected it to be?

I wish to thank you for your time. This was our first meeting and I will contact you again in six months. I will than email you again the questionnaires and will ask to arrange a meeting in which I can film you feeding and we can have a chat.

Can I please ask that if after this meeting you feel you have additional questions, wish to add something or maybe you feel uncomfortable with anything, please do contact me. It is very important for me to hear what you have to say.

For the analysis of the data, a thematic analysis methodology was applied. This is the most common form used for qualitative research which aims to identify themes within the data (Braun and Clark. 2006). The phases and decisions undertaken for the thematic analysis are stated in chapter 6.

2.1.3.2 The Simple Feeding Element Scale:

The SFES scale (Mohebati. In prep) includes 10 variables pertaining to mother-baby feeding interactions (see Appendix). It is rated on a 3-point Likert scale by a trained observer, ranging from 1 (less ideal) to 3 (more ideal). Elements were coded separately as Cronbach's alpha showed a weak correlation between the scale elements. Table 2-2 contains a description on the elements of the scale. Mothers were asked to feed their baby as usually and to ignore the presence of the researcher as much as possible. The researcher explained to the mothers that she (NS) will remain silent during the feed so the feeding will be representative as possible. The meal ended when the mother approached the researcher and said that the baby finished its meal. The process was repeated in each of the follow-ups and mothers were reminded that during the feed they are asked to ignore the presence of the researcher.

In the analysis of this thesis films were viewed by the lead researcher (NS), a qualified psychotherapist with training in NCAST and the SFES. A second researcher (CN), trained in the SFES, was asked to view the films and code them independently. Finally the third researcher (LM) also coded the material independently. For variables that did not reach an agreement of more than 75%, LM adjudicated the final score.

In the first meal interaction several films included breastfeeding thus for the analysis an additional variable was generated comparing between breastfeeding meal; indicative on mothers who were filmed while breastfeeding compared to otherwise feeding; indicative for mothers who fed pureed food or formula feed. The analysis always addressed the filmed feed and not general feeding behaviours.

Table 2-2; The Simple Feeding Element Scale (SFES): Description of Elements.

	Less ideal (1)	Average (2)	More ideal (3)
Setting	- TV - Toys - Other distractions (books, etc.)	- TV on but baby facing away/not interested or engaged - Distraction turned off/taken away less than halfway through mealtime	- No distractions, just the mealtime
Positioning	- Side-by-side (eye contact difficult) - Eating alone - Lying down	- Perpendicular - Perpendicular on lap	- Face-to-face
Mood and atmosphere	- Annoyed/irritated with baby - Ignoring baby	- Somewhat bored with activity	- Enjoying interaction
Child participation	- Saying 'no' to child's attempts to participate - Physically restraining to prevent participation	- Failure to offer opportunity - Offering opportunity but child doesn't participate	- Baby holding spoon or other utensil/cup etc - Finger feeding/self feeding
Pacing	- Offering food while baby is still chewing 3 times or more	- Offering food while baby is chewing up to twice	- Waiting until baby finishes chewing before offering food - Allowing child to feed self at own pace
Feeding while distracted	- Baby accepts a bite or feeds self 3 times or more in a row while distracted with TV, toys, other food or people other than the carer	- Baby accepts a bite or feeds self 2 times in a row while distracted with TV, toys, other food or people other than the carer	- Baby accepts a bite or feeds self while distracted with TV, toys, other food or people other than the carer on the odd occasion or not al all
Feeding while disengaging	- Feeding baby during a potent disengagement cue (NCAST) or within 3 seconds after the cue has been displayed	- Offering food during a potent disengagement cue (NCAST) or within 3 seconds after the cue has been displayed	- Pausing the feeding during a potent disengagement cue (NCAST) and for at least 3 seconds after the cue has been displayed
Qualitative aspects of verbal communication	- Using eating commands AND/OR negative comments 3 times or more	- Using eating commands AND/OR negative comments up to twice	- Not using eating commands OR negative comments
Quantitative aspects of verbal communication	- One or more episodes of at least one minute in duration with no vocalisation from carer AND not responding to child's vocalisations on two or more occasions	- One or more episodes of at least one minute in duration with no vocalisation from carer OR not responding to child's vocalisations on two or more occasions	- Conversation during the meal and responding to child's vocalisations
Fruits and vegetables	- If any sugary biscuits, chocolates, puddings, sweets, soft drinks, adult crisps.	- Formula, milk, porridge, rice, rice cereal, rice cakes, bread, meat/fish sandwiches, mashed potatoes, rusks, yoghurt, pasta, spaghetti Bolognese	- If any breast-milk and/or foods consisting of or containing fruits and/or vegetables as a main ingredient (i.e., orange-coloured pap, broccoli, melon, banana, etc.)

3 Stability and change in self-esteem, eating behaviour and body satisfaction during and after pregnancy.

Abstract:

Maternal body mass index (BMI) is associated with negative body image and restrained eating which are experienced differently across cultures. The present study explored if levels of self-esteem, eating behaviours and body satisfaction change from early pregnancy to 24 months following birth. An additional aim was to identify if such measurements vary according to country. Given that heavier women show higher levels of restrained eating and less satisfaction with body compared to healthy weight women the study examined if such differences can be attributed to mother's BMI .

Data were collected on four occasions (every six months) and women completed questionnaires assessing self-esteem (RSEQ), body image (BIS/BIDQ) and eating behaviours (DEBQ). Women reported their weight and height and BMI were calculated. Regression modelling was used to account for changes and to assess the independent impact of BMI on outcomes.

73 women participated in the study in early pregnancy and continued to participate in the follow-up study 16(9) weeks following birth. A total of twelve women withdrew from the study between the first and the final follow-up resulting in 61 women who completed the study for its full length.

Self-esteem remained stable across follow-ups and did not differ according to country. As mothers' BMI increased they ate more according to emotional cues and were less satisfied with their body. Findings from this study note that BMI was the strongest predictor for self-esteem, eating behaviours and body satisfaction.

The period after pregnancy is a key time to investigate how well women adjust to motherhood. Future research should aim to continue and explore mothers' well-being, eating behaviours and body satisfaction in the immediate time postpartum, but also how well women adjust to such changes over time.

3.1 Introduction:

Weight gain during adulthood contributes to obesity in later life (Smith et al., 1994) and several studies have identified pregnancy as a time when women are at particular risk for an increase in weight (Schmitt et al., 2007; Rooney et al., 2002; Greene et al., 1998). As women's weight gain is positively correlated with their BMI prior to pregnancy, different health advice is given for women with different BMIs. Healthy weight women are advised to gain up to12-15 kg during pregnancy whereas overweight and obese women are advised to gain the minimum weight possible (Harris et al., 1997; Linne et al. 2004) with no actual recommendations about how many kg are considered as minimum.

BMI was also positively associated with women's well-being acting as a strong predictor for self-esteem (chapter 2). Thus high BMI before pregnancy was associated with lower levels of self-esteem during pregnancy (Laraia et al., 2008).

Another factor which is associated with BMI changes is body image and as discussed in chapter 1, pregnancy is a time when women's body and eating behaviours change. Duncombe et al (2008) explored body image across pregnancy showing that women were generally accepting of the changes within their body and body image was stable. Women who showed higher levels of body dissatisfaction were more likely to report depressive symptoms. Similar to Duncombe et al., Shloim et al (2013) identified strong correlations between body image and BMI with significantly higher body dissatisfaction in Israeli than in UK women.

Following pregnancy women struggle to lose weight and to return to their pre-pregnancy weight and shape. For some women failing to lose the pregnancy weight results in negative feelings towards their body sometimes leading to an increase in disordered eating (Tiggemann. 2003; Stein and Fairburn., 1996). Thus, having given birth, women can no longer attribute the weight gain to positive aspects of providing food for the healthy development of their infant (Carter et al., 2000) and show higher levels of weight concern.

The results contained in this chapter describe a study which aimed to explore Israeli and UK women's body image, self-esteem and eating behaviours following pregnancy by addressing the following specific objectives:

1) Do maternal characteristics such as self-esteem, eating behaviours and body satisfaction change from pregnancy to the postpartum.
2) Do these changes vary according to country (Israel and the UK).
3) Are there any possible differences in maternal characteristics and how these change according to participant's BMI.

It was hypothesized that (3a) lower self-esteem, higher restraint and greater body dissatisfaction will be found post pregnancy attributable to weight change. Thus women will be more satisfied with their body and restrain their eating less during pregnancy compared to the postpartum. This is supported by findings from previous research exploring eating behaviours and BMI (Cornelis et al., 2014; Groesz et al., 2012). (3b) higher levels of restrained and emotional eating were expected to be found as BMI increased. Finally, and as addressed in the introduction for this thesis, (3c) higher levels of restrained eating and less satisfaction with the body were expected to be found in Israel compared to the UK.

The research involves four periods of study (an initial visit and 3 subsequent follow up measures) in both countries (Israel and the UK) every six months. To facilitate the flow of findings, these are given by period and then the chapter ends with a general discussion summarising the findings from all four follow-ups.

3.2 Methods:

156 pregnant women (Israel and the UK) participated in the first phase of the study exploring self-esteem, eating behaviours and satisfaction with body during pregnancy. Not all women provided future contact details resulting in a final sample of seventy three women participating in the first follow-up, 2-6 months after giving birth (Figure 3-1).

The largest withdrawal in the study was between pregnancy (phase 1) to the follow-up study (phase 2). Additional twelve women (N=12) stopped their participation in the study during the two years of the follow-up, as indicated in Figure 3-2.

Participants were asked to fill in the same questionnaire they had previously completed during pregnancy and to report their weight and height to enable calculation of their estimated body mass index (BMI). Further details can be seen in chapter 2.

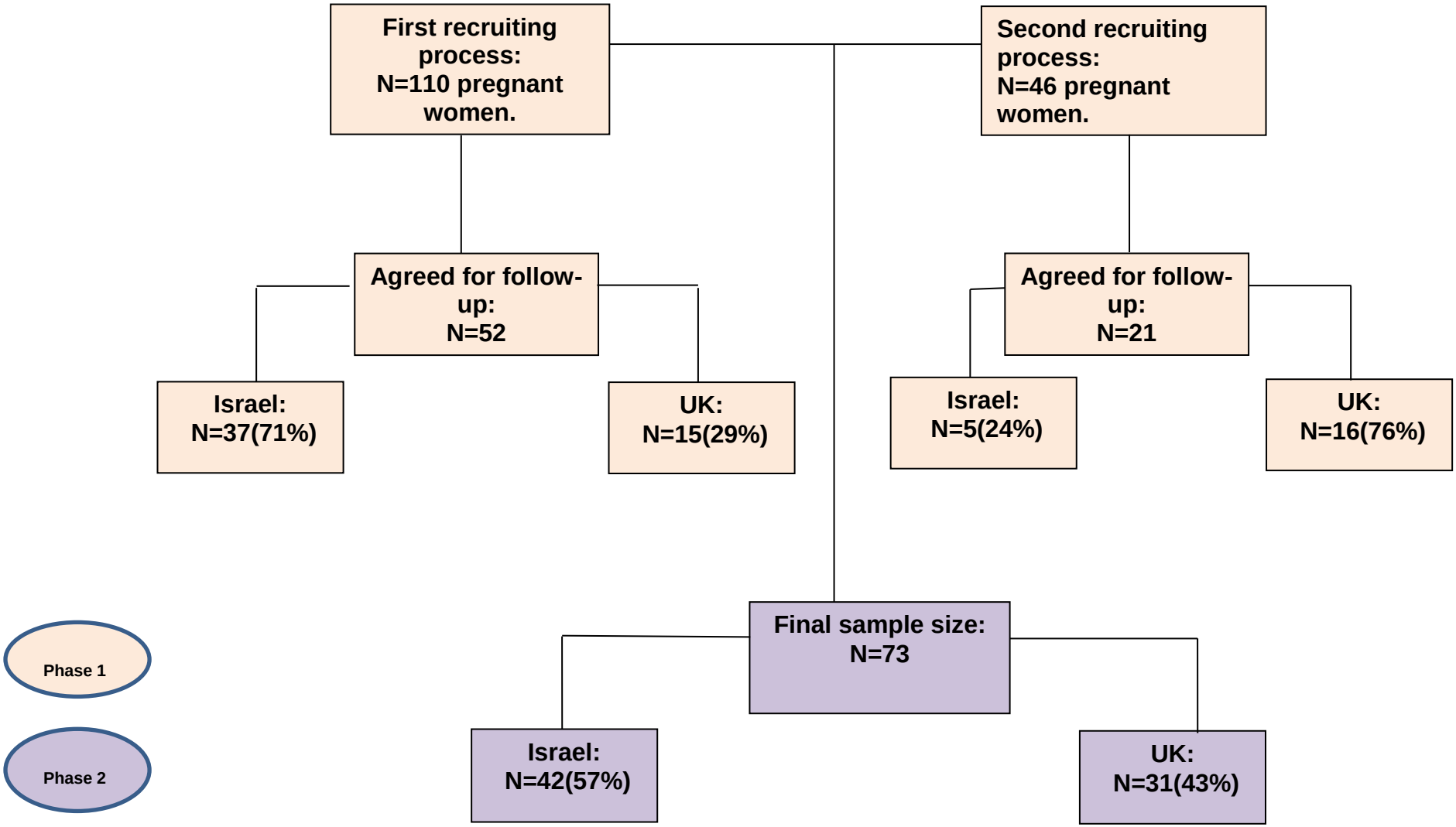


Figure 3-1; Changes in the number of participants

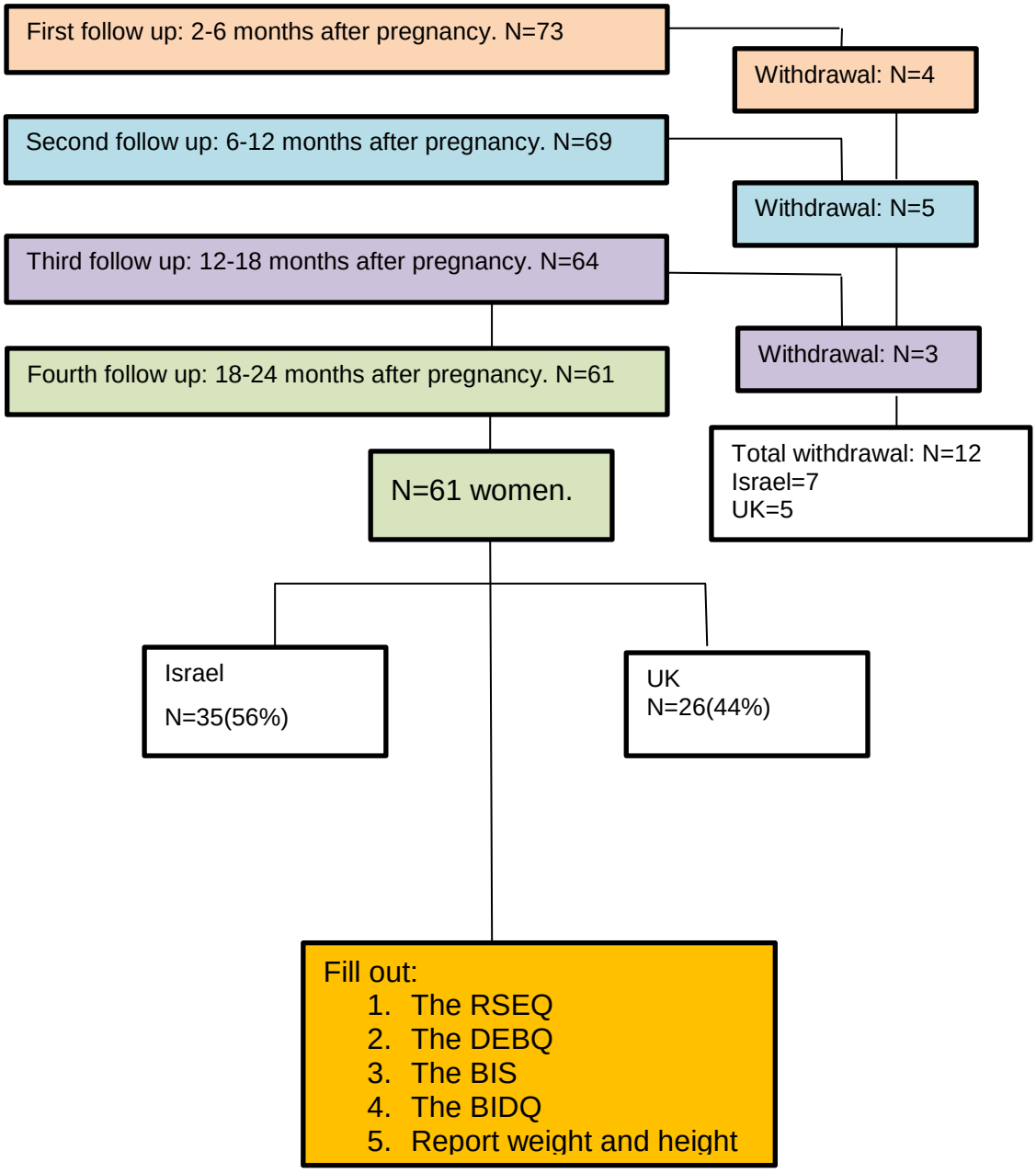


Figure 3-2; Changes in the number of participants and questionnaires as assed from the first to the fourth follow-up.

3.3 First follow-up: Maternal characteristics 2-6 months postpartum.

3.3.1 General findings:

The main characteristics of the women who agreed to continue in the follow-up study compared to those who withdrew are indicated in Table 3-1. Women who continued to participate in the study were significantly older and more educated compared to those who did not continue.

Table 3-2 summarises the main characteristics of the sample who participated in the study.

Questionnaires were sent via email between 2-6 months after the women had given birth. The women in our study were on average 3 kg±7.1kg; range -12 to 35 kg heavier at the time of follow-up compared to their pregnancy weight at week 8 and 12. Mean (SD) weight following pregnancy was higher in the UK compared to Israel (67 kg vs. 64.4 kg respectively) with similar levels of increase in weight for both countries. Mean (SD) BMI after pregnancy was 23.9±4.1kg/m^2, similar to participants' BMI at week 8/12 of pregnancy, 22.5±3.6 kg/m^2.

Figure **3-3** presents BMI categories during and post pregnancy.

Table 3-1; Descriptive characteristics of participants who participated in the study (n= 73) compared with those from the original cohort who did not (n= 79)

	Number of Observations			Median			Range			P-Value	Missing data		
Variable	**Did not participate**	**Participated**	**Total**	**Did not participate**	**Participated**	**Total**	**Did not participate**	**Participated**	**Total**		**Did not participate**	**Participated**	**Total**
Age(years)	79	70	149	33	34	34	22-42	26-40	22-42	*0.02	2.5%	4.2%	7.7%
BMI(Kg/m$^{2)}$	72	69	141	21.5	23	22.8	16.1-39.08	17-39	16.1-39.08	0.23	2.8%	5.7%	8.5%
Number of children per family	81	73	151	1	1	1	0-13	0-2	0-13	0.28			
Levels of education	83	73	150	5	5	5	1-5	0-5	0-5	*0.003			
Marital Status	83	73	150	1	1	1	1-3	1-3	1-3	0.79			

Modified from Shloim et al., (2014. submitted). *Kruskal-Wallis equality-of-populations rank test comparison of medians between withdrawal and continued to follow-up participants. BMI (body max index).Level of education:1 indicates only GCSE, ;4 indicates at least 3A levels and 5 indicates a degree, Marital status: 1 ;married, 2;long-time partner and 3; single.

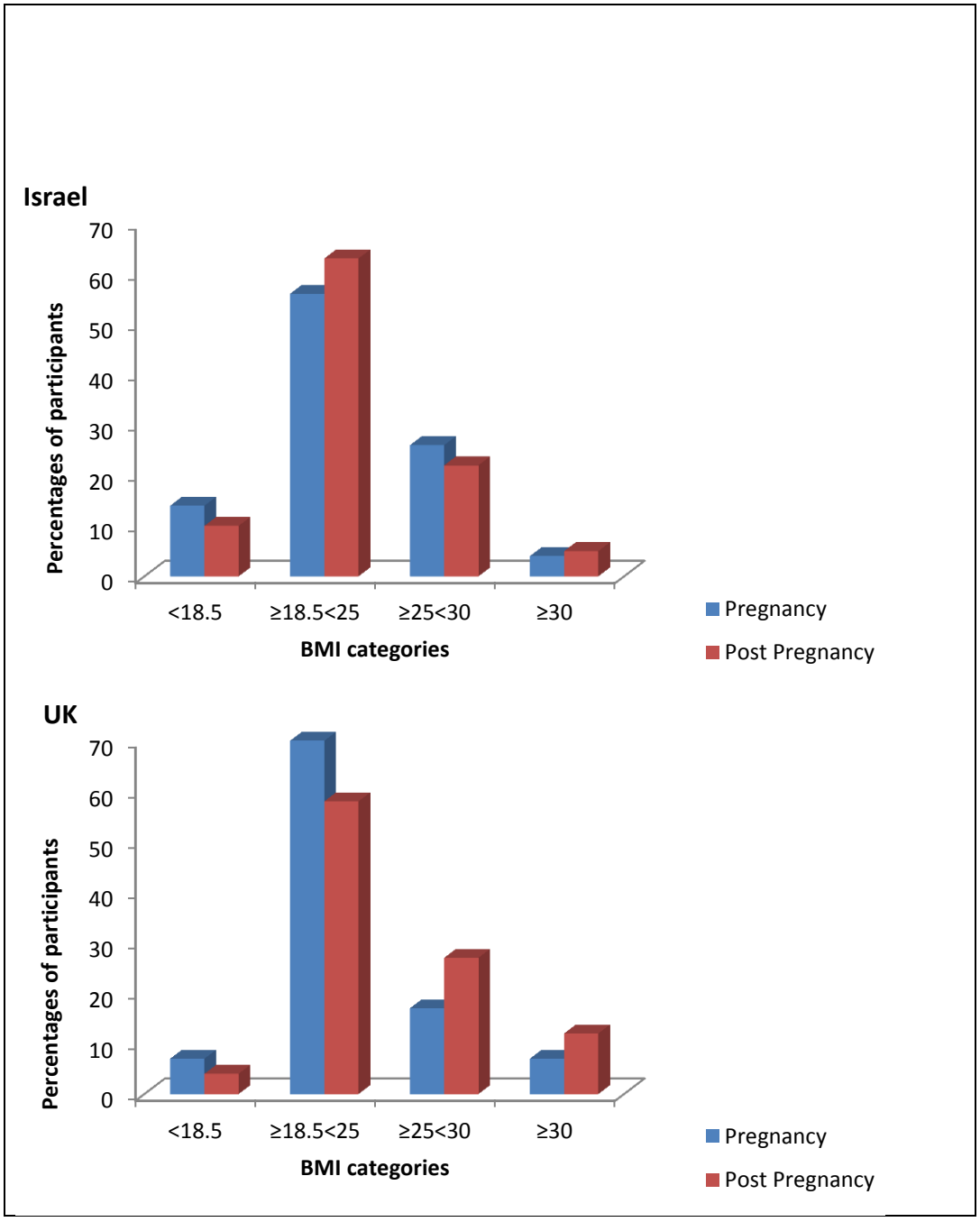


Figure 3-3; Israeli and UK women BMI (Body Mass Index) during and following pregnancy

3.3.2 Findings from the Questionnaires (RSEQ, DEBQ, BIS and the BIDQ):

Self-esteem, body image and eating behaviours scores during and after pregnancy are given in Table 3-3. No significant differences were seen apart from significantly higher levels of dissatisfaction with body following pregnancy for women from the UK.

Time of follow-up (after giving birth compared to pregnancy) was positively correlated with the questionnaire scores and changes in body image scores (from pregnancy to first follow up), indicating higher levels of desire for a slimmer body shape (P=0.006) following pregnancy. Older women were significantly less satisfied with their post-pregnancy body size (P=0.001) . Body dissatisfaction was greater for Israeli women compared to UK women post pregnancy (P=0.04).

Women with higher BMI had significantly higher levels of self-esteem, were significantly more restrained than healthy-weight women, were more likely to eat according to emotional cues and had significantly larger differences between their current and ideal body size (Table 3-4).

Table 3-2; Participants' main characteristics at the first follow-up.

	N (%)			Mean (SD)			Median			IQR			Missing data (%)		P value
	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	
Mothers Age (years)	42(57%)	31(43%)	73	34.6(3.8)	34.4(3.2)	34.5(3.5)	35	34	34	26-40	28-41	26-41			0.80
Infants age (weeks)	33(55%)	27(45%)	60	18.8(6.1)	22.4(3.7)	20.5(5.4)	20	24	24	5-26	9-26	5-26	15%	6%	0.09
Number of children before pregnancy:							0	1	1	0-4	0-2	0-8			*0.02
None	11(26%)	13(42%)	73												
More than one	31(74%)	18(58%)													
Levels of education:							5	5	5	4-5	4-5	4-5	2%		0.19
Degree	2(5%)	4(13%)	72												
Higher than first degree	40(95%)	26(87%)													
Mother's BMI (Kg/m^2):				23.5(3.6)	24.2(4.7)	23.8(4.1)				17-32	18-37	17-37	2%	13%	0.74
<18.5	4(10%)	1(4%)	69												
≥18.5<25	26(63%)	15(58%)													
≥25<30	9(22%)	7(27%)													
≥30	2(5%)	3(12%)													
Infant's weight (Kg)	33(55%)	27(45%)	60	6.2(1.5)	7.6(1.4)	6.6(1.8)	6	7.2	7	3.3-9.5	5-11.5	3.3-11.5	15%	6%	*0.008
Infant's length (cm)	18(49%)	19(51%)	37				64	69	66	48-72	55-82	48-82	42%	61%	0.17
Weight Z scores	33(55%)	27(45%)	60	-0.37(0.9)	0.45(0.88)	0.00-09(1)	-0.54	0.19	0.07	-2.22-1.6	-1.16-2.8	-2.22-2.8	15%	6%	*0.008
Breastfeeding:															
Yes	30(77%)	23(77%)	69										7%	3%	0.92
No	9(23%)	7(23%)													

(Modified from Shloim et al., 2013) *Mann Whitney test comparing median scores between countries. SD (Standard Deviation), IQR (Inter quartiles range)

Table 3-3; Summary of scores of the RSEQ, DEBQ, BIS and the BIDQ according to BMI status presented by time of follow up (pregnancy vs. 2-6 months following pregnancy) for each country (Israel vs. UK).

Israel:	**Pregnancy Median score(N)**			**Post-Pregnancy Median score(N)**			**Pregnancy IQR**			**Post pregnancy IQR**			**P-value**
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	25(45)	25(17)	25(63)	25(29)	26(10)	25(40)	24-26	23-28	23-27	24-27	25-28	24-28	0.43
DEBQ-R	2.5(44)	2.8(18)	2.7(64)	2.5(28)	2.9(11)	2.7(40)	1.9-3.1	2.8-3.2	2.1-3.1	1.9-3.1	2.7-3.1	2.3-3.1	0.78
DEBQ-E	2.1(42)	2.3(16)	2.2(60)	2(26)	2.7(10)	2.2(36)	1.6-2.5	2.3-3.3	1.7-2.7	1.6-2.4	2.4-3	1.7-2.7	0.90
DEBQ-X	3(45)	3(16)	3(64)	3(28)	3.2(10)	3.1(41)	2.7-3.3	2.7-3.4	2.6-3.3	2.8-3.4	3-3.5	2.8-3.4	0.45
BIS-Diff.	0.5(46)	1(18)	1(67)	1(30)	2(11)	1(41)	0-1	1-2	0-1	0-1	1-2	0-2	0.13
BIDQ	1.5(46)	1.7(18)	1.5(65)	1.5(30)	2(11)	1.6(41)	1.2-1.8	1.7-2.4	1.2-2	1.2-1.8	1.5-3	1.2-2.7	0.52
UK:	**Pregnancy Median score(N)**			**Post-Pregnancy Median score(N)**			**Pregnancy IQR**			**Post pregnancy IQR**			**P-value**
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	24(54)	25.5(21)	25(82)	24(16)	25.5(10)	24(29)	23.5-25.5	23-27	24-26	23.5-25.5	23-27	23-26	0.71
DEBQ-R	2.5(54)	2.9(20)	2.6(81)	2.7(16)	2.9(10)	2.6(29)	1.8-3.1	2.1-3.4	2.1-3.1	2.3-3.1	1.8-3.3	2.2-3.2	0.99
DEBQ-E	2.1(54)	2.5(20)	2.3(81)	2.2(15)	2.3(10)	2.3(28)	1.7-2.6	1.6-3.1	1.7-2.7	1.7-3	2-3.2	1.8-3	0.64
DEBQ-X	2.8(55)	2.8(20)	2.8(81)	2.8(15)	3.2(9)	2.8(27)	2.5-3.2	2.7-3.1	2.6-3.2	2.5-3.2	2.7-3.3	2.5-3.2	0.53
BIS-Diff.	0(55)	1(20)	1(82)	1(16)	2(10)	1(29)	0-1	1	0-1	1-2	2	1-2	*0.006
BIDQ	1.2(52)	11.2(18)	1.2(75)	1.4(14)	1.5(10)	1.4(27)	1.1-1.5	1.1-1.5	1.1-1.5	1.1-1.7	1.4-2	1.2-1.7	0.09

(Modified from Shloim et al., 2013) *Two-sample paired Wilcoxon signed rank test comparing scores between pregnancy and post pregnancy. IQR (Inter quartile range). RSEQ (Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviour questionnaire), BIS (Body Image scale) and the BIDQ (Body Image Disturbance Questionnaire), ≤25 (healthy weight), >25 (Overweight+ Obese), UK (United Kingdom)

Table 3-4; Multilevel regression modelling for the RSEQ, DEBQ, BIS and the BIDQ.

Outcomes	Variables	Model Coefficient	95% CI	P Value
RSEQ	Country (UK vs. Israel)	-0.28	-1.32,0.75	0.59
	Mother's age (years)	0.006	-0.13,0.15	0.93
	Mother's BMI	0.14	0.01,0.27	*0.02
	Breastfeeding (yes vs. no)	0.32	-0.96,1.60	0.62
DEBQ-R	Country (UK vs. Israel)	-0.05	-0.49,0.39	0.81
	Mother's age (years)	-0.03	-0.09,0.02	0.21
	Mother's BMI	0.09	0.03,0.14	*0.001
	Breastfeeding (yes vs. no)	-0.47	-1.02,0.06	0.08
DEBQ-Em	Country (UK vs. Israel)	0.13	-0.26,0.54	0.50
	Mother's age (years)	-0.02	-0.08,0.02	0.34
	Mother's BMI	0.07	0.02,0.12	*0.003
	Breastfeeding (yes vs. no)	-0.28	-0.81,0.24	0.30
DEBQ-Ex	Country (UK vs. Israel)	-0.14	-0.41,0.12	0.30
	Mother's age (years)	-0.02	-0.06,0.007	0.12
	Mother's BMI	0.01	-0.01,0.05	0.22
	Breastfeeding (yes vs. no)	0.08	-0.41,0.24	0.61
BIS-diff in scores	Country (UK vs. Israel)	0.40	-0.04,0.85	0.08
	Mother's age (years)	0.10	0.04,0.17	*0.00
	Mother's BMI	0.07	0.01,0.12	*0.01
	Breastfeeding (yes vs. no)	-0.09	-0.66,0.47	0.73
BIDQ	Country (UK vs. Israel)	-0.21	-0.58,0.15	0.25
	Mother's age (years)	-0.01	-0.06,0.03	0.52
	Mother's BMI	0.008	-0.03,0.05	0.71
	Breastfeeding (yes vs. no)	-0.18	-0.65,0.28	0.43

*Significant. RSEQ (Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviour questionnaire), BIS (Body Image scale) and the BIDQ (Body Image Disturbance Questionnaire).
Levels of education and marital status were accounted for and were not significant thus not added in this table.

3.4 Summary of the first follow-up results:

- Multilevel regression modelling suggested that BMI was found to be the main independent predictor of self-esteem, eating behaviours and body satisfaction.
- 2-6 months after giving birth, women were on average 1.5 kg heavier compared to their mean weight in early pregnancy.
- No significant differences were found between levels of self-esteem and eating behaviours scores during and following pregnancy.
- No significant differences were found between both countries and levels of self-esteem and eating behaviours, apart from significantly higher levels of dissatisfaction with body for Israeli women.
- In the UK, significantly higher levels of dissatisfaction with body were seen following pregnancy.
- Higher levels of distorted body image were found following pregnancy and were significantly more distorted for older women.

3.5 Second follow-up: Feeding and eating behaviours 6-12 months post pregnancy.

3.5.1 General findings:

Sixty-nine women participated in the second follow-up study 6-12 months after giving birth (Israel; N=39, 57%. UK; N=30, 43%). Four women (Israel =3, UK=1) stopped replying to emails and were removed from the study (Figure 3-2). At this time, 71% (N=49) of the women had returned to work with significantly higher levels of working mothers in Israel (P=0.001. 85% vs. 53% respectively) compared to the UK.

One woman was pregnant again at the time of the follow up (first trimester) and in the analysis her data were removed as it could have potentially confounded the results (eating behaviours and body image might vary during and following pregnancy). However, the data were retained as no significant differences were identified while exploring the total sample.

Women's weight at the time of the second follow up ranged from 43-106 kg. Our findings suggest that women were 800g heavier on average compared to their weight in early pregnancy but lighter compared to their mean weight at the previous follow-up. Figure 3-4 shows the differences in the women's mean weight and is distributed according to the time of the follow-up. The highest mean (SD) weight was seen in the first follow up. In both countries women's mean (SD) weight in the second follow-up was similar to the mean (SD) weight as measured in early pregnancy.

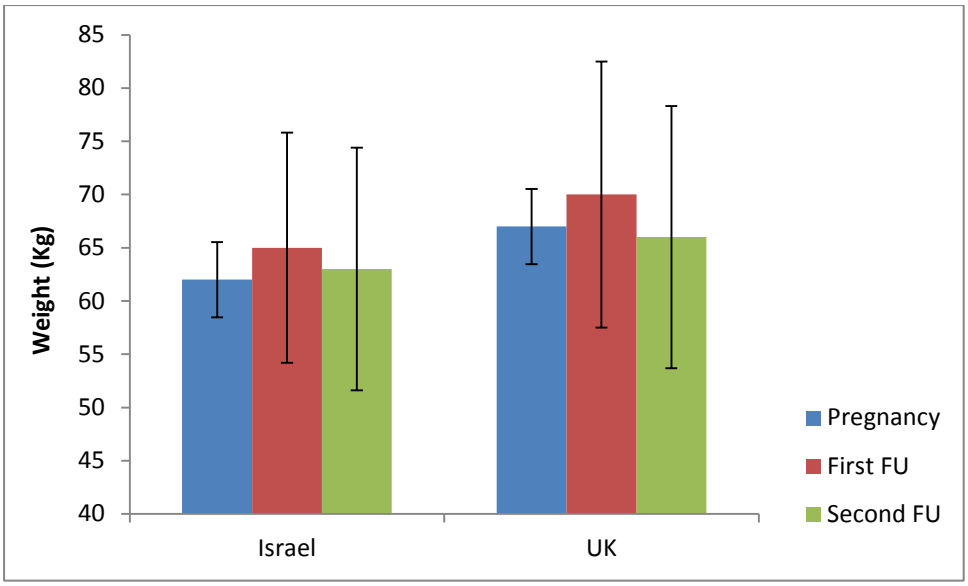


Figure 3-4; Participant's mean weight at pregnancy, first and second follow-up.

3.5.2 Findings from the questionnaires:

Self-esteem, body image and eating behaviours scores for the second follow up (compared to pregnancy) are presented in Table 3-5. No significant differences were seen between levels of self-esteem, body-image and eating behaviours during pregnancy and 6-12 months after giving birth. No significant differences were observed while comparing the scores at the second follow-up and country.

Our findings suggest that as BMI increased levels of self-esteem increased, women were more likely to eat according to emotional cues and aspired to a slimmer body, compared to healthy-weight women (Table 3-5). Thus, although the data present similar median scores, the Z-approximation for the Mann-Whitney-Wilcoxon is different.

Table 3-5; Summary of scores for the RSEQ, DEBQ, BIS and BIDQ presented by mothers BMI categories during the second follow-up occasion (20-65 weeks).

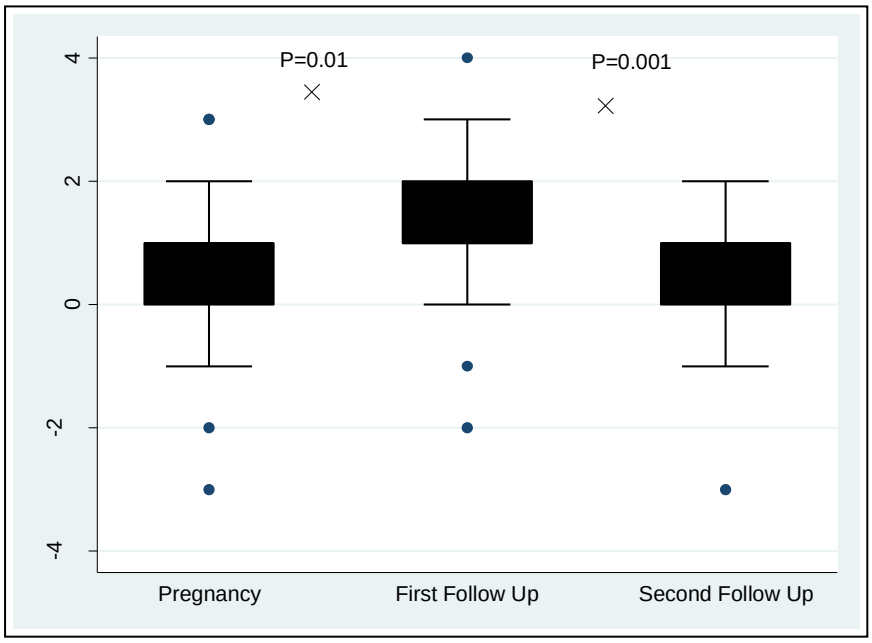
Pregnancy	N			Median Score			IQR			Missing Data (%)	P-value
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total		
RSEQ	46	17	66	25	25	25	20-29	19-30	19-30	4.5%	0.31
DEBQ-R	45	17	65	2.5	3.1	2.8	1-4.4	2.1-5	1-5	4.6%	*0.004
DEBQ-Em	42	16	61	2.2	2.4	2.4	1.2-3.9	1.4-4.9	1.2-4.9	5%	0.15
DEBQ-Ex	46	15	64	2.9	3.1	3	1.8-4.3	2.3-4.3	1.8-4.3	4.6%	0.48
BIS-Diff.	46	17	64	1	1	1	-3+3	-2+3	-3+3	4.6%	0.31
BIDQ	47	15	62	1.4	1.6	1.4	1-3.7	1-2.9	1-3.7	4.6%	0.38
Second follow-up	**N**			**Median Score**			**IQR**			**Missing Data (%)**	**P-value**
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total		
RSEQ	47	19	68	25	25	25	20-30	22-29	20-30	3%	*0.04
DEBQ-R	48	19	69	2.8	2.9	2.9	1-5	1.4-3.6	1-5	2.8%	0.49
DEBQ-Em	48	19	69	2.3	2.8	2.4	2.4	1.1-4.8	1.3-5	2.8%	*0.04
DEBQ-Ex	48	19	69	3.1	2.9	3	1-4.3	2.5-4.7	1-4.7	2.8%	0.94
BIS-Diff.	48	19	69	1	1	1	-3+2	-1+2	-3+2	2.8%	*0.002
BIDQ	47	18	67	1.6	2	1.8	1-3.5	1.1-4.2	1-4.2	3%	0.24

*Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing between questionnaires scores and BMI category in the second follow up. IQR (Inter quartile range). RSEQ (Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviour questionnaire), BIS (Body Image scale) and the BIDQ (Body Image Disturbance Questionnaire), ≤25 (healthy weight), >25 (Overweight+ Obese), UK (United Kingdom)

Table 3-6 presents the findings from the multilevel linear regression revealing that the best fitting model was the variance-components model with fixed slopes (chapter 2). An increase in scores was seen for all outcomes from pregnancy to the first follow up and then a decrease from the first to the second follow up. Thus, the change was not a linear change as time progressed, neither was each subsequent change significant.

The women in our study continued to restrain their eating similarly to previous follow-ups, thus BMI was found to be a significant predictor of restrained eating (P=0.01). The older (P=0.01) and heavier (P=0.04) women were, the more they ate according to emotional cues, were less satisfied with their body and wished to be slimmer (P=0.03) than younger women.

Figure 3-5 presents the differences in women's desire to achieve a slimmer body size (BIS-differences in scores). The findings indicate a significant peak in women's body perception 2-6 months after pregnancy and then a decline by to earlier levels by the second follow-up.



Higher scores indicate higher levels of dissatisfaction with body.

Figure 3-5; The BIS: Differences in scores.

Table 3-6; Multilevel regression modelling for the RSEQ, DEBQ, BIS and the BIDQ at the second follow-up

	Outcome	Multivariable model Coefficient	95% CI	P value
RSEQ:	Time of follow-up:			
	1st follow-up vs. pregnancy	0.83	-3.45,5.12	0.70
	2nd follow-up vs. pregnancy	-0.26	-0.96,0.43	0.45
	Country (UK vs. Israel)	-0.18	-1.1,0.73	0.70
	Age(years)	0.10	-0.03,0.24	0.12
	BMI	0.05	-0.03, 0.14	0.22
	Breastfeeding (yes vs. no)	-0.51	-1.7, 0.70	0.40
DEBQ: R	Time of follow-up:			
	1st follow-up vs. pregnancy	-0.68	-1.93, 0.56	0.28
	2nd follow-up vs. pregnancy	0.06	-0.12, 0.25	0.52
	Country (UK vs. Israel)	0.08	-0.25, 0.43	0.61
	Age(years)	-0.05	-0.05, 0.04	0.81
	BMI	0.03	-0.001,0.06	*0.04
	Breastfeeding (yes vs. no)	-0.07	-0.52, 0.38	0.76
DEBQ: Em	Time of follow-up:			
	1st follow-up vs. pregnancy	0.18	-1.19, 1.55	0.79
	2nd follow-up vs. pregnancy	0.28	0.06, 0.51	*0.01
	Country (UK vs. Israel)	0.25	-0.05,0.57	0.11
	Age(years)	-0.04	-0.09,0.003	*0.03
	BMI	0.06	0.03, 0.09	*0.002
	Breastfeeding (yes vs. no)	0.33	-0.07, 0.74	0.10
DEBQ: Ex	Time of follow-up:			
	1st follow-up vs. pregnancy	-0.20	-1.03, 0.62	0.63
	2nd follow-up vs. pregnancy	0.07	-0.05, 0.20	0.23
	Country (UK vs. Israel)	-0.11	-0.26, 0.10	0.36
	Age(years)	-0.01	-0.03, 0.01	0.49
	BMI	0.01	-0.006,0.02	0.07
	Breastfeeding (yes vs. no)	-0.03	-0.35, 0.27	0.80
BIS: difference	Time of follow-up			
	1st follow-up vs. pregnancy	-1.06	-2.8, 0.75	0.25
	2nd follow-up vs. pregnancy	-0.49	-0.82, -0.17	*0.03
	Country (UK vs. Israel)	0.07	-0.20, 0.35	0.53
	Age(years)	0.04	0.003, 0.08	*0.02
	BMI	0.05	0.02, 0.08	*0.01
	Breastfeeding (yes vs. no)	0.25	-0.16, 0.67	0.23
BIDQ:	Time of follow-up:			
	1st follow-up vs. pregnancy	-0.01	-1.31, 1.29	0.98
	2nd follow-up vs. pregnancy	0.15	-0.05, 0.37	0.15
	Country (UK vs. Israel)	-0.14	-0.38, 0.08	0.21
	Age(years)	-0.03	-0.06, -0.008	*0.01
	BMI	0.02	-0.001, 0.04	*0.006
	Breastfeeding (yes vs. no)	0.25	-0.16, 0.67	0.23

RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body image Disturbance Questionnaire. Levels of education and marital status were accounted for and were not significant thus not added in this table.

3.6 Summary of the second follow-up results:

- BMI was a significant predictor for body image and eating behaviours.
- Women had managed to lose their added pregnancy weight 6 and 12 months following birth. Differences in weight retention were identified in Israel and the UK. Nevertheless, although women had returned to their previous early pregnancy weight, they were, overall, less satisfied with their body size than in early pregnancy and showed a significant desire to be slimmer.
- No significant differences were seen between levels of self-esteem, eating behaviours and body image during early pregnancy and 6-12 months postpartum.
- No significant differences were seen between countries.
- Heavier mothers scored significantly higher in the DEBQ-Em scale.

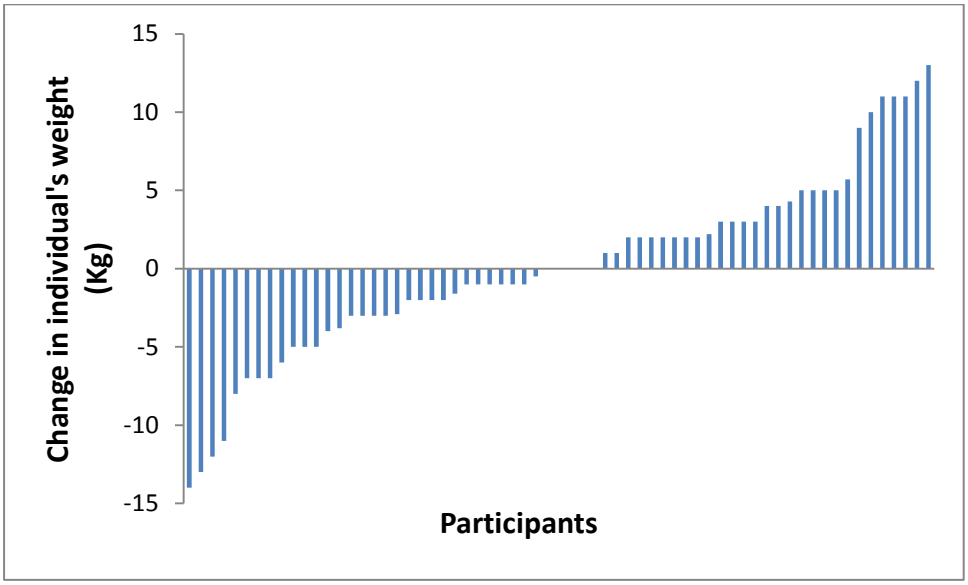
3.7 Third follow-up: Feeling and eating behaviours 12-18 months post pregnancy.

3.7.1 General findings:

Sixty-four women continued to participate in the third follow-up study. Nine women had withdrawn from the study between the first and the third follow up, as shown in Figure 3-2. Three women stopped replying to any contact attempts made by the researcher and withdrew from the study. One participant suffered from postnatal depression and one participant moved abroad and stopped responding to email. Exploration of the main characteristics of the withdrawn sample did not indicate any differences between both groups.

Women were on average 0.5 Kg lighter compared to their mean weight at early pregnancy measured at week 8 in Israel and 12 in the UK (range 44-94 kg).

Figure 3-6 describes individuals' change in weight and reveals some similarities in the number of participants who lost and did not lose their pregnancy weight.



Higher weight after giving birth (women did not lose their pregnancy weight) ; Lower weight after giving birth (women have lost their pregnancy weight); Outcome= 2nd follow-up weight minus pregnancy weight

Figure 3-6; Changes in individuals' weight from pregnancy until 12-18 months after giving birth.

Mean (SD) BMI was 22.5(4.8) kg/m^2. UK mothers were on average 1 kg heavier compared to Israeli mothers (UK: 64.1 (10.6) range 45 to 83 Vs. Israel: 63.0(12) range 44 to 94 indicating that Israeli women had continued to lose their pregnancy weight whereas UK women stopped losing weight, as compared with the second follow up. The retained weight change ranged from -14+12 indicating that 10% of the women were between 8-14 kg lighter postpartum compared to pregnancy whereas 10% were 9-12 kg heavier. Nevertheless, for 50% of the sample the change in weight ranged from -3+3.

Figure 3-7 describes the differences in mothers' BMI according to follow ups.

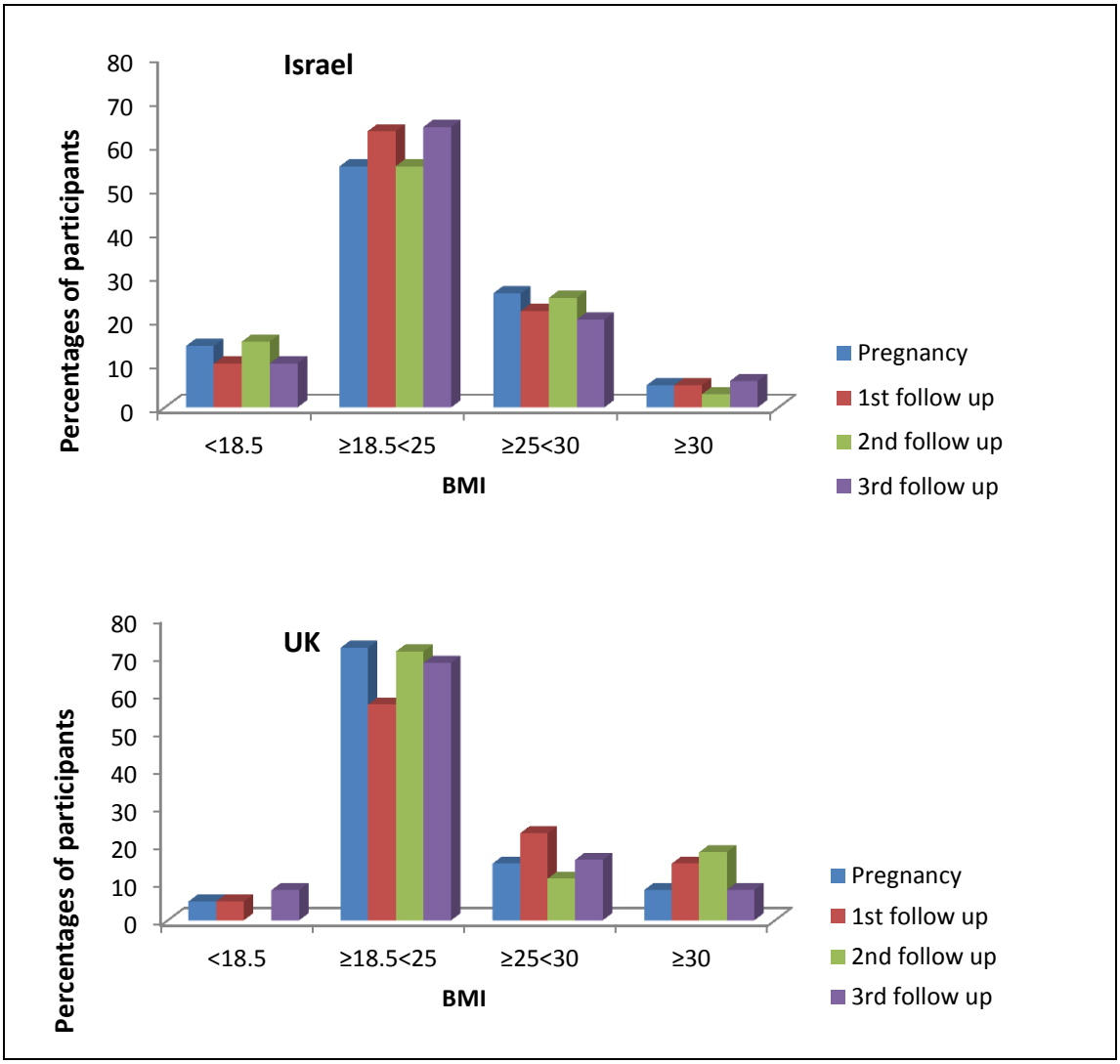


Figure 3-7; Israeli and UK women BMI (Body Mass Index) as measured from pregnancy until the third follow-up

At this time significantly (P= 0.007) more women had returned to work with higher levels of working mothers in Israel than the UK (84% vs. 75% respectively), as indicated in Table 3-7.

Table 3-7; Participants' main characteristics.

	N (%)			Mean (SD)			IQR			Missing data (%)		P value
	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	
Mothers Age (years)	36	27	63	35.3(3.4)	35.7(3)	35.5(3.2)	27-41	30-42	27-42		1.5%	0.87
Working status:												
Working	30	21	64									*0.007
Not working	6	7										
Mother's BMI (Kg/m^2):												
<18.5	4	2									10.7%	0.44
≥18.5<25	23	17										
≥25<30	7	4	61									
≥30	2	2										
Infant's weight (Kg)	31	19	50	10.8(1.1)	10.4(1.9)	10.6(1.5)	8.7-14	7-14.4	7-14.4	16%	32%	0.46
Weight Z-scores	31	17	48	0.6(1.08)	0.3(1.04)	0.5(1.2)	-1.6-2.99	-1.98-2.8	-1.98-2.99	16%	39%	0.66

*Mann Whitney test comparing maternal characteristics between countries. SD (Standard Deviation), IQR (Inter quartiles range).

3.7.2 Findings from questionnaires:

Self-esteem, eating behaviours and body image scores are given in Table 3-8. Israeli women showed a significantly higher desire for a slimmer body (P=0.01) compared to UK mothers.

Median scores for the overall sample did not vary by country. Exploration of the data from the third follow up and comparison with pregnancy showed similar scores for the Israeli sample. However, in the UK, levels of self-esteem decreased from pregnancy to the third follow up but were not significantly different. In both countries, a trend of increase in levels of self-esteem, emotional eating (DEBQ-E) and dissatisfaction with body image (BIDQ) was seen as BMI increased.

Against expectations, BMI was a significant predictor of self-esteem indicating that heavier mothers had significantly higher levels of self-esteem compared to healthy weight mothers. Working mothers had significantly higher levels of self-esteem (P=0.04. Table 3-9) compared to stay-at home mothers. Working women were also more likely to eat according to emotional cues (P=0.03). Women with the highest weight gain since pregnancy had significantly lower self-esteem compared to women who had gained least weight after pregnancy (-0.10, 95% CI [-0.20, -0.004]; p = 0.04). Thus, weight change after pregnancy significantly affected women's self-esteem.

Heavier women aspired to a slimmer body size (P<0.000) and were less satisfied with their body image (P=0.02) compared to healthy weight women. During all of the follow-ups women's desired body size was significantly slimmer compared to their current one. Similar to our findings from the previous follow ups, the regression analysis suggests that self-esteem, body image and eating behaviours following pregnancy were affected mainly by women's BMI and not by their country of origin, age or working status.

12-18 months after pregnancy women ate significantly more according to external cues compared to during pregnancy and 2-6 months after giving birth (P=0.01).

Table 3-8; Summary of scores for the RSEQ, DEBQ, BIS and BIDQ presented by mothers BMI categories, follow up and country.

Israel Questionnaires	Pregnancy Median score(N)			3rd follow up Median score(N)			Pregnancy IQR			3rd follow up IQR			P-value
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	25(28)	26(13)	25(41)	25(26)	27(9)	25(35)	20-29	22-30	20-30	20-27	23-30	20-30	0.73
DEBQ-R	2.5(27)	2.8(13)	2.7(40)	2.9(26)	2.8(9)	2.9(35)	1-4.3	1.9-3.1	1-4.3	1-4.1	1.9-3.1	1-4.1	0.81
DEBQ-E	2.2(25)	2.4(11)	2.4(36)	2.2(26)	2.5(9)	2.3(35)	1.2-3.9	1.4-3.7	1.2-3.9	1.1-4.1	1.5-3.1	1.1-4.1	0.36
DEBQ-X	2.9(28)	3(11)	3(39)	3.2(26)	2.9(9)	3.1(35)	1.8-4.3	2.3-3.6	1.8-4.3	2.2-5	2.7-3.4	2.2-5	0.11
BIS-Diff.	1(28)	1(13)	1(41)	1(27)	2(9)	1(36)	-3-1	-2-3	-3-3	-1-3	1-2	-1-3	*0.01
BIDQ	1.4(29)	1.9(13)	1.5(42)	1.4(26)	1.7(9)	1.4(35)	1-3.7	1-2.9	1-3.7	1-3.7	1-3.6	1-3.7	0.80
UK Questionnaires	**Pregnancy Median score(N)**			**3rd follow up Median score(N)**			**Pregnancy IQR**			**3rd follow up IQR**			**P-value**
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	24(21)	25(6)	25(29)	23(19)	25(6)	23(28)	21-29	19-28	19-29	21-30	18-28	18-30	0.17
DEBQ-R	2.6(22)	3.3(6)	2.8(30)	3(18)	2.9(6)	2.8(27)	1.1-4.4	2.1-5	1.1-5	1.1-4.4	1.2-4.1	1-4.4	0.98
DEBQ-E	2.3(21)	3(6)	2.4(29)	2.2(18)	2.6(5)	2.3(27)	1.4-3.9	1.4-4.9	1.2-4.9	1.2-3.8	1.1-5	1.1-5	0.76
DEBQ-X	2.8(22)	3.2(6)	2.9(30)	3(18)	2.8(6)	3(27)	1.8-3.8	2.3-4.3	1.8(4.3)	1.5-4	1.4-5	1.4-5	0.98
BIS-Diff.	1(22)	1(6)	1(30)	1(19)	2(6)	1(28)	-1-3	0-2	-1-3	-1-2	2-3	-1-3	0.20
BIDQ	1.3(22)	1.3(4)	1.3(27)	1.3(19)	1.9(6)	1.3(28)	1-3.1	1-1.4	1-3.1	1-3.6	1.1-3.3	1-3.6	0.79

*Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing between questionnaires scores and the third follow up. IQR (Inter quartile range). RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire)., ≤25 (healthy weight), >25 (Kingdom Overweight+ Obese), UK (United)

Table 3-9; Multilevel regression modelling for the RSEQ, DEBQ, BIS and the BIDQ.

Outcome	Variables	Multivariable model Coefficient	95% CI	P value
RSEQ:	Time of follow-up			
	1st vs. pregnancy	0.12	-0.50,0.75	0.69
	2nd vs. pregnancy	-0.28	-0.96,0.39	0.41
	3rd vs. pregnancy	-0.15	-0.85,0.54	0.66
	Country	-0.71	-1.7,0.30	0.16
	Age(years)	-0.06	-0.21,0.07	0.35
	BMI	0.08	0.003,0.15	*0.04
	Working status	1.27	0.06,2.28	*0.04
	Hours at child minder	0.35	0.05,0.75	0.09
DEBQ: R	Time of follow-up			
	1st vs. pregnancy	0.01	-0.18,0.21	0.89
	2nd vs. pregnancy	0.05	-0.16,0.27	0.62
	3rd vs. pregnancy	-0.03	-0.25,0.19	0.78
	Country	0.05	-0.37,0.48	0.80
	Age(years)	-0.01	-0.07,0.04	0.68
	BMI	0.01	-0.01,0.04	0.42
	Working status	0.31	-0.14,0.76	0.18
	Hours at child minder	-0.03	-0.17,0.11	0.67
DEBQ: Em	Time of follow-up			
	1st vs. pregnancy	-0.07	-0.20,0.42	0.35
	2nd vs. pregnancy	0.15	-0.06,0.02	0.09
	3rd vs. pregnancy	0.04	-0.15,0.23	0.66
	Country	0.14	-0.27,0.56	0.49
	Age(years)	-0.04	-0.10,0.01	0.15
	BMI	0.04	0.01,0.06	*0.000
	Working status	0.31	0.01,0.61	*0.03
	Hours at child minder	-0.03	-0.12,0.05	0.42
DEBQ: Ex:	Time of follow-up			
	1st vs. pregnancy	0.04	-0.10,0.19	0.57
	2nd vs. pregnancy	0.11	-0.04,0.27	0.17
	3rd vs. pregnancy	0.20	0.03,0.37	*0.01
	Country	-0.24	-0.54,0.04	0.09
	Age(years)	-0.02	-0.06,0.02	0.30
	BMI	0.006	-0.01,0.03	0.62
	Working status	0.18	-0.19,0.57	0.34
	Hours at child minder	-0.06	-0.19,0.07	0.38

***Significant. RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire).**

Outcome	Variables	Multivariable model Coefficient	95% CI	P value
BIS: difference	Time of follow-up			
	1st vs. pregnancy	0.45	0.20,0.69	*0.00
	2nd vs. pregnancy	0.30	0.03,0.56	*0.02
	3rd vs. pregnancy	0.36	0.09,0.62	*0.008
	Country	0.24	-0.09,0.58	0.16
	Age(years)	0.009	-0.04,0.05	0.70
	BMI	0.04	0.02,0.06	*0.000
	Working status	0.29	-0.05,0.62	0.09
	Hours at child minder	-0.17	-0.29,0.06	*0.02
BIDQ:	Time of follow-up			
	1st vs. pregnancy	0.19	0.05,0.32	*0.006
	2nd vs. pregnancy	0.05	-0.09,0.31	0.44
	3rd vs. pregnancy	0.002	-0.16,0.16	0.97
	Country	-0.25	-0.56,0.05	0.10
	Age(years)	-0.02	-0.07,0.01	0.24
	BMI	0.02	0.002,0.04	*0.02
	Working status	0.24	-0.05,0.53	0.11
	Hours at child minder	0.02	-0.06,0.11	0.57

***Significant. RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire).**

3.8 Summary of the third follow-up results:

- BMI was a significant predictor for self-esteem, emotional eating and distorted body image.
- Women were on average 0.5 kg lighter compared to their weight in early pregnancy.
- Significantly more women returned to work with significant higher levels of Israeli working mothers compared to the UK.
- No significant differences were seen between levels of self-esteem, eating behaviours and body satisfaction from early pregnancy and the third follow-up.
- No significant differences were seen between countries.
- In all follow-ups, significantly higher levels of desire for a slimmer body size were seen.

3.9 Fourth follow-up: Feeling and eating behaviours 18-24 months after giving birth.

3.9.1 General findings:

Sixty-one women participated in the final follow-up 18-24 months after giving birth. The three women who withdrew from the study since the third follow-up did not provide a particular reason for withdrawing and simply failed to reply to the researcher's emails. Two women were from the UK and one was Israeli. At this time, 13 (21%) of the women were pregnant again. No significant differences were observed while exploring the data with or without this sub-sample and the following analysis relates to 48 (79%) non-pregnant women and 13(21%) pregnant women, most in their first trimester of pregnancy.

Women's weight at the time of the fourth follow up was available for 58 women. Mean weight was 63.6±11.8 kg and ranged from 44 to101 kg. Women were 0.6 kg heavier compared to their weight in early pregnancy with UK women significantly heavier compared to Israeli women (P=0.03). 13% of the sample were on average 2 kg lighter at this time compared to their weight in early pregnancy with 11% being 2 kg heavier. The findings indicate as well that 14% of the women were more than 4 kg lighter two years postpartum compared to early pregnancy (range -5-13) with nearly 25% being more than 5 kg heavier (range 5 to17). Thus although participants mean weight two years postpartum was similar to their mean weight in early pregnancy (for the total sample), exploring individuals changes in weight and BMI indicated that more women were heavier postpartum, as noted in appendix C chapter 3.

3.9.2 Findings from the questionnaires:

Self-esteem, body image and eating behaviours scores for the final follow-up are presented in **Table 3-10**.Total scores are similar at the time of the final follow-up to pregnancy other than significantly higher levels of restrained eating (p=0.01) and desire to be slim (P=0.02) for UK mothers.

Significantly higher levels of body dissatisfaction were seen for Israeli women compared to women from the UK.

Exploration of individuals' scores from pregnancy to the postpartum suggest wide variation and changes in scores for most of the women (**Error! Reference source not found.**), first for self-esteem and then for dissatisfaction with body. Data are arranged according to mothers' BMI.

No significant differences were observed by BMI and median scores, however, as before, BMI was a significant predictor of self-esteem indicating that heavier mothers had higher levels of self-esteem compared to healthy weight mothers, as seen in Table 3-11.

In all of the follow-ups women had a desire for a slimmer body size after giving birth. Older and heavier mothers were less satisfied with their body size and showed a greater desire for a slimmer size compared to younger and healthy weight mothers.

Table 3-10; Summary of scores for the RSEQ, DEBQ, BIS and BIDQ by mother's BMI category, follow up period and country.

Israel	N		Pregnancy Median score			4th follow up Median score(N)			Pregnancy IQR			4th follow up IQR			P-value
			BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	28	13	25	26	25	25	25	25	20-29	22-30	20-30	20-29	24-26	20-29	0.83
DEBQ-R	27	13	2.5	2.8	2.7	2.6	3	2.9	1-4.3	2.2-3.9	1-4.3	1-4.1	2.6-3.5	1-4.1	0.25
DEBQ-E	25	11	2.2	2.4	2.4	2.1	2.2	2.1	1.2-3.9	1.4-3.7	1.2-3.9	1.2-3.6	1.6-3.2	1.2-3.6	0.88
DEBQ-X	28	11	2.9	3	3	3.1	3	3	1.8-4.3	2.3-3.6	1.8-4.3	2.2-4.4	2.5-3.8	2.2-4.4	0.76
BIS-Diff.	28	13	1	1	1	1	1	1	-3+1	-2+3	-3+3	0+2	1+3	0+3	0.07
BIDQ	29	13	1.4	1.9	1.5	1.4	1.4	1.4	1-3.7	1-2.9	1-3.7	1-3.6	1-2.7	1-3.6	0.78
UK			Pregnancy Median score(N)			4th follow up Median score(N)			Pregnancy IQR			4th follow up IQR			P-value
			BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
RSEQ	22	6	24.5	25	25	25	25	25	21-29	19-28	19-29	21-30	19-27	19-30	0.97
DEBQ-R	23	6	2.6	3.3	2.8	2.3	2.9	2.5	1.1-4.4	2.1-5	1.1-5	1-3.4	2.5-3.8	1-4.1	*0.01
DEBQ-E	22	6	2.2	3	2.4	2.2	2.8	2.3	1.2-3.9	1.4-4.9	1.2-4.9	1.2-3.7	1.3-4.3	1.2-4.3	0.56
DEBQ-X	23	6	2.8	3.2	2.9	3.1	3	3	1.8-3.8	2.3-4.3	1.8-4.3	1.8-4.6	2.4-3.7	1.8-4.6	0.87
BIS-Diff.	23	6	1	1	1	1	1	1	-1+3	0+2	-1+3	0+2	1+3	0+3	*0.02
BIDQ	23	4	1.3	1.3	1.3	1.2	1.4	1.3	1-3.1	1-1.4	1-3.1	1-1.9	1.1-3.6	1-3.6	0.18

*Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing between BMI and questionnaires scores at the fourth follow up, in each country separately. IQR (Inter quartile range). RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire), ≤25 (healthy weight), >25 (Overweight+ Obese), UK (United Kingdom)

Table 3-11; Multilevel regression modelling for the RSEQ, DEBQ, BIS and the BIDQ at the fourth follow-up

Outcome	Variables	Multivariable model Coefficient	95% CI	P value
RSEQ:	Time of follow-up			
	1st vs. pregnancy	0.42	-0.49,0.72	0.20
	2nd vs. pregnancy	-0.09	-0.82,0.48	0.79
	3rd vs. pregnancy	0.003	-0.76,0.58	0.99
	4th vs. pregnancy	0.11	-0.67,0.67	0.75
	Country (UK vs. Israel)	-0.22	-1.00,0.54	0.60
	Age(years)	-0.02	-0.13,0.08	0.65
	BMI	0.07	0.02,0.12	*0.002
	Working status (yes vs. no)	0.38	-0.37,1.13	0.32
DEBQ: R:	Time of follow-up			
	1st vs. pregnancy	0.09	-0.18,0.19	0.37
	2nd vs. pregnancy	0.12	-0.12,0.27	0.25
	3rd vs. pregnancy	0.05	-0.25,0.17	0.66
	4th vs. pregnancy	-0.004	-0.30,0.12	0.97
	Country (UK vs. Israel)	0.01	-0.28,0.30	0.87
	Age(years)	-0.001	-0.04,0.04	0.15
	BMI	0.01	-0.03,0.02	0.11
	Working status (yes vs. no)	0.14	-0.08,0.38	0.21
DEBQ: Em:	Time of follow-up			
	1st vs. pregnancy	-0.07	-0.23,0.08	0.35
	2nd vs. pregnancy	0.16	-0.003,0.34	*0.03
	3rd vs. pregnancy	0.05	-0.13,0.24	0.54
	4th vs. pregnancy	0.009	-0.17,0.19	0.92
	Country (UK vs. Israel)	0.11	-0.19,0.42	0.23
	Age(years)	-0.01	-0.06,0.02	0.44
	BMI	0.01	-0.001,0.02	0.09
	Working status (yes vs. no)	-0.04	-0.23,0.15	0.68
DEBQ: X:	Time of follow-up			
	1st vs. pregnancy	0.05	-0.08,0.20	0.45
	2nd vs. pregnancy	0.13	-0.02,0.28	0.08
	3rd vs. pregnancy	0.22	0.06,0.38	*0.006
	4th vs. pregnancy	0.14	-0.01,0.31	0.07
	Country (UK vs. Israel)	-0.11	-0.31,0.07	0.22
	Age(years)	-0.02	-0.05,0.002	0.07
	BMI	0.0009	-0.01,0.01	0.98
	Working status (yes vs. no)	-0.10	-0.28,0.07	0.25

RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire).

(continued):

Outcome	Variables	Multivariable model Coefficient	95% CI	P value
BIS: difference	Time of follow-up			
	1st vs. pregnancy	0.44	0.21,0.67	*0.000
	2nd vs. pregnancy	0.28	0.04,0.54	*0.02
	3rd vs. pregnancy	0.33	0.08,0.58	*0.009
	4th vs. pregnancy	0.27	0.01,0.52	*0.03
	Country (UK vs. Israel)	0.24	-0.02,0.52	0.07
	Age(years)	0.04	0.001,0.08	*0.04
	BMI	0.03	0.01,0.05	*0.000
	Working status (yes vs. no)	-0.15	-0.44,0.13	0.29
BIDQ:	Time of follow-up			
	1st vs. pregnancy	0.18	0.06,0.31	*0.004
	2nd vs. pregnancy	0.06	-0.07,0.20	0.36
	3rd vs. pregnancy	0.008	-0.14,0.16	0.91
	4th vs. pregnancy	-0.03	-0.18,0.12	0.38
	Country (UK vs. Israel)	-0.24	-0.51,0.02	0.04
	Age(years)	-0.03	-0.07,0.007	0.05
	BMI	0.0002	-0.01,0.11	0.88
	Working status (yes vs. no)	0.11	-0.04,0.28	0.15

RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviours questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire).

Figure 3-9 summarizes the relationship between the dependent and independent variables as identified from the multilevel regression modelling at the time of the final follow-up. The figure concludes the following:

- Country was a significant predictor for self-esteem (RSEQ).

- BMI continued to be a strong predictor for eating behaviours and body-image; however, fewer significant associations were seen in the later follow-ups. This could be related to the decrease in the sample size.

- As the time since birth increased, levels of emotional and external eating increased and women became less satisfied with their body.

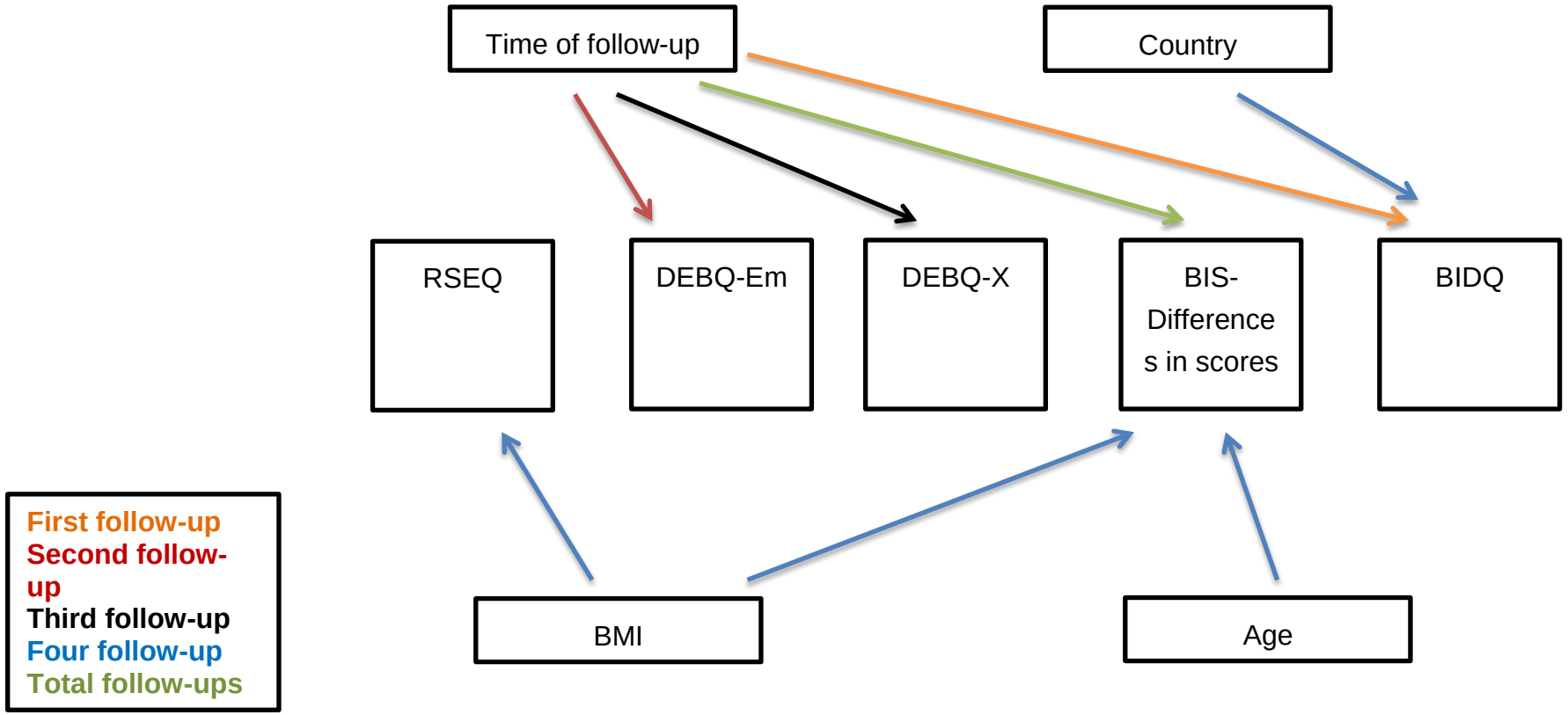


Figure 3-9; Regression modelling summary noting the significant relationship between the dependent and independent variables.

3.10 Summary of findings from the final follow-up:

- 61 women from Israel and the UK participated in the final follow-up study. At this time, 21% were pregnant again with similar levels of pregnant participants in both countries.
- Two years after giving birth, UK women restrained their eating significantly more compared with early pregnancy and had significantly higher desire for a slimmer body size.
- Higher levels of body dissatisfaction were observed at 18-24m postpartum for Israeli women compared to women from the UK.
- No significant differences were seen between levels of self-esteem, eating behaviours and body satisfaction according to mothers' BMI, however, regression modelling showed that time of follow-up was the strongest predictor for all variables apart from self-esteem. Thus the longer the time since giving birth the less satisfied women were with their body and the more they restrained their eating.

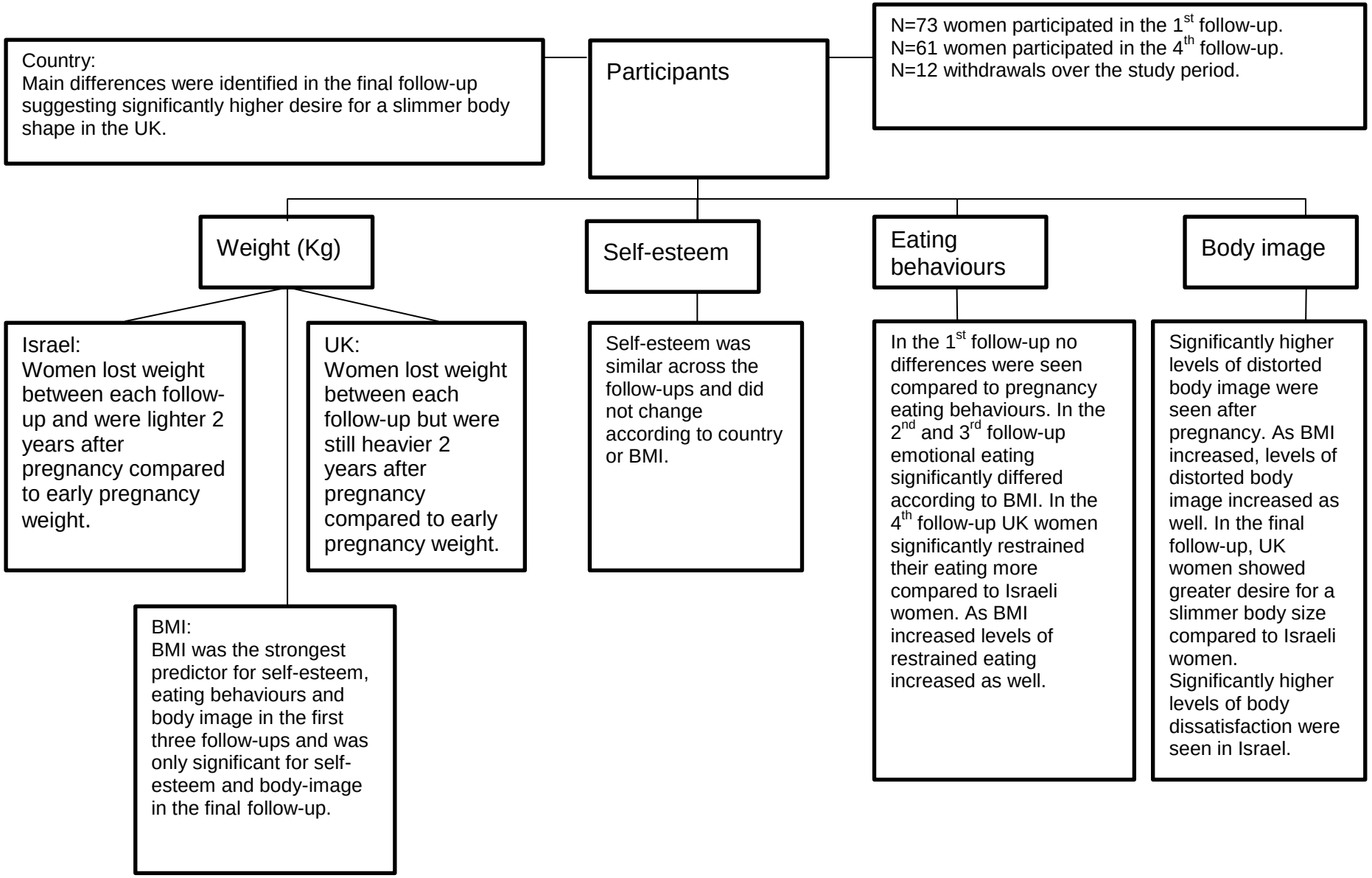


Figure 3-10; Summary of findings from the first to the final follow-up

3.11 Discussion:

The present study aimed to explore changes in self-esteem, body image and eating behaviours in Israeli and UK women from early pregnancy until two years after giving birth.

The main findings from this study suggest that two years after giving birth women were less satisfied with their body and ate more according to emotional and external cues compared to during pregnancy. Our findings indicate as well a similarity in levels of self-esteem and eating behaviours for Israeli and UK women with Israeli women showing a significantly higher desire for a slimmer body compared to UK women.

Research has previously noted that eating behaviours tend to vary according to BMI (Jenkins et al., 2012). While exploring mothers' self-esteem, body satisfaction and eating behaviours according to BMI, we hypothesized that a) heavier mothers would demonstrate lower levels of self-esteem compared to healthy weight mothers; b) higher levels of restrained eating would be seen as mothers' BMI increased and c) as BMI increased, levels of body dissatisfaction would increase. Findings from our analysis only partly supported our hypotheses; nevertheless, BMI was the strongest predictor of self-esteem, eating behaviours and body satisfaction.

Eating behaviours tended to vary during and after pregnancy with most women following a healthy lifestyle while pregnant (Stein and Fairburn. 1996). The average weight retained for longer than a year after pregnancy is 0.5-4 kg (Van Poppel et al., 2012; Olson et al., 2003) indicating that re-achieving the pre-pregnancy weight and shape takes time. Findings from our study suggest that women were on average 0.6 kg heavier two years after pregnancy compared to their weight in early pregnancy. Healthy weight women were more likely to lose all of their retained pregnancy weight whereas overweight and obese women were more likely not to succeed in losing all the pregnancy weight. Moreover, although the average retained weight was relatively low, findings from our study note that more women

were heavier two years postpartum compared to their early pregnancy weight and about 50% were more than 4 kg heavier. The findings support previous research noting that losing the pregnancy weight takes time and is hard to achieve (Van Poppel et al., 2012).

Differences in retained weight were seen between the countries we well. Israeli women were nearly two kg lighter after pregnancy whereas UK women were about one kg heavier. In both counties women gained weight from pregnancy to the first follow-up (two kg on average) and lost it when they reported for the second follow-up. Thus, 6-12 months after giving birth women's weight was similar to their weight in early pregnancy.

Heavier women had higher levels of self-esteem with self-esteem remaining stable during and after pregnancy. (Shloim et al., 2013; Shloim et al., 2014). Such unexpected findings might be attributed to the fact that the Rosenberg self-esteem questionnaire (Rosenberg. 1965) was not originally developed for pregnancy and the postpartum. Thus its feasibility and ability to detect certain parameters potentially affecting self-esteem and self-worth in such critical time might be limited.

The second hypothesis addressed mothers eating behaviours and BMI. During pregnancy women tend to adopt a healthy lifestyle (Verbekea and Bourdeaudhuij. 2006; Damton-Hill et al., 2004; WHO; 2014) whereas after giving birth women are more concerned with their weight and demonstrate higher tendency to restrain and control eating behaviours (Rosner and Ohlin. 1995; Carter et al., 2000). Our findings indicate that in the immediate postpartum women's eating behaviours were similar to their eating behaviours during pregnancy. This might be attributed to the high levels of breastfeeding which were previously positively associated with healthy eating behaviours (Wiltheiss et al., 2013).

However, as time progressed and as seen from the second and third follow-up, eating behaviours varied according to mothers BMI. Thus, heavier mothers ate according to emotional cues compared to healthy weight mothers. In support, exploring eating behaviours within a non-pregnant population suggested that obese individuals tend to overeat in response to negative emotional states (Geliebter and Aversa. 2003; Van Strein. 1995).

Findings from our study contribute to previous research by being the first to explore emotional eating during pregnancy and the postpartum. Nevertheless, the reason why heavier women tend to eat more emotionally during the postpartum remains unknown and should be further explored possibly by qualitative and quantitative methodologies. We would like to suggest that for heavier women the postpartum can be seen as a vicious cycle and failing to lose their pregnancy weight is potentially affecting their eating behaviours, resulting in negative well-being and high levels of dissatisfaction with the body. Having given birth women demonstrate intense pressure to rapidly lose the gained pregnancy weight and compare themselves with other women. Findings from this study indicates that body dissatisfaction was highly prevalent for both healthy-weight and obese women in the postpartum. This is supported by the literature noting that following pregnancy body image tends to be associated with fear of not being able to lose the gained weight and of being unable to return to their pre-pregnancy body shape (Stein and Fairburn. 1996; Hisner. 1986).

The present study also aimed to identify if Israeli and UK women's self-esteem, eating behaviours and body image vary according to country. Israel has been undergoing a process of great change since its establishment in 1948 and studies exploring eating behaviours as related to socio-cultural changes comment on the effect of such changes on the development of problematic eating behaviours as a source of coping mechanism (Pike and Borovoy. 2004; Feinstein and Meir. 2014). Based on such findings it was expected that Israel through its culture, which is constantly under the threat of war (Shloim et al., 2013; Shloim et al., 2014; Glasser et al., 1998; Lindquist et al., 1997), might adopt similar eating strategies.

This was also supported by research noting relatively high levels of underweight women in Israel compared to other western countries (Bar Dayan et al., 2005). Our findings were unexpected and indicate that levels of self-esteem, body-image and eating behaviours did not differ according to country, apart from significantly higher levels of desire for slimmer body size and body dissatisfaction for Israeli women compared to women from the UK.

Moreover, Israeli women showed a higher tendency to restrain their eating during pregnancy compared to women from the UK, with higher levels of body dissatisfaction (Shloim et al., 2013; Shloim et a;., 2014. Reviewed) and it was expected that such differences will continue to be significant following pregnancy as well. We would like to note therefore that such findings might be attributed to general similarities in women's characteristics regardless of their country of origin.

3.12 Limitations:

This part of the dissertation and its findings should be considered with several inherent limitations which mainly relate to the sample size and representativeness. A larger sample would have allowed further in-depth sub-group analysis within countries according to each follow-up and BMI.

A second limitation addresses participants' socio-economic status: women in this study originated from a relatively high socio-economic status and were highly educated, thus responses may have been biased. Nevertheless, in a future study, an improved study design would include women from a wider socio-economic background, whilst also recruiting a larger sample size and providing a wider distribution of BMI.

Another limitation relates to the potential bias in self-reported weight. Previous research has shown that self-reported weight tends to be under-estimated (Elgar et al., 2005; Shields et al., 2011). For this study we conducted a sensitive analysis and found that BMI categories did not change even when women's BMI was 'artificially' increased or decreased by 2 Kg.

This suggests that self-reporting is likely to have little impact on our conclusions. Moreover, having to actually measure the women would have highlighted the importance of weight in this study resulting in potential bias in response to the eating behaviours and body image questionnaires.

Finally, the questionnaires which were used in this study have been all previously validated however, they were not originally designed for pregnancy and the postpartum. Thus although the contribution of this study and the findings for a better understanding of women's well-being and eating behaviours during and following pregnancy is important, it might be that several aspects of such unique time in a women's life were not addressed. Thus, future research should aim to develop sensitive measuring tools for such a critical period.

3.13 Conclusion:

The current study addressed self-esteem, eating behaviours and body image in a sample of Israeli and UK women from pregnancy until the postpartum. To our knowledge, this was the first study to explore Israeli and UK mothers from pregnancy until after giving birth with very few studies exploring such measurements in other countries. Taking into account the relatively small sample size, our findings suggest that BMI was the strongest predictor for self-esteem, eating behaviours and body-image.
This highlights the need for novel assessments tools which will be able to detect unique characteristics associated with mothers' well-being and eating behaviours during pregnancy and the postpartum.

The period after pregnancy is a key time to investigate how well women adjust to motherhood. Future research should aim to continue and explore mothers' well-being, eating behaviours and body satisfaction in the immediate time postpartum, but also how well women adjust to such changes over time.

Moreover, having giving birth, mothers are part of a mother-infant dyad thus examining the association between mothers' well-being and eating behaviours to her infant is crucial.

This will be further examined in the following chapter.

4 Infant eating behaviours- impact of age, maternal BMI and country

Abstract

Given the prevalence of obesity and the observation that rapid weight gain in infancy is positively associated with the development of later obesity, it is important to study the origins of healthy eating in early life. This study addressed maternal perceptions of babies eating behaviours since this is a strong determinant of how mothers feed their babies. Specific objectives were if mothers perceptions of their infants' eating vary according to babies age, country and BMI. Given that mother's well-being and satisfaction with their body affect their own eating behaviours, this study explored if such associations also affect mothers' perceptions of their babies' eating.

Our findings indicate that healthy-weight mothers were more aware of their infant's satiety cues whereas overweight and obese mothers were more likely to feed according to a schedule. UK mothers were more concerned for their babies hunger than Israeli counterparts. Mothers with high levels of self-esteem were more aware of their infants' satiety cues. Mothers who were dissatisfied with their body were more concerned for their baby being overweight or overeating. To conclude, the findings from this study show associations between maternal psychological characteristics (including eating behaviours) to babies' eating behaviours.

4.1 Introduction:

Every third child in America is overweight or at risk of overweight (Ogden et al., 2002) and it is estimated that 9.5% of the infants worldwide are above the 95th percentile for weight (Stifter et al., 2011; Ogden et al., 2010). Exposing infants to a healthy life- style is crucial (Ong et al., 2006; Baird et al., 2005) and is considered via an increase in levels and duration of breastfeeding worldwide (Baughcum et al., 2001; Dwyer at al., 2010). Hodges et al (2008) proposes that the primary role of a caregiver addressing children in early life is by supporting appropriate growth and development. In terms of nutrition, parents should provide infants with healthy meals and should prolong breastfeeding at least to 6m of age. Duration of breastfeeding is known to have some protective affects against later obesity (Amir and Donath. 2007).

However, feeding is not only about the content of the meal but rather the way in which mothers and babies interact. Thus it is suggested that one of the benefits of breastfeeding as well as providing optimal nutrition is the close physical contact that this affords. Daily feeding interactions are therefore more than the type of the meal (what is given) but the quality of the interaction (how the food is offered and the emotional tone of the interaction; Ainsworth and Bell. 1969), as fully addressed in chapter 5.

Responsive feeding involves responding to the needs of the child supporting healthy nutrition and growth (Bently and Pento. 2000). For example, a mother who accurately interprets her infant's hunger and satiety cues is less likely to overfeed compared to mothers who show a tendency to use food to calm or comfort and thus feed in the absence of hunger (Birch and Fisher. 1998). Poor responsive feeding has implications for baby's self-regulation with the potential to increase the risk of later obesity.

Taking into account of the observation that eating behaviours develop and change over time, this component of the thesis aimed to:

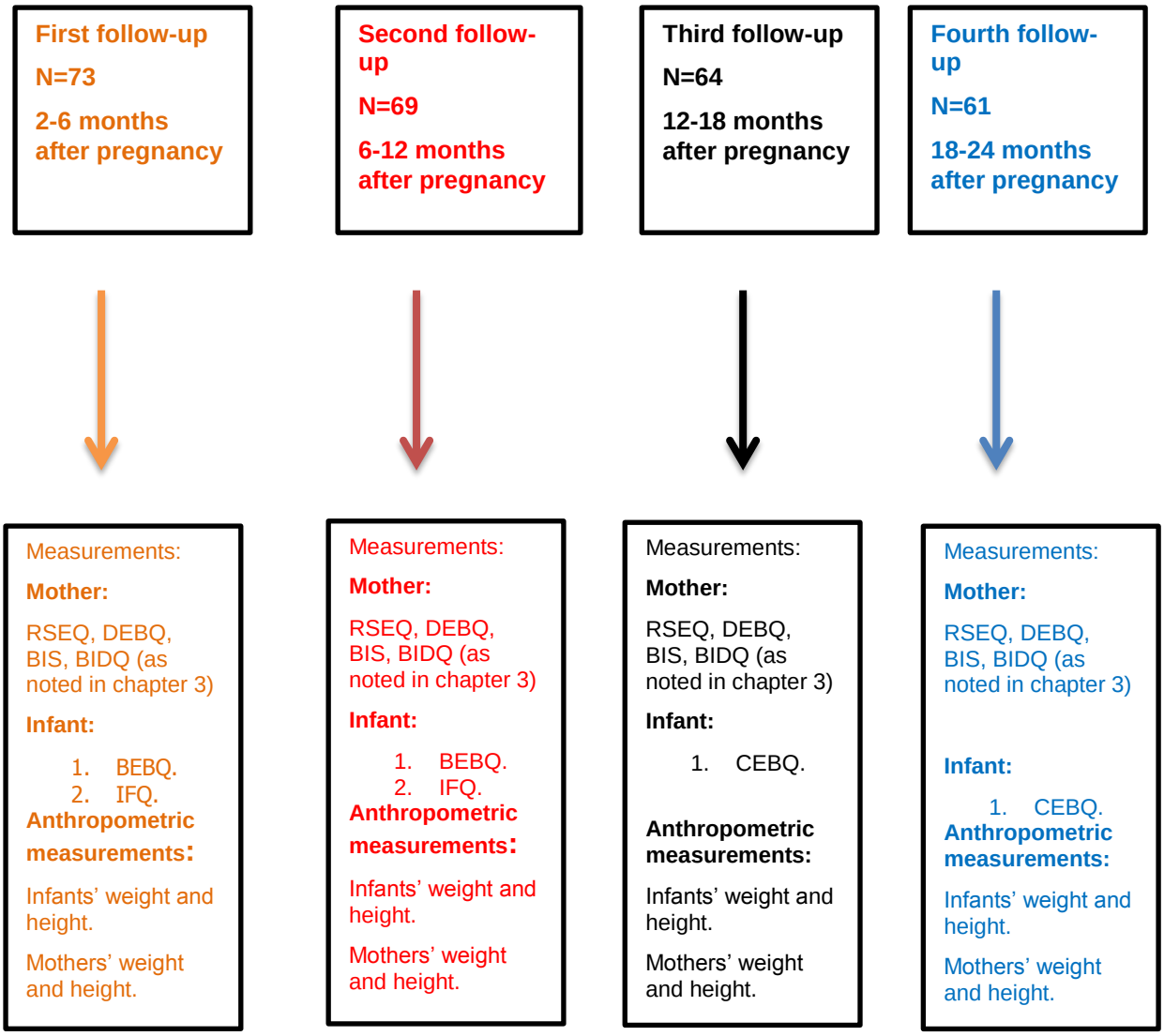
1. explore mothers' perceptions of their infant's eating behaviours from birth and every six months, until their infants were 24 months of age (four follow-ups in all).
2. compare how the perceptions changed over time.
3. identify any differences in feeding perceptions according to mothers' BMI (healthy weight vs. overweight and obese).
4. identify any differences in feeding perceptions according to country (Israel vs. UK).
5. correlate feeding behaviours with mothers' self-esteem, eating behaviours and body image.

It was hypothesised that feeding perceptions would vary according to mothers' BMI and country; (4a, 4b) heavier mothers were expected to show higher levels of concern regarding their baby's weight compared to healthy weight women;(4c) mothers with higher levels of self-esteem and who were more satisfied with their body were likely to follow a more responsive feeding pattern. Those mothers would have infants who enjoy food more compared to infants of mothers with lower levels of self-esteem.

4.2 Methods:

Figure 4-1 presents the questionnaires and data collection for each follow up, for mothers and their infants. It also notes the number of participants for each follow-up.

Details about participants who withdrew from the study are given in chapter 3 (mother's feelings and eating behaviours from pregnancy to the postpartum). The number of participants who withdrew from the study between the first and the fourth follow-up (duration of 24 months) did not exceed 12 participants.



First follow-up; Second follow-up; Third follow-up; Fourth follow-up

RSEQ (Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviour questionnaire), BIS (Body Image scale) and the BIDQ (Body Image Disturbance Questionnaire), BEBQ (The Baby Eating Behaviors Questionnaire, CEBQ (The Child Eating Behaviors Questionnaire, IFQ (The Infant Feeding Questionnaire).

Figure 4-1; Questionnaires and measurements for each follow up.

Maternal perceptions of eating behaviours were explored for a total duration of two years and measured every six months (Figure **4-1**). Thus the results presented in this chapter firstly address the changes in eating traits over time and then explore the findings from each follow-up separately. The chapter ends with a discussion addressing the main findings from the total sample and then address the identified differences according to mothers BMI and country.

4.3 Eating traits over time:

The BEBQ is an infant measurement of the CEBQ as fully addressed in chapter 2 therefore this analysis explored possible changes/stability in infants eating traits from the first to the final follow-up. The findings show significant differences for food responsiveness, enjoyment of food and satiety responsiveness by time. Thus babies were significantly more food responsive in the first follow-up compared to the latest ones (P=0.009) but enjoyed food more and showed higher levels of satiety responsiveness as time passed (P=0.004; P=0.002 respectively. Table 4-1; Figure 4-2).

Table 4-1; Summary of scores for the BEBQ and the CEBQ across follow-ups.

	1st follow-up Mean(SD)	2nd follow-up Mean (SD)	3rd follow-up Mean (SD)	4th follow-up Mean (SD)	P-value
Food Responsiveness	2.6(0.4)	2.1(0.8)	2.3(0.8)	2.2(0.7)	*0.009
Enjoyment of food	3.2(0.2)	3.5(0.8)	3.8(0.8)	3.6(0.7)	*0.004
Satiety responsiveness	2.6(0.6)	2.6(0.8)	3(0.4)	3(0.4)	*0.002
Slowness in eating	2.5(0.5)	2.6(0.9)	2.7(0.3)	2.7(0.4)	0.54

*significant. One way ANOVA comparing between mean scores and time of follow-up.

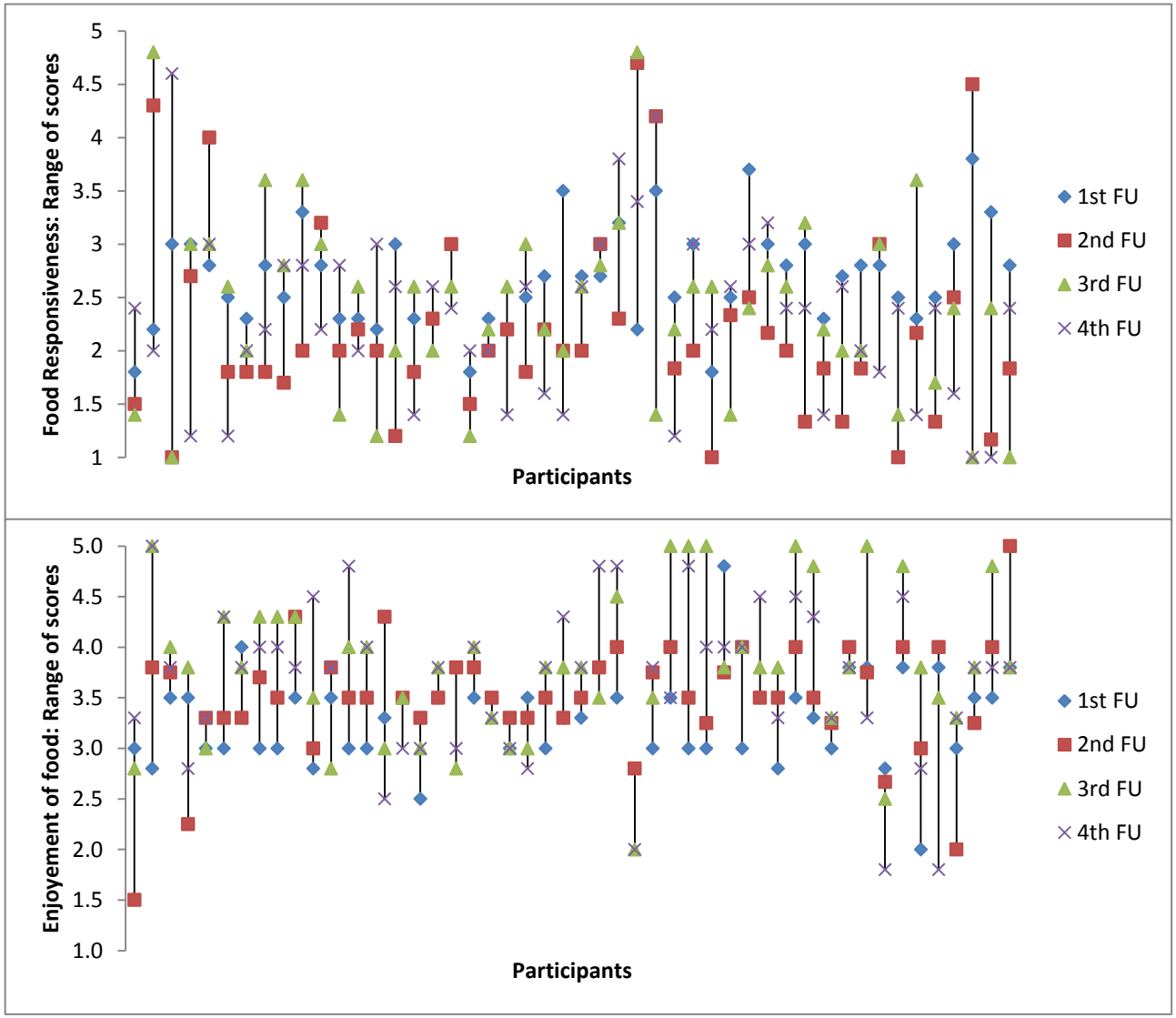
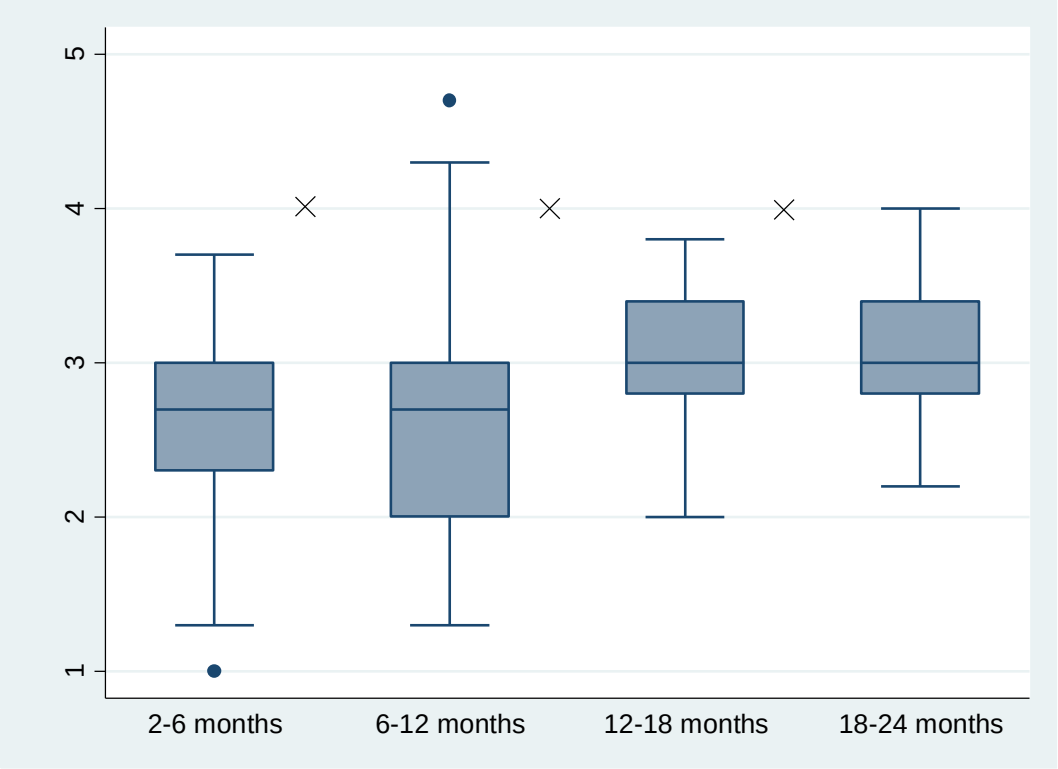


Figure 4-2; Participants scores for the food responsiveness and enjoyment of food scales.

The Bonferroni post-hoc pairwise comparisons found significant differences in levels of food responsiveness between the second and the first follow up (P=0.007). Thus infants were significantly more food responsive at the first follow-up compared to the second one. Differences were seen for babies enjoyment of food indicating on significantly higher levels on the third follow-up compared to the first one (P=0.003).

Significant differences were seen for the satiety responsiveness scale and time of follow-up (Indicated as X in the figure. P<0.03). Thus older babies showed significantly higher levels of satiety responsiveness compared younger babies, as noted in Figure 4-3.



***Significant. P<0.03**

Figure 4-3; Satiety responsiveness: Box plot of babies scores by time of measurements.

4.4 First follow-up: Mothers' perceptions of infants eating behaviours 2-6 months after birth.

4.4.1 General findings:

Seventy three women and infants participated in the study 2-6 months following birth. Mother's mean age was 34.5±3.5 years and was similar in both countries. Table 4-2 summarises the main characteristics of the mothers and their infants and is discussed in detail in the previous chapter (chapter 3).

The male to female ratio for infants was 48% male: 52% female. For most women this was not the first pregnancy with significantly more Israeli women being multiparous compared to women from the UK (74% vs. 58% respectively. P=0.02). Mean age (weeks) for UK babies was higher compared to Israeli infants (22.4±3.7 vs. 18.8±6.1 respectively).

Data regarding infants' weight were available for 60 (82%) infants and was significantly different for Israeli and UK babies (P=0.008). Z-scores for weight were also significantly different between both countries (P=0.008) indicating significantly heavier babies in the UK.

Most women in this sample had initiated breastfeeding (81%) and levels were higher compared to levels in the general population (McAndrew et al., 2010). More than 50% of the women breastfed their infants for duration longer than 3 months with 64% of the Israeli and UK infants introduced to solid food at 4 months of age.

4.4.2 Findings from the questionnaires:

The Baby Eating Behaviours Questionnaire (BEBQ):

Israeli mothers perceptions of their infants satiety cues were significantly higher than for UK mothers (P=0.001). Israeli babies had also enjoyed food more than UK babies (P=0.03) as seen in appendix C table 1. Israeli healthy weight women were significantly more aware of their infant's satiety cues compared to Israeli overweight and obese women (2.8±0.5 vs. 2.3±0.5; P=0.001). A wider range of scores was seen for UK healthy-weight mothers (Figure 4-4) for the food responsive scale (1.8-3.9 vs. 1.8-3.5 respectively).

Self-esteem (RSEQ) was positively correlated with satiety responsiveness (r=0.28; P=0.02) suggesting that mothers with higher levels of self-esteem were more aware of their infants' satiety cues. Restraint eating (DEBQ-R) was correlated with satiety responsiveness as well indicating that mothers who restrained their own eating were more aware of their infants' satiety cues (r=0.26; P=0.03). External eating (DEBQ-X) and enjoyment of food (r=0.43; P=0.004) showed that mothers who tended to eat according to external food cues were more likely to report higher levels of enjoyment of food for their infants.

Table 4-2; Participants' main characteristics. Modified from Shloim et al., 2014.

	N (%)			Mean (SD)			Median			IQR			Missing data (%)		P value
	Israel	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	
Mothers Age (years)	42(57%)	31(43%)	**73**	34.6(3.8)	34.4(3.2)	**34.5(3.5)**	35	34	**34**	26-40	28-41	**26-41**			0.80
Infants age (weeks)	33(55%)	27(45%)	**60**	18.8(6.1)	22.4(3.7)	**20.5(5.4)**	20	24	**24**	5-26	9-26	**5-26**	15%	6%	0.09
Number of children before pregnancy:							0	1	**1**	0-4	0-2	**0-8**			*0.02
None	11(26%)	13(42%)	**73**												
More than one	31(74%)	18(58%)													
Mother's BMI (Kgm^{-2}):				23.5(3.6)	24.2(4.7)	**23.8(4.1)**				17-32	18-37	**17-37**	2%	13%	0.74
<18.5	4(10%)	1(4%)	**69**												
≥18.5<25	26(63%)	15(58%)													
≥25<30	9(22%)	7(27%)													
≥30	2(5%)	3(12%)													
Infant's weight (Kg)	33(55%)	27(45%)	**60**	6.2(1.5)	7.6(1.4)	**6.6(1.8)**	6	7.2	**7**	3.3-9.5	5-11.5	**3.3-11.5**	15%	6%	*0.008
Infant's length (cm)	18(49%)	19(51%)	**37**				64	69	**66**	48-72	55-82	**48-82**	42%	61%	0.17
Weight Z-scores	33(55%)	27(45%)	**60**	-0.37(0.9)	0.45(0.88)	**0.00-09(1)**	-0.54	0.19	**0.07**	-2.22-1.6	-1.16-2.8	**-2.22-2.8**	15%	6%	*0.008
Breastfeeding			**69**												
Yes	30(77%)	23(77%)											7%	3%	0.92
No	9(23%)	7(23%)													
Infant's weight (Kg)	33(55%)	27(45%)	**60**	6.2(1.5)	7.6(1.4)	**6.6(1.8)**	6	7.2	**7**	3.3-9.5	5-11.5	**3.3-11.5**	15%	6%	*0.008

*Mann Whitney test comparing maternal characteristics between countries. SD (Standard Deviation), IQR (Inter quartiles range).

Table 4-3; Summary of scores for the BEBQ according to mothers BMI:

Questionnaire	Mean score(SD)			IQR			*P-value
BEBQ:	**BMI<25**	**BMI≥25**	**Total**	**BMI<25**	**BMI≥25**	**Total**	
Food responsiveness	2.6(0.5)	2.5(0.4)	2.6(0.4)	1.8-3.8	1.3-3	1.3-3.8	0.56
Enjoyment of food	3.2(0.4)	3.3(0.3)	3.2(0.4)	2-4.7	2.7-4	2-4.7	0.41
Satiety Responsiveness	2.6(0.6)	2.6(0.5)	2.6(0.5)	1-3.6	1.3-3.3	1-3.6	0.82
Slowness in Eating	2.5(0.5)	2.5(0.4)	2.5(0.4)	1.5-3.7	1.7-3.2	1.5-3.7	0.95
General Appetite	4(1.1)	3.4(0.9)	3.4(0.9)	1-5	2-5	1-5	0.77

Two- sample Mann-Whitney test comparison of questionnaires scores and mothers BMI (Body Mass Index) categories. **IQR** (Inter quartile range), **SD** (Standard Deviation), **BEBQ** (Baby Eating Behaviour Questionnaire).

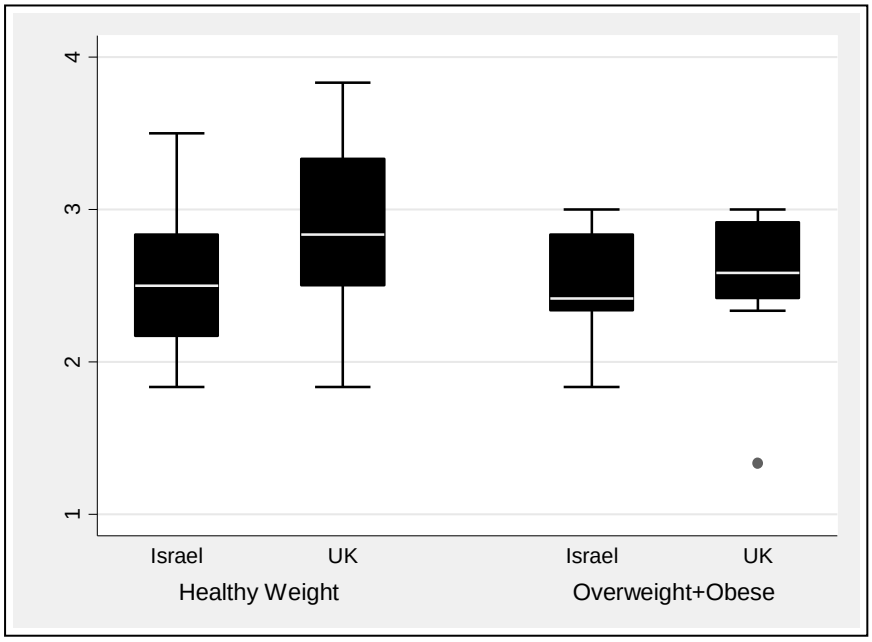


Figure 4-4; BEBQ: Food Responsiveness according to maternal BMI and country.

The Infant Feeding Questionnaire (IFQ):

Israeli mothers were significantly more concerned about their infant becoming overweight or overeating (P=0.008) compared to mothers from the UK. Heavier mothers from both countries fed according to a schedule compared to healthy weight mothers (Table 4-4; Table 4-5; P<0.05). Older mothers were significantly more concerned about their infant's hunger compared to younger mothers (P=0.04; Table 4-5).

Mothers with higher levels of self-esteem showed a higher tendency not to feed according to a schedule (r=-0.27; P=0.02) whereas mothers who ate according to emotional cues (DEBQ-E) did feed according to a schedule (r=0.29; P=0.01).

Mothers who were less satisfied with their own body were more concerned about their infant being overweight (r=-0.36; P=0.002). They were also less concerned about their infants' hunger (r=-0.26; P=0.03).

Table 4-4; Summary of scores for the IFQ:

	Mean score(SD)			IQR			*P-value
	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
Concern about infant underrating or becoming underweight	4.3(0.5)	4.2(0.7)	4.3(0.6)	3-5	2.2-5	2.2-5	0.90
Concern about infant's hunger	4.5(0.7)	4.6(0.5)	4.5(0.6)	2.3-5	2.6-5	2.3-5	0.65
Awareness of Infants Hunger and Satiety Cues	1.7(0.7)	1.8(0.5)	1.7(0.6)	1-3.7	1-3.2	1-3.7	0.27
Concern about Infant overeating or becoming Overweight	4.4(0.6)	4.3(0.6)	4.3(0.6)	2.6-5	3.3-5	2.6-5	0.52
Feeding Infant on a schedule	2.9(0.4)	3.2(0.5)	3(0.4)	2-4	2.5-4.5	2-4.5	*0.04
Using food to calm infant fussiness	3.4(0.8)	3.3(0.6)	3.3(0.7)	1-5	2-5	1-5	0.50
Social interaction	2.2(0.8)	2.1(1)	2.2(0.8)	1-5	1-5	1-5	0.33

*Significant at 5% level (P<0.05). Two- sample Mann-Whitney test comparison of questionnaires scores and mothers BMI (Body Mass Index) categories. **IQR** (Inter quartile range), **SD** (Standard Deviation), **IFQ** (Infant Feeding Questionnaire).

Table 4-5; Multilevel regression modelling for the IFQ (2-6 months)

IFQ	Variable	Model Coefficient	95% CI	P-value
Concern about infant under eating or becoming underweight	Country(UK vs. Israel)	-0.001	-0.35,0.35	0.99
	Mother's age (years)	0.02	-0.02,0.07	0.31
	BMI Category (≥25 vs. <25)	-0.11	-0.49,0.25	0.53
	Breastfeeding (yes vs. no)	0.15	-0.23,0.55	0.41
	Infants sex (female vs. male)	-0.06	-0.55,0.41	0.77
Concern about infant's hunger	Country(UK vs. Israel)	-0.001	-0.34,0.34	0.99
	Mother's age (years)	0.03	-0.01,0.08	*0.04
	BMI Category (≥25 vs. <25)	-0.15	-0.51,0.20	0.39
	Breastfeeding (yes vs. no)	0.05	-0.31,0.42	0.77
	Infants sex (female vs. male)	-0.09	-0.53,0.34	0.66
Awareness of Infants Hunger and Satiety Cues	Country(UK vs. Israel)	-0.16	-0.54,0.21	0.34
	Mother's age (years)	-0.04	-0.09,0.04	0.07
	BMI Category (≥25 vs. <25)	0.17	-0.21,0.57	0.37
	Breastfeeding (yes vs. no)	-0.17	-0.59,0.54	0.40
	Infants sex (female vs. male)	0.20	-0.36,0.78	0.46
Concern about Infant overeating or becoming Overweight	Country(UK vs. Israel)	0.50	0.14,0.87	*0.008
	Mother's age (years)	-0.007	-0.05,0.04	0.78
	BMI Category (≥25 vs. <25)	-0.04	-0.42,0.33	0.81
	Breastfeeding (yes vs. no)	-0.17	-0.57,0.22	0.37
	Infants sex (female vs. male)	-0.18	-0.70,0.32	0.46

(continued):

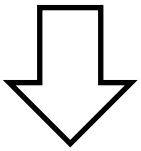
	Variable	Model Coefficient	95% CI	P-value
Feeding Infant on a schedule	Country(UK vs. Israel)	-0.01	-0.29,0.25	0.89
	Mother's age (years)	0.005	-0.03,0.04	0.74
	BMI Category (≥25 vs. <25)	0.27	-0.01,0.55	*0.03
	Breastfeeding (yes vs. no)	-0.12	-0.43,0.17	0.40
	Infants sex (female vs. male)	0.12	-0.29,0.54	0.55
Using food to calm infant fussiness	Country(UK vs. Israel)	0.26	-0.18,0.70	0.24
	Mother's age (years)	0.01	-0.04,0.07	0.70
	BMI Category (≥25 vs. <25)	-0.03	-0.49,0.42	0.87
	Breastfeeding (yes vs. no)	0.01	-0.46,0.49	0.96
	Infants sex (female vs. male)	0.21	-0.39,0.82	0.47
Social interaction	Country(UK vs. Israel)	0.07	-0.51,0.65	0.80
	Mother's age (years)	0.01	-0.06,0.08	0.76
	BMI Category (≥25 vs. <25)	-0.16	-0.76,0.42	0.57
	Breastfeeding (yes vs. no)	-0.31	-0.92,0.28	0.29
	Infants sex (female vs. male)	-0.35	-1.2,0.57	0.43

Levels of education and marital status were accounted for and were not significant thus not added in this table.

*Significant

4.5 Summary of the first follow-up results:

- Overweight and obese women showed a higher tendency to feed according to a schedule and were more concerned about their infants' becoming overweight.
- Mothers with higher levels of self-esteem were more aware of their infant's satiety cues and were also feeding their infant's according to a schedule.
- Mothers who restrained their own eating were more aware of their infants' satiety cues.
- Mothers who were less satisfied with their body were more concerned about their infant being overweight and less concerned about their infants' hunger.



Mothers' eating behaviours were found to be significantly associated with their perceptions of their infant's eating behaviours at the age of 2-6 months.

4.6 Second follow-up: 6-12 months post pregnancy.

4.6.1 General findings:

Mothers were re-contacted and sixty-nine women and infants participated in the second follow-up study, 6-12 months after pregnancy.

At this time significantly more Israeli women had returned to work compared to UK women (85% vs. 53% respectively. P=0.004) with more Israeli babies attended by a child minder (79% vs. 50% respectively. P=0.01). Israeli babies were significantly older and heavier compared to UK babies (P=0.002; P=0.007 respectively). See Table 4-6

High levels of missing data were seen in both countries for infant's weight.

4.6.2 Findings from the questionnaires:

The Baby Eating Behaviours questionnaire:

Overall, the findings indicate that maternal perceptions of babies eating behaviours did not vary between Israeli and UK mothers (Table 4-7). Mothers who have previously breastfed their infants were significantly more aware of their infants' eating pace compared to mothers who did not initiate breastfeeding (P=0.002). Older mothers were more aware of their infants' eating pace (appendix C table 2; P=0.001). No differences were identified between mothers BMI and perceptions of feeding.

Mothers who ate according to emotional cues were feeding more responsively (r=0.35; P=0.001).

Table 4-6; Participants' main characteristics 6-12 months after giving birth, by country.

	N (%)			Mean (SD)			Median			IQR			Missing data (%)		P value
	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	
Mothers Age (years)	39	30	**69**	35.2(3.6)	34.9(3.3)	**35.1(3.5)**	35	34	**35**	27-41	27-41	**27-41**			0.53
Infants age (weeks)	33	26	**59**	38.7(14.8)	24.2(5.2)	**32.3(13.6)**	36	24	**26**	20-65	9-33	**9-65**	15%	13%	*0.0002
Mother's BMI (Kgm^{-2}):	38	27	**65**	22.8(3.9)	22.2(7.5)	**23.2(4.1)**				16.1-32.1	18.6-36.2	**16.1-36.2**	2.5%	10%	0.11
<18.5	5(12%)	2(7%)	**67**										1%	3%	
≥18.5<25	22(58%)	19(66%)													
≥25<30	10(26%)	3(10%)													
≥30	1(4%)	5(17%)													
Working status:															*0.004
Yes	33(85%)	16(53%)	**69**												
No	6(15%)	14(47%)													
Attending a child minder:															*0.01
Yes	30(79%)	15(50%)	**68**										2.5%		
No	8(21%)	15(50%)													
Infant's weight (Kg)	34	27	**61**	9(1.5)	7.9(1)	**8.5(1.4)**	8.6	7.9	**8.2**	6.4-12	5.7-10.4	**5.7-12**	13%	10%	*0.007
Weight Z-scores	26	24	**50**	-0.25(1.2)	0.02(1.4)	**-0.12(1.3)**	-0.22	-0.37	**-0.22**	-2.66-1.9	-3.24-4.26	**-3.24-4.26**	25%	20%	0.71

*Mann Whitney test comparing maternal characteristics between countries. SD (Standard Deviation), IQR (Inter Quartiles Range).

Table 4-7; Summary of scores for the BEBQ explored by time of follow-up and BMI categories

First Follow-up	N			Mean score(SD)			IQR			Missing Data	*P-value
BEBQ:	**BMI<25 kg/m^2**	**BMI≥25 Kg/m^2**	**Total**	**BMI<25 Kg/m^2**	**BMI≥25 Kg/m^2**	**Total**	**BMI<25 Kg/m^2**	**BMI≥25 Kg/m^2**	**Total**		
Food responsiveness.	38	18	**60**	2.6(0.5)	2.5(0.4)	**2.6(0.4)**	1.8-3.8	1.3-3	**1.3-3.8**	6.6%	0.28
Enjoyment of food	38	20	**61**	3.2(0.4)	3.3(0.3)	**3.2(0.4)**	2-4.7	2.7-4	**2-4.7**	5%	0.53
Satiety Responsive.	39	19	**62**	2.6(0.6)	2.6(0.5)	**2.6(0.5)**	1-3.6	1.3-3.3	**1-3.6**	6.4%	0.68
Slowness in Eating	39	20	**63**	2.5(0.5)	2.5(0.4)	**2.5(0.4)**	1.5-3.7	1.7-3.2	**1.5-3.7**	6.3%	0.88
General Appetite	40	21	**65**	4(1.1)	3.4(0.9)	**3.4(0.9)**	1-5	2-5	**1-5**	6.1%	0.61
Second Follow-up		**N**			**Mean score(SD)**			**IQR**		**Missing Data**	***P-value**
	BMI<25 kg/m^2	**BMI≥25 Kg/m^2**	**Total**	**BMI<25 Kg/m^2**	**BMI≥25 Kg/m^2**	**Total**	**BMI<25 Kg/m^2**	**BMI≥25 Kg/m^2**	**Total**		
Food responsiveness.	43	19	**63**	2.1(0.8)	2.4(1)	**2.2(0.9)**	1-4.7	1.2-5	**1-5**	3%	0.29
Enjoyment of food	43	19	**63**	3.5(0.9)	3.5(0.4)	**3.5(0.8)**	1.5-5	2.2-4.3	**1.5-5**	3%	0.87
Satiety Responsive.	43	19	**64**	2.6(0.8)	2.3(0.8)	**2.5(0.8)**	1-4.6	1-4.3	**1-4.6**	3%	0.11
Slowness in Eating	43	19	**63**	2.5(0.6)	2.7(1.4)	**2.6(0.9)**	1.5-4.3	1.2-5	**1.2-5**	3%	0.47
General Appetite	43	19	**63**	3.2(1)	3.6(0.9)	**3.4(1)**	1-5	2-5	**1-5**	3%	0.16

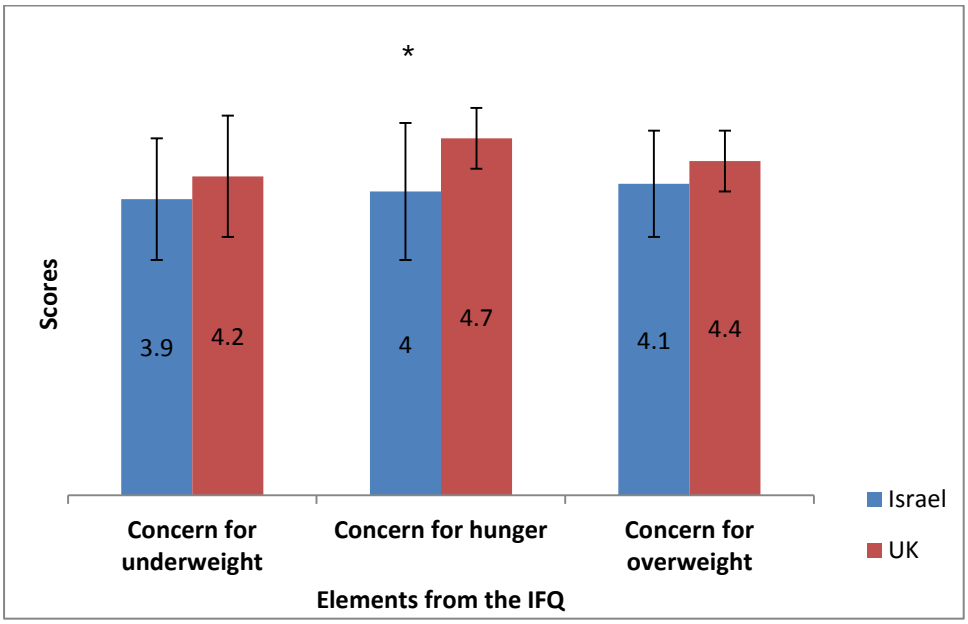
***Two sample T-Test comparing between questionnaires scores and BMI category in each time point. BEBQ (Baby Eating Behaviours Questionnaire), IQR (Inter quartile range).**

The infant Feeding Questionnaire (IFQ):

The findings from the IFQ indicate on few differences between Israeli and UK mothers perceptions of their babies eating (Table 4-8). UK mothers were significantly more concerned for their infants' hunger compared to Israeli mothers (P=0.01.Figure 4-5; Table 4-9). Similarly, those mothers were more concerned for infant's under-eating and for infants overeating/ overweight compared to Israeli mothers, although the findings were not significantly different (**Figure 4-5; Bar Chart for the IFQ scales.**). Israeli mothers showed higher levels of concern for their infant overeating (P=0.005).

In both countries mothers' age (P=0.02) and the age infants were introduced to solid food (P=0.03) were significant predictors for mothers concern about their infant being underweight or under-eating (Table 4-9). Social interaction was correlated with breastfeeding (r=-0.25; P=0.04) indicating that mothers who did not breastfeed their infants were less likely to interact with them during a feeding.

Mothers with high levels of self-esteem were more concern for the infants being underweight (r=23; P=0.04) compared to mothers with lower levels of self-esteem. Mothers who were less satisfied with their own body were less concerned with their infants hunger (r=-0.26; P=0.03; Figure 4-6).



*Significant. P<0.05

Figure 4-5; Bar Chart for the IFQ scales.

Table 4-8; Summary of scores for the IFQ explored by mothers BMI.

	Mean score(SD)			IQR			*P-value
First Follow-up	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
Concern about infant under eating or becoming underweight	4.3(0.5)	4.2(0.7)	4.3(0.6)	3-5	2.2-5	2.2-5	0.84
Concern about infant's hunger	4.5(0.7)	4.6(0.5)	4.5(0.6)	2.3-5	2.6-5	2.3-5	0.54
Awareness of Infants Hunger and Satiety Cues	1.7(0.7)	1.8(0.5)	1.7(0.6)	1-3.7	1-3.2	1-3.7	0.35
Concern about Infant overeating or becoming Overweight	4.4(0.6)	4.3(0.6)	4.3(0.6)	2.6-5	3.3-5	2.6-5	0.64
Feeding Infant on a schedule	2.9(0.4)	3.2(0.5)	3(0.4)	2-4	2.5-4.5	2-4.5	*0.05
Using food to calm infant fussiness	3.4(0.8)	3.3(0.6)	3.3(0.7)	1-5	2-5	1-5	0.72
Social interaction	2.2(0.8)	2.1(1)	2.2(0.8)	1-5	1-5	1-5	0.31
	Mean score(SD)			IQR			*P-value
Second Follow-up	BMI<25	BMI≥25	Total	BMI<25	BMI≥25	Total	
Concern about infant under eating or becoming underweight	3.9(0.9)	4.3(0.5)	4(0.8)	1.5-5	3-5	1.5-5	0.25
Concern about infant's hunger	4.4(0.7)	4.3(0.8)	4.3(0.8)	2-5	1.7-5	1.7-5	0.93
Awareness of Infants Hunger and Satiety Cues	1.8(0.6)	1.8(0.5)	1.8(0.6)	1-4.5	1-3	1-4.5	0.98
Concern about Infant overeating or becoming Overweight	4.3(0.6)	4.1(0.6)	4.2(0.6)	2.3-5	3-5	2.3-5	0.10
Feeding Infant on a schedule	3(0.5)	2.9(0.6)	2.9(0.5)	1.5-4	1-3.5	1-4	0.97
Using food to calm infant fussiness	3.6(0.7)	3.4(0.9)	3.6(0.8)	2-5	1-5	1-5	0.49
Social interaction	2.3(0.8)	2.4(0.7)	2.4(0.7)	1-4.6	1-4	1-4.6	0.95

*Significant. Two- sample Mann-Whitney test comparison of questionnaires scores and mothers BMI (Body Mass Index) categories in each follow-up. **IQR** (Inter quartile range), **SD** (Standard Deviation), **IFQ** (Infant Feeding Questionnaire).

Table 4-9; Linear regression modeling for the IFQ (6-12 months)

IFQ	variable	Model Coefficient	95% CI	P-Value
Concern about infant under-eating or becoming underweight	Time of follow-up (2^{nd} vs. 1^{st})	-0.27	-0.55,0.004	0.05
	Country (UK vs. Israel)	0.09	-0.20,0.38	0.53
	Mother's age (years)	0.04	-0.007,0.08	*0.02
	BMI Kg/m^2	0.06	-0.24,0.37	0.68
	Breastfeeding (yes vs. no)	-0.36	-0.73,0.006	0.05
	Infant's age (weeks)	-0.30	-0.58,-0.02	*0.03
	Infant's sex (female vs. male)	-0.13	-0.41,0.15	0.35
Concern about infant's hunger	Time of follow-up (2^{nd} vs. 1^{st})	-0.32	-0.57,-0.06	*0.01
	Country (UK vs. Israel)	0.34	0.08,0.60	*0.01
	Mother's age (years)	0.04	0.01,0.08	*0.009
	BMI Kg/m^2	-0.17	-0.45,0.10	0.21
	Breastfeeding (yes vs. no)	-0.15	-0.49,0.17	0.34
	Infant's age (weeks)	-0.01	-0.26,0.23	0.92
	Infant's sex (female vs. male)	0.11	-0.14,0.36	0.39

*Significant

Levels of education and marital status were accounted for and were not significant thus not added in this table.

Continued:

IFQ	variable	Model Coefficient	95% CI	P-Value
Awareness of Infants Hunger and Satiety Cues	Time of follow-up (2^{nd} vs. 1^{st})	0.04	-0.18,0.28	0.69
	Country (UK vs. Israel)	-0.08	-0.32,0.16	0.51
	Mother's age (years)	-0.03	-0.06,0.001	0.05
	BMI Kg/m^2	0.10	-0.15,0.37	0.43
	Breastfeeding (yes vs. no)	0.27	-0.04,0.59	0.09
	Infant's age (weeks)	0.29	0.06,0.53	*0.01
	Infant's sex (female vs. male)	-0.07	-0.31,0.16	0.55
Concern about Infant overeating or becoming Overweight	Time of follow-up (2^{nd} vs. 1^{st})	-0.09	-0.32,0.14	0.43
	Country (UK vs. Israel)	0.35	0.10,0.60	*0.005
	Mother's age (years)	-0.02	-0.05,0.01	0.17
	BMI Kg/m^2	-0.18	-0.44,0.07	0.16
	Breastfeeding (yes vs. no)	0.007	-0.30,0.32	0.96
	Infant's age (weeks)	-0.21	-0.44,0.02	0.07
	Infant's sex (female vs. male)	0.04	-0.19,0.28	0.72

*Significant

Levels of education and marital status were accounted for and were not significant thus not added in this table.

Continued:

IFQ	variable	Model Coefficient	95% CI	P-Value
Feeding Infant on a schedule	Time of follow-up (2^{nd} vs. 1^{st})	-0.07	-0.27,0.12	0.47
	Country (UK vs. Israel)	0.04	-0.16,0.25	0.66
	Mother's age (years)	-0.002	-0.03,0.02	0.87
	BMI Kg/m^2	0.12	-0.09,0.34	0.26
	Breastfeeding (yes vs. no)	-0.01	-0.27,0.24	0.92
	Infant's age (weeks)	0.05	-0.15,0.25	0.61
	Infant's sex (female vs. male)	0.001	-0.20,0.20	0.98
Using food to calm infant fussiness	Time of follow-up (2^{nd} vs. 1^{st})	0.20	-0.10,0.50	0.19
	Country (UK vs. Israel)	0.11	-0.20,0.42	0.48
	Mother's age (years)	0.001	-0.04,0.04	0.94
	BMI Kg/m^2	-0.15	-0.49,0.17	0.35
	Breastfeeding (yes vs. no)	-0.18	-0.58,0.21	0.36
	Infant's age (weeks)	0.006	-0.29,0.31	0.96
	Infant's sex (female vs. male)	-0.004	-0.31,0.30	0.97

*Significant

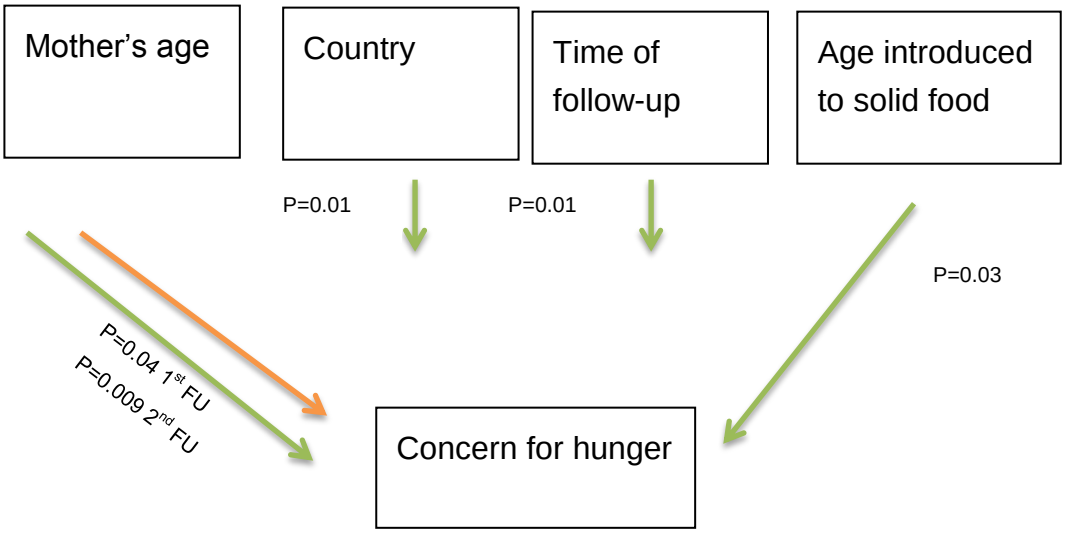
Levels of education and marital status were accounted for and were not significant thus not added in this table.

Continued:

IFQ	variable	Model Coefficient	95% CI	P-Value
Social interaction	Time of follow-up (2^{nd} vs. 1^{st})	0.22	-0.09,0.53	0.16
	Country (UK vs. Israel)	-0.09	-0.41,0.22	0.54
	Mother's age (years)	-0.02	-0.07,0.01	0.22
	BMI Kg/m^2	-0.07	-0.41,0.25	0.64
	Breastfeeding (yes vs. no)	0.11	-0.28,0.52	0.56
	Infant's age (weeks)	-0.02	-0.32,0.28	0.88
	Infant's sex (female vs. male)	-0.32	-0.63,-0.007	*0.04

*Significant

Levels of education and marital status were accounted for and were not significant thus not added in this table.



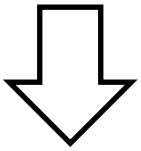
First follow-up

Second follow-up

Figure 4-6; IFQ-concern of hunger: significant predictors.

4.7 Summary of the second follow-up results:

- UK mothers were more concerned and occupied with their babies hunger compared to Israeli mothers. Similarly, Israeli mothers were more concerned about their baby becoming overweight.
- Levels of food responsiveness were significantly higher at the second follow-up compared to the first follow-up.
- Enjoyment of food was higher in older babies and they scored higher on ability to socially interact with the caregiver during a meal compared to younger babies.



In general findings from the second follow-up yielded weaker associations between maternal characteristics and baby eating behaviours.

4.8 Third follow-up: Feeding and eating behaviours 12-18 months post pregnancy.

4.8.1 General findings:

Sixty-five women and infants continued to participate in the third follow-up study. At this time significantly more women had returned to work with higher levels of working mothers in Israel (84% vs. 75% respectively), as indicated in Table 4-10 (P= 0.007).

Baby's mean weight was 10.6Kg (1.5) and was available for 50 (76%) out of 65 babies. Babies mean age when measurements were taken was 62.5 (11.08) weeks and higher in Israel compared to the UK (64.1±9.3 vs. 59.8±13.3; P=0.06 respectively). Z-scores for weight were slightly higher for the UK babies (0.3±1 vs.0.6±1 respectively) indicating slightly heavier babies in the UK.

High levels of missing data were seen for babies' weight and this was higher in the UK. This was attributable to their mothers rarely measuring their babies.

Table 4-10; Participants' main characteristics 12-18 months after giving birth, explored by countries.

	N (%)			Mean (SD)			IQR			Missing data (%)		P value*
	Israel	UK	Total	Israel	UK	Total	Israel	UK	Total	Israel	UK	
Mothers Age (years)	36	27	63	35.3(3.4)	35.7(3)	35.5(3.2)	27-41	30-42	27-42	—	1.5%	0.87
Working status:												
Working	30	21	64									*0.007
Not working	6	7										
Mother's BMI (Kg/m^{-2}):												
<18.5	4	2	61									0.44
≥18.5 and <25	23	17										
≥25 and <30	7	4									10.7%	
≥30	2	2										
Babies weight (Kg)	31	19	50	10.8(1.1)	10.4(1.9)	10.6(1.5)	8.7-14	7-14.4	7-14.4	16%	32%	0.46
Weight Z-scores	31	17	48	0.6(1.08)	0.3(1.04)	0.5(1.2)	-1.6-2.99	-1.98-2.8	-1.98-2.99	16%	39%	0.66

*Mann Whitney test comparing maternal characteristics between countries. SD (Standard Deviation), IQR (Inter Quartiles Range).

4.8.2 Findings from the questionnaire:

The Child Eating Behaviours Questionnaire (CEBQ):

Maternal perceptions of babies eating behaviours did not vary according to mothers BMI and country part of ssignificantly higher levels of child's enjoyment of food for UK babies (Table 4-11, P=0.01).

Few associations were identified between maternal eating behaviours and perceptions of babies eating. As such, maternal emotional eating (DEBQ-E) and babies' emotional overeating were positively and significantly correlated (r=0.32; P=0.02). Mothers whose eating was affected by external cues (DEBQ-X) had babies who showed higher levels of responding to food cues (r=0.26; P=0.02).

As seen in Table 4-12 mothers who restrained their own eating (DEBQ-R) had babies who ate less rapidly (r=0.28; P=0.03). Finally, mothers who were less satisfied with their body (BIDQ) had babies who ate slowly (r=0.42; P=0.02) compared to mothers who were more satisfied and accepting of their own body size.

Table 4-11; The Child Eating Behaviours questionnaire (CEBQ) scores according to country of origin.

	Mean(SD)		IQR		Missing data		P value
	Israel	UK	Israel	UK	Israel	UK	
Food Responsiveness	2.5(0.9)	2.4(0.7)	1-4.8	1-4			0.79
Emotional Overeating	1.8(0.5)	2(0.8)	1-3.3	1-4.8			0.79
Enjoyment of Food	3.5(0.7)	4.1(0.6)	1.8-5	2.5-5			*0.01
Desire to Drink	2.7(0.6)	2.5(0.7)	1.3-4.5	1.7-4.3	2.7%	3.5%	0.20
Satiety Responsiveness	2.9(0.4)	3(0.3)	2-3.8	2.3-3.8		3.5%	0.43
Slowness in Eating	2.7(0.4)	2.8(0.3)	2-4.3	2.3-3.5		3.5%	0.15
Emotional Under-eating	2.7(0.8)	2.9(0.7)	1-4.5	1.5-4.5		3.5%	0.45
Food Fussiness	2.9(0.2)	3.1(0.2)	2.3-3.7	2.5-3.5		3.5%	*0.04

*Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing between questionnaires scores and country. IQR (Inter quartile range).

Table 4-12; Pairwise correlation for the Child Eating Behaviours questionnaire (CEBQ) elements and mothers responses to the RSEQ, DEBQ, BIS and the BIDQ

	FR	EO	EOF	DD	SR	SIE	EUE	FF
RSEQ	-0.15	-0.21	-0.10	-0.20	-0.08	-0.22	-0.06	-0.02
DEBQ-R	0.08	0.03	-0.02	-0.04	0.03	*0.28	0.03	0.08
DEBQ-E	0.12	*0.32	-0.10	*0.27	0.02	0.23	0.21	0.04
DEBQ-X	*0.26	0.02	0.10	0.06	-0.04	0.09	-0.07	-0.009
BIS-Diff	0.08	0.03	-0.14	0.10	0.03	0.17	0.17	0.01
BIDQ	0.01	0.21	-0.18	0.10	0.18	**0.42	0.13	0.15

Pairwise correlation test (Pearson correlation test *Significance level <0.05. ** Significance level <0.005. Food Responsiveness (FR); Emotional Overeating (EO); Enjoyment of Food (EOF); Desire to Drink (DD); Satiety Responsiveness (SR); Slowness in Eating (SIE); Emotional Under-Eating (EUE); Food Fussiness (FF); RSEQ(Rosenberg self-esteem questionnaire), DEBQ (Dutch eating behaviour questionnaire), BIS (Body Image Scale), BIDQ (Body Image Disturbance questionnaire.

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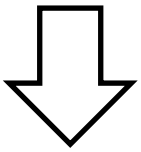
4.9 Summary of the third follow-up results:

- Mothers' perceptions of babies eating behaviours did not vary according to country and BMI, apart from significant higher levels of enjoyment of food for UK babies.
- Mothers whose own eating was affected by external cues had babies who showed higher levels of responding to food cues.
- The older the babies were when introduced to solid food the more food responsive they were.



Thus, the main finding from the third follow-up demonstrates an association between maternal and child eating behaviour at 12-18 month postpartum.

4.10 Fourth follow-up: Mothers' perceptions of infants' eating behaviours 18-24 months after birth.

4.10.1 General findings:

Twelve mothers withdrawal from the study between the first and the final follow-up resulting within sixty one mothers and infants participated in the study 18-24 months following birth. Babies mean (SD) age was 87.4(9.7) weeks and did not significantly differ between both countries, as noted in Table 4-13. Babies mean (SD) weight was 11.8(1.4) Kg and was similar in both countries with a wider range for weight in the UK.

High levels of missing data were seen in both countries while exploring babies' weight.

4.10.2 Findings from the questionnaire:

The Child Eating Behaviours Questionnaire (CEBQ):

UK babies were reported as showing higher levels of food fussiness compared to Israeli babies (P=0.009. appendix C table 4). Heavier and older babies showed higher responsiveness to food (P=0.004; P=0.005 respectively) as noted in appendix C table 6. Older babies overate according to emotional cues compared to younger babies (P=0.01). They also showed higher levels of desire to drink (P=0.04).

Higher levels of emotional overeating were seen for UK babies compared to babies from Israel (P=0.04.Table 4-14). Significantly higher levels for babies' desire to drink were seen in Israel (P=0.04) and might be attributed to the fact Israel is a warmer country than the UK.

Mothers with higher levels of self-esteem had babies who enjoyed food more compared to babies whose mothers had lower levels of self-esteem (r=0.28; P=0.02). Those mothers also reported lower levels of desire to drink for their infants. Mothers who restrained their own eating (DEBQ-R) had babies with higher levels of desire to drink (r=0.36; P=0.003). Mothers who ate emotionally had babies who ate less rapidly (slowness in eating. r=0.39; P=0.002).

Table 4-13; Participant's main characteristics 6-12 months after giving birth, explored by countries.

	N (%)			Mean (SD)			Median			IQR			Missing data (%)		P value
	Israel	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	**Total**	**Israel**	**UK**	
Mothers Age (years)	33	25	**58**	35.7(3.2)	35.9(3.7)	**35.8(3.4)**	35	35	**35**	26-41	29-42	**26-42**	1.6%	3.2%	0.83
Baby's age at measurements (weeks)	25	17	**42**	88.7(7.6)	85.5(12.2)	**87.4(9.7)**	90	85	**87**	74-100	66-106	**66-106**	14.7%	16.3%	0.34
Mother's BMI (Kg/m^2):	33	26	**59**	22(3.5)	23(3.9)	**22.8(3.7)**	21.5	22.7		16.3-32.3	17.9-33.7	**16.3-33.7**	1.6%	1.6%	0.10
<18.5	5(15%)	2(7%)	**59**												
≥18.5<25	23(70%)	17(66%)													
≥25<30	3(9%)	5(20%)													
≥30	2(6%)	2(7%)													
Working status:															0.45
Yes	29(85%)	21(78%)	**61**												
No	5(15%)	6(22%)													
Attending a child minder:															0.07
Yes	30(88%)	19(70%)	**61**												
No	4(12%)	8(30%)													
Baby's weight (Kg)	26	17	**43**	11.9(1.09)	11.6(1.8)	**11.8(1.4)**	12	12	**12**	10-14	8.5-15	**8.5-15**	13.1%	16.3%	0.58
Weight Z-scores															

*Mann Whitney test comparing median scores between countries. Chi-square test comparing between attending child minder and country in the fourth follow-up. SD (Standard Deviation), IQR (Inter Quartiles Range).

Table 4-14; The Child Eating Behaviours questionnaire (CEBQ) scores according to country of origin and time of follow-up.

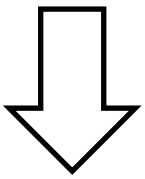
	Mean(SD)		IQR		Missing data		P value
3rd follow-up	Israel	UK	Israel	UK	Israel	UK	
Food Responsiveness	2.5(0.9)	2.4(0.7)	1-4.8	1-4			0.79
Emotional Overeating	1.8(0.5)	2(0.8)	1-3.3	1-4.8			0.79
Enjoyment of Food	3.5(0.7)	4.1(0.6)	1.8-5	2.5-5			*0.01
Desire to Drink	2.7(0.6)	2.5(0.7)	1.3-4.5	1.7-4.3	2.7%	3.5%	0.20
Satiety Responsiveness	2.9(0.4)	3(0.3)	2-3.8	2.3-3.8		3.5%	0.43
Slowness in Eating	2.7(0.4)	2.8(0.3)	2-4.3	2.3-3.5		3.5%	0.15
Emotional Under-eating	2.7(0.8)	2.9(0.7)	1-4.5	1.5-4.5		3.5%	0.45
Food Fussiness	2.9(0.2)	3.1(0.2)	2.3-3.7	2.5-3.5		3.5%	*0.04

	Mean(SD)		IQR		Missing data		P value
4th follow-up	Israel	UK	Israel	UK	Israel	UK	
Food Responsiveness	2.3(0.8)	2.2(0.7)	1.2-4.6	1-4.4			0.59
Emotional Overeating	1.9(0.6)	1.7(0.5)	1-3.3	1-3.8			*0.04
Enjoyment of Food	3.6(0.7)	3.7(0.7)	2-5	1.8-4.8			0.73
Desire to Drink	2.7(0.6)	2.4(0.6)	1-3.7	1.3-3.7		1.6%	*0.04
Satiety Responsiveness	3(0.4)	3(0.4)	2.2-4	2.2-3.8			0.51
Slowness in Eating	2.7(0.4)	2.8(3.9)	2-3.5	1.8-3.5			0.30
Emotional Under-eating	2.7(0.6)	3(0.8)	1.3-4	1.3-4.7			0.13
Food Fussiness	2.9(0.2)	3.1(0.2)	2.3-3.5	2.6-3.7			*0.009

*Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing between questionnaires scores and country at each follow-up. IQR (Inter quartile range).

4.11 Summary of the fourth follow-up study:

- Israeli mothers noted significantly higher levels of emotional eating and desire to drink for their babies compared to UK mothers possibly as a result of a warmer climate in Israel.
- UK mothers noted higher levels of food fussiness for their babies compared to Israeli mothers.
- Mothers with high levels of self-esteem had babies who enjoyed food more compared to babies whose mothers had lower levels of self-esteem. The more restrained eating the mothers were, the more likely their babies were to show a greater desire to drink.
- Heavier and older babies showed higher responsiveness to food.



Mothers eating behaviours, satisfaction with body and self-esteem were significantly associated with their perceptions of their babies eating behaviours.

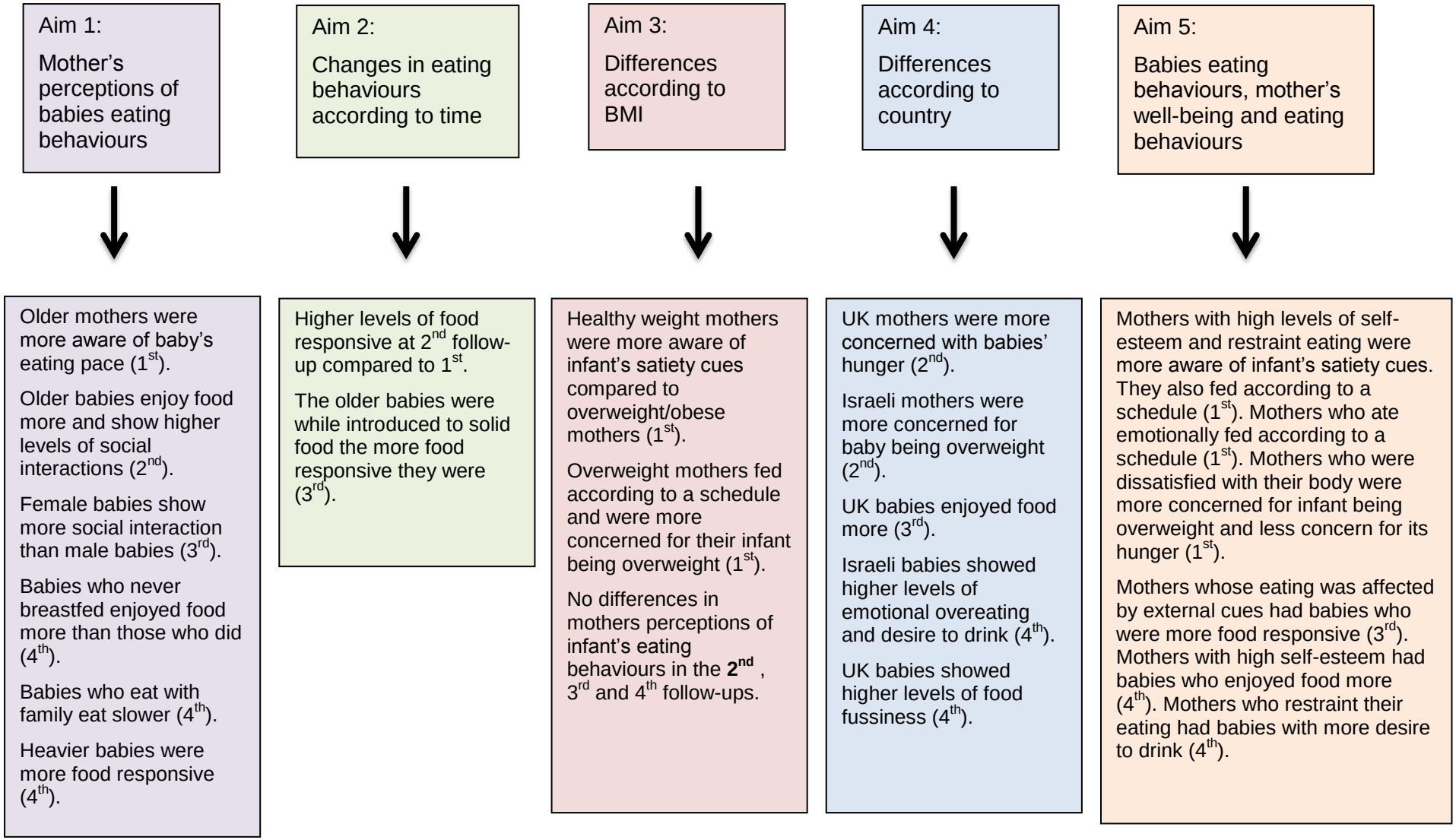


Figure 4-7; Summary of findings according to study aims.

4.12 Discussion:

The present study explored maternal perceptions of babies eating behaviours and suggested strong associations between infants' and mothers' eating behaviours. As such, mothers whose eating was affected by emotional cues fed according to a schedule. Mothers who restrained their eating reported on higher levels of desire to drink for their babies. The findings indicate as well on associations between maternal well-being and feeding perceptions. As such, mothers with high levels of self-esteem were more aware of their infant's satiety cues and reported on higher levels of food enjoyment for their babies.

Research has previously noted that maternal self-esteem influences parenting behaviour and was found to be related to the mother's beliefs in her ability to accept the baby and mother it (Farrow and Blissett. 2007). Thus, our findings might suggest that mothers who felt more confident in their parental skills enjoyed the feeding more and were available to recognize infant's satiety cues. In contrast, and as previously suggested by Gelfand et al (1996), mothers who feel less worth than others tend to struggle with parenting which might result in struggling with feeding as well.

The findings suggest that mothers who were less satisfied with their appearance were less concerned about their infant's hunger and more concerned about their infant being overweight. Mothers who restrained their eating (DEBQ-R) were more aware of their infants' satiety cues and is not in agreement with previous research noting that women who restrain their eating are less aware of their own hunger and satiety cues (stein et al., 1999). Nevertheless, Brown and Lee (2011) noted that mothers who restrain their own eating restrain their infants' eating as well.

Stunkard et al (2004) explored eating traits in infancy and noted that infant's with a more avid sucking style are at a higher risk to develop later on obesity. Similarly, Li et al (2008) noted that infants who initiated bottle-emptying in the first six months of life are more likely to gain more weight in the following six months compared to infants who did not empty their bottle. Rapid weight gain in infancy is positively associated with the development of later on childhood obesity (Ong et al., 2006).

In the present study babies mean (SD) weight was similar in both countries, apart from significantly higher Z-scores for weight in the first follow-up suggesting heavier babies in the UK. Babies' weight and Z-scores for weight were not significant predictors for eating behaviours. The author suggest that the relatively small available data for infants' weight might have affected the findings and exploring such associations in a larger sample, with more complete data, would potentially result in different findings.

This research followed infants from birth until 2 years of age and noted that as time progressed babies enjoyed food more and showed higher levels of satiety responsiveness. Mothers initiated breastfeeding (80%) and more than 50% for a duration longer than 4 months. Such high levels of breastfeeding might be attributed by women who were highly educated and from a relatively high socio-economic status. Nevertheless, breastfeeding was not significant for infant's eating behaviours in the first follow-up, perhaps because most mothers initiated breastfeeding thus no differences within the sample were identified. However, as infants grow up, and as indicated in the second follow-up (6-12 months), breastfeeding mothers were more aware of their infants eating pace compared to mothers who did not breastfeed. Mothers who breastfed might have been more in-tune with their infants eating and continued to follow such feeding behaviour in early weaning. This is further explored in the following chapter. Thus breastfeeding is important not only via the content of the meal but also as it shapes future eating behaviours, as supported by Fisher at al (2000) and Birch et al (1998).

Mothers' BMI and babies' eating behaviours were associated with mothers' ability to follow responsive feeding in terms of identifying the baby's satiety cues and not feeding in absence of hunger. As such, Israeli healthy weight mothers showed higher awareness of their infants' satiety cues at the first follow-up (aged 2-6 months). Our findings indicate as well that heavier mothers (from Israel and from the UK) fed according to a schedule (aged 2-6 months), which has previously been associated with the development of childhood obesity, as suggested by Disantis et al (2011).

An additional aim of the study was to explore differences in feeding perceptions as attributed to mothers' country of origin. Findings from this study note that UK mothers were more concerned about infant's hunger compared to Israeli mothers, who were more concerned for their infant's becoming overweight. Recent research notes that childhood obesity is increasing in Israel and levels are similar to the USA (http://www.prweb.com/releases/2013/7/prweb10961437.htm). Nevertheless, levels of underweight are high in Israel as well, indicating body dissatisfaction even during pregnancy (Shloim et al., 2013). Thus, mothers' views of their babies might have been affected by the culture they live in resulting in high levels of concern for their baby being overweight or overeating. Moreover, a recent study by Shloim et al (2014. under review) notes that Israeli women aspire for an "ideal" type of motherhood. Such a mother is always available for her children, prepares homemade food and is her child's constant companion. As such, it might be that an "ideal" mother aspires for an "ideal" sized –child.

UK babies were slightly heavier and enjoyed food more compared to Israeli babies. UK mothers were slightly less aware of their baby's satiety cues and reported higher levels of food fussiness at the age of 18-24 months.

Our findings indicate higher awareness for babies' eating behaviours for UK mothers and might be explained by cultural differences, which have been addressed in detail in chapter 3. Moreover, the differences in the length of maternal leave resulted in UK mothers being able to spend more time with their children. As such they had more opportunities to feed their babies which probably affected their awareness of their babies eating behaviours.

To conclude, exploring eating behaviours in young babies notes that previous research tend to focus on mothers BMI, parenting style and responsive feeding as mainly contributing to the development of early eating behaviours. Findings from our study identifies additional factors such as mothers' well-being and own eating behaviours as associated with babies eating and add to the complexity of accurately assessing the origins of the development of babies' eating behaviours.

4.13 Limitations:

The findings from this study should be considered in relation to the inherent limitations. The main limitation relates to the sample size as previously discussed in chapter 3. Second, our sample consisted of highly educated mothers which is not entirely representative of the wider Israeli and UK population. Third, high levels of missing data for babies' weight were identified and an improved methodology should verify lower levels of missing data. Controlling the first and the second limitation might result in clear associations between infants' eating behaviours, infants' weight and mothers' BMI.

An additional limitation address maternal well-being and as such it is possible that mothers with lower levels of self-esteem and high levels of dissatisfaction with body might have misinterpreted their infant's eating traits. This could be controlled by filming the feeding sessions which can confirm/refute maternal perceptions of eating traits.

To conclude, the findings from this study are based on self-reported measures and an improved methodology should combine both quantitative methods and observational research (chapter 6). Combining both methodologies will allow a better understanding of such a complex and highly important research area.

4.14 Conclusion:

The current study explored mothers' perceptions of their infants' eating from birth until 24 months after birth. This was the first study to explore such measurements in an Israeli and a UK sample. Our findings suggest on strong associations between mothers and infants eating behaviors. Unfortunately missing data regarding infant's weight meant that this aspect could not be fully explored.

As obesity increases in prevalence it will become more imperative that we understand how maternal characteristics influence the ways in which mothers interpret their infant's hunger and satiety cues, how they respond to these cues and how this influences the ways that infants are fed then acquire food habits. With this imperative comes the obligation to ensure that valid and reliable measures are used especially the use of self-report in conjunction with observations of meals in real time.

5 Mother-Infant Mealtime Interactions

Abstract:

Decisions about what and how to feed infants influences obesity risk. For example, early weaning and formula feeding are associated with rapid infant weight gain in the first year of life which is a risk factor for obesity development. Therefore, it is important to understand and to characterize the earliest interactions between mother and baby during feeding. The objective of this study was to explore mealtime interactions in a sample of Israeli and UK mothers and how these varied over time, by maternal BMI and country. Mother-infant dyads (N=41) from Israel and UK were filmed on four occasions (every six months). Behaviours were coded using the Simple Feeding Element Scale (SFES). Spearman's rank correlations were applied to determine associations between the elements of the SFES and more importantly how these changed over time. The Mann-Whitney test was applied to determine differences in SFES by maternal BMI, mode of feeding and country. Positive mealtime interactions were seen in the first follow-up, however, with time; babies ate in a less ideal setting and were distracted by television, books or toys during the feed. UK mothers enjoyed the feeding interaction more than Israeli mothers, potentially explained by faster return to work in Israeli mothers compared to stay-at-home mothers in the UK. Healthy weight women used fewer feeding commands and fed their babies a healthier meal compared to overweight and obese mothers. Correlations were found between mothers' eating behaviours and mealtime interactions. Mealtime observations offer an insight into the quality of the early feeding experience and future research should continue to explore this within larger and more diverse populations.

5.1 Introduction:

Recent research indicates that 9.5% of infants worldwide are above the 95th percentile in weight (Stifter et al., 2011; Ogden et al., 2010) with rapid weight gain in infancy associated with obesity in later life (Redsell et al., 2010; Baird et al., 2005). It is thought that duration of breastfeeding, (Dietz. 2001) and the age at which solid foods are introduced (Ong et al 2006) influence rapid weight gain, thus mothers who formula feed and introduce solids before 4m increase the risk of obesity seen at 3 and 7 years (Ong et al 2006).

Eating behaviours should also be considered by the complexity of early mealtime interactions. As such, early experiences of feeding are important for setting the foundation of healthy eating later in life (Nicklaus and Remy, 2013). For example, studies have shown that infants are born with the ability to self-regulate their consumption of food and signal to their mothers when they are hungry and when they have had enough (Li et al., 2010). However, for some parents, recognising hunger and satiety cues is not straightforward, potentially resulting in mothers over-feeding their infant and reducing their ability to self-regulate (Birch et al., 2003; Birch and Fisher. 1998).

In addition, excessive parental control over feeding such as applying restrictions or pressure to eat may be adversely associated with under or overfeeding (Johnson and Birch. 1994) or with slower weight gain (Farrow and Blissett, 2006). Parents who notice their child's tendency to overeat may attempt to restrict or place limits on intake and those whose child is fussy might pressure them to eat certain foods. Thus parental control may reflect responsiveness to their child, but in an oppositional rather than supportive direction.

Given the influence of eating traits on the risk of obesity and the role of parents in responding to these characteristics, mealtimes may hold the key to understanding the dynamic nature of the parent-child interaction in determining food intake and the development of appetite control.

As noted in chapters 2 and 4 mealtime interactions are best understood in real time and via recorded observations rather than recall. This presents a methodological challenge insofar as it requires both the presence of an investigator during mealtimes and a validated coding structure to score discrete behaviours of the mother and the baby during the meal.

It was hypothesised that only via a recorded meal interaction can one explore not only the type of food infants are exposed to, but also how the food is presented, in terms of mother-infant behaviours during a feed. In particular we expected (5a) that early mealtime interactions (breastfeeding or bottle feeding) will be more positive than later interactions. Thus mothers will be more in-tune to their infants needs during a feed at an earlier age. As Israel and the UK vary in the duration of maternal leave, (5b) UK women were expected to follow a more ideal mealtime interaction at the first and second follow-ups as a result of spending more time with their infants. Finally, (5c) healthy weight women were expected to enjoy the meal interaction more than heavy weight women and to score higher in the fruit and vegetables sub-scale.

5.1.1 The aims of this study were:

1) To investigate mealtime interactions of mother-baby dyads.
2) To test whether mealtime interactions change over time (every six months).
3) To explore the impact of country (Israel vs. UK) on the nature of mealtime interactions.
4) To examine the influence of maternal BMI on mealtime interactions.

5.2 Methods:

5.2.1 Participants:

Of the original sample of 156 women from Israel (N=67) and the UK (N=89), 73 women agreed to take part in a follow-up study, as fully discussed in chapter 3

(mother's feelings and eating behaviours following pregnancy). 41 women agreed to take part in an in-depth study involving meal-time observation as well. No significant differences were observed between the women who agreed to take part in the in-depth study compared to those who did not in terms of levels of education, number of previous children and marital status. Details regarding the changes in the number of participants from pregnancy to the follow-up study are stated in chapter 2 and in chapter 3.

5.2.2 Procedure:

Mothers were contacted between 5-12 weeks after the birth of their child and a date to visit them in their home was set. The procedure is fully addressed in chapter 2.

5.2.2.1 The Simple Feeding Elements Scale:

The Simple Feeding Elements Scale (SFES. Mohebati. 2014. Submitted) is described in chapter 2; methodology and in Table 5-1.

5.2.2.2 Data Analysis:

The analysis was conducted using Stata version 12 and SPSS Statistics 20. Each film was scored according the SFES as described in chapter 2. In the first follow-up, for most elements, mothers scored the highest scores possible (3; more ideal) and the analysis focused on the more ideal scores (3). An additional variable to identify mode of feeding (breastfeeding vs. other feeding) was generated for the first follow-up and its correlation was assessed in relation to BMI and SFES scores.

All scores were compared by BMI category and by mode of feeding (i.e. frequency of mothers obtaining ideal, average or less than ideal ratings for each element) using the Mann-Whitney test.

For the subsequent follow-ups, the analysis focused on the changes in scores across time using regression modeling. Our analysis revealed that the best fitting model was the variance-components model with fixed slopes.

Spearman's rank correlation test was applied to determine whether there was any evidence of correlation between each element of the SFES (see appendix C) and the SFES and infant's weight, age etc.

Finally the data were analysed to determine whether there were differences in the results between the two countries, using the Mann-Whitney test.

5.2.2.3 Ethical Considerations:

The study was approved by the Ethics Committee at the Institute of Psychological Sciences at the University of Leeds, reference no. #11-0137.

Table 5-1; The Simple Feeding Element Scale (SFES).

Element	Description of Element
Setting	Absence of distractions during the meal.
Positioning	Infant and caregiver face each other during the meal.
Mood and atmosphere	Caregiver enjoys the mealtime interaction.
Child participation	Infant is encouraged to participate in self-feeding.
Pacing	Caregiver allows the infant to set the pace of eating.
Avoids feeding while distracted	Caregiver avoids feeding the infant when distracted.
Avoids feeding while disengaging	Caregiver avoids feeding when the infant needs a break (i.e., is disengaging.)
Qualitative aspects of verbal communication	Caregiver avoids using commands or negative comments during the mealtime.
Quantitative aspects of verbal communications	Caregiver talks to the infant during the mealtime.
Fruits, vegetables and breast-milk	The meal contains fruits, vegetables and/or breast-milk.

Modified from Shloim et al., 2014. Submitted

5.3 First meal: Infants age: 3-32 weeks.

5.3.1 General findings:

Mothers' mean age was 35.3(3.7) years. Most were married (N=38, 87%) and multiparous (65%), as noted in table 5.2. Maternal BMI was similar in both countries and most mothers were within the healthy weight range. Infants' mean age was 15.1(6.8) weeks and ranged from 3-32 weeks. Two infants were 8 weeks older than other infants and a sensitive analysis was conducted (chapter 2). As our results indicated no significant difference with this analysis the data was retained. Israeli infants were significantly older than the infants in the UK (P=0.009). No significant differences for their Z-scores for weight were found. Mode of feeding was similar in both countries with significantly more women who had ever breastfed compared to those who had never breastfed (P=0.01; 32 vs. 9 women respectively). Of the total

sample, 78% of the women initiated breastfeeding and were either still breastfeeding or had stopped at the time of the study. Nevertheless, only 48% of the women breastfed during the filmed interactions with significantly more UK breastfeeding films compared to the Israeli sample (P=0.001).This was not significantly related to babies' age.

Table 5-2; Mothers and infants main characteristics at the time of the first follow-up.

	N (%)	Mean (SD)	Median	IQR	Missing data
Mothers age	41	35.3(3.7)	37	27-41	
Primiparous	14(35%)		1	0-8	2.2%
Multiparous	26(65%)				
Levels of education:					
No degree	3(7%)				4.4%
Degree/higher than a degree	36(93%)				
Mothers BMI	38	23.3(2.9)	23.2	18.1-29.4	7%
BMI<25	28(74%)				
BMI≥25	10(26%)				
Infants age:	41	15.1(6.8)	12	3-32	
Israel	23(56%)	17.7(6.8)	18	8-32	
UK	18(44%)	11.8(5.3)	12	3-20	
Infants sex:					
Male	25(60%)				
Female	16(40%)				
Ever breastfed:					
Yes	32(78%)				
No	9(22%)				
Duration of breastfeeding:					
Less than 12 weeks	4(12%)				12%
More than 12 weeks	31(88%)				
Breastfeeding during filming:					
Israel	6(26%)				
UK	14(77%)				
Other feeding during filming:					
Israel	17(74%)				
UK	4(23%)				
Infants weight (Kg):	40	6.5(1.3)	6.8	3.3-9.2	2.2%
Infants Z-scores for weight:	33	-0.89(1.09)		-3.07[1] -1.23	19%

SD (Standard Deviation), IQR (Inter quartile range).

5.3.2 Findings from the Simple Feeding Elements Scale (SFES):

Table 5-3 presents the scores for the SFES, first for the total sample and then divided according to BMI category and mode of feeding. As can be seen, most scores awarded were at the more ideal end of the scale (3) suggesting that our sample consisted of mothers who were generally responsive to their infants. Mean duration of the feed was 21(4.8) minutes (range 8-26 min) and was similar between breastfeeding and other feeding modes [(21.8(4.9) vs. 19.5(4.5) minutes respectively].

5.3.3 Relation to maternal BMI

Among the healthy weight mothers just over half elected to breastfeed on the day of filming compared to feeding a mixed or solid food meal (55% vs. 45% respectively). Among the overweight mothers fewer elected to breastfeed on the day of filming compared to offering a bottle or solid meal (36% vs. 64% respectively) but this was not significantly different within the group or compared to healthy weight mothers.

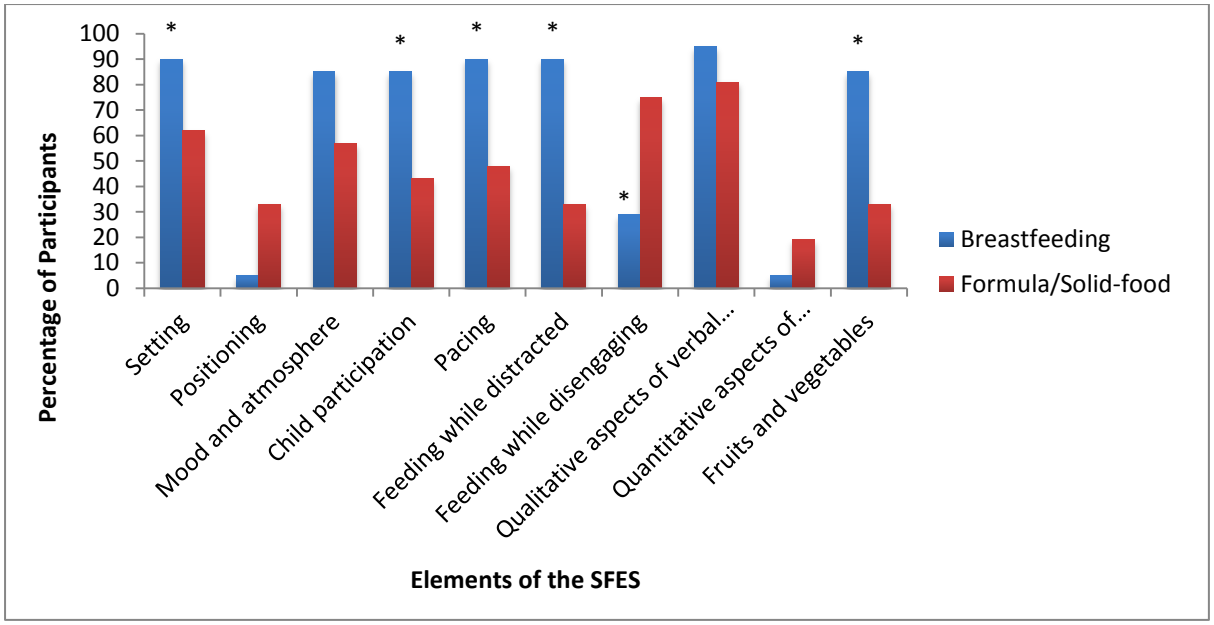
BMI category revealed no significant differences in meal time interaction scores in the SFES (Table 5-3).

Table 5-3; The Simple Feeding Elements scale (SFES) distribution of scores divided by total sample size, BMI and type of filmed feeding.

	Setting	Positioning	Mood and atmosphere	Child participation	Pacing	Feeding while distracted	Feeding while disengaging	Qualitative aspects of verbal Communication	Quantitative aspects of verbal communication	Fruit and vegetables
Total sample	N=41	N=41	N=41	N=41	N=41	N=41	N=41	N=41	N=41	N=41
Less Ideal	2(5%)	7(7%)	1(3%)	4(10%)	6(15%)	6(15%)	15(37%)	2(5%)	9(22%)	----
Average	8(20%)	26(63%)	8(20%)	9(22%)	5(12%)	8(19%)	6(13%)	4(10%)	26(64%)	18(44%)
More Ideal	31(75%)	8(19%)	31(77%)	28(68%)	30(73%)	27(66%)	20(50%)	35(86%)	6(14%)	23(56%)
BMI<25	N=27	N=27	N=27	N=27	N=27	N=27	N=27	N=27	N=27	N=27
Less Ideal	2(8%)	5(18%)		2(8%)	2(8%)	5(18%)	10(37%)	1(4%)	6(22%)	
Average	4(15%)	17(63%)	7(26%)	8(30%)	6(22%)	5(18%)	3(11%)	2(8%)	18(67%)	9(33%)
More Ideal	21(78%)	5(19%)	20(74%)	17(63%)	19(70%)	17(63%)	14(52%)	3(89%)	3(11%)	18(67%)
BMI≥25	N=15	N=15	N=15	N=15	N=15	N=15	N=15	N=15	N=15	N=15
Less Ideal	1(7%)	2(13%)	1(7%)	2(13%)	3(20%)	2(13%)	6(40%)		1(7%)	
Average	3(20%)	11(73%)	5(33%)	3(20%)	1(7%)	3(20%)	1(7%)	2(13%)	12(80%)	8(53%)
More Ideal	11(73%)	2(14%)	9(60%)	10(67%)	11(73%)	10(67%)	8(53%)	13(87%)	2(13%)	7(47%)
Breastfeeding during filmed meal	N=21	N=21	N=21	N=21	N=21	N=21	N=21	N=21	N=21	N=21
Less Ideal	1(5%)	3(14%)	----	1(5%)		2(10%)	4(19%)	1(5%)	2(10%)	----
Average	1(5%)	16(76%)	2(9%)	2(10%)	2(10%)	1(5%)	3(14%)	1(5%)	16(76%)	3(14%)
More Ideal	19(90%)	2(10%)	19(91%)	18(85%)	19(90%)	18(86%)	14(67%)	19(90%)	3(14%)	18(86%)
Otherwise feeding	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20
Less Ideal	1(5%)	4(20%)	1(5%)	2(10%)	6(30%)	4(20%)	10(50%)	1(5%)	6(30%)	
Average	7(35%)	9(45%)	6(30%)	7(35%)	2(10%)	6(30%)	3(15%)	3(15)	9(45%)	14(70%)
More Ideal	12(50%)	7(25%)	12(50%)	11(45%)	12(50%)	10(50%)	7(35%)	16(80%)	5(25%)	6(30%)

5.3.4 Mode of feeding:

The SFES elements differed by mode of feeding (Figure 5-1, Table 5-3).
For example, mothers who initiated breastfeeding while being filmed fed without distraction (the baby eats without being distracted by toys, books or TV; P = 0.0001) and provided a more ideal setting (no distractions of TV or toys during meal time; P=0.03).
Applying the Spearman correlation test suggested that the duration of feeding correlated with feeding disengagement (Table 5-4. rho=0.16; P=0.03). Thus, the longer the feed the more mothers would pause in order to respond to disengagement cues such as arching the back or moving the head away from the food or the breast. For breastfeeding babies mothers' removal from the breast during a disengagement cue was indicative of an ideal response.



*Significant at P < 0.05 using Mann-Whitney Test with mode of feeding as the main effect.

Figure 5-1; Percentages of participants with more ideal scores distributed by mode of feeding.

Child participation was negatively correlated with positioning (rho=-0.42; P=0.002) as was pacing (rho=-0.48; P=0.008), indicating that a face to face position during the meal was associated with greater restriction of the child self-feeding and poorer pacing (Table 5-4). Child participation was also positively correlated with pacing (rho=0.62; P=0.0001) suggesting that children who fed themselves determined their own pace of eating (which includes by definition the observation that breastfed infants determined their own pace of feeding).

Child participation was correlated with feeding commands (rho=0.65; P=0.0001, qualitative aspects of verbal communication). Thus, the more mothers encouraged self-feeding the fewer eating commands they issued. Mothers who did not use feeding commands were also likely to pause feeding during a disengagement cue (rho=0.51; P=0.0032).

Pacing was negatively correlated with positioning (rho=-0.48; P=0.008).

5.3.5 Analysis by country:

Differences in feeding interactions by country were not significant, however, trends revealed more positive mealtime interactions within the UK sample. This could be explained by the observation that UK babies' mean age and weight at filming were greater than for the Israeli women (Table 5-3) and significantly more UK women breastfed their infants during the filmed feeding.

Table 5-4; Simple Feeding Elements scale (SFES) bivariate correlation matrix of mean scores.

	Setting	Positioning	Mood and Atmosphere	Child Participation	Pacing	Feeding while Distracted	Feeding while Disengaging	Qualitative Verbal	Quantitative Verbal	Fruit and Vegetables
Setting	1.00									
Positioning	0.21	1.00								
Mood and Atmosphere	0.41	0.09	1.00							
Child Participation	0.11	-0.42**	0.19	1.00						
Pacing	0.18	-0.48**	0.14	0.62**	1.00					
Feeding while Distracted	0.50**	-0.09	0.41	0.39*	0.62**	1.00				
Feeding while Disengaging	0.08	-0.36*	0.24	0.48**	0.65**	0.60**	1.00			
Qualitative Verbal	0.06	-0.70**	0.09	0.65**	0.69**	0.31	0.51**	1.00		
Quantitative Verbal	0.07	0.07	0.45	-0.13	0.00	0.08	-0.03	-0.16	1.00	
Fruit and Vegetables	0.21	-0.17	0.17	0.40**	0.27	0.35*	0.46**	0.21	-0.07	1.00

Spearman's Correlation test. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

5.4 Summary of main results:

- Mealtime interactions at this early stage revealed mostly ideal scores indicating that for most of the elements mealtime interactions were positive.
- Mode of feeding was a strong predictor for most of the SFES and was associated with a more positive mealtime interaction for breastfeeding mothers.
- Country was not significant for any of the elements of the scale indicating that Israeli and UK mothers demonstrate similar mealtime interactions with their infants.
- Maternal BMI did not act as a significant predictor with the SFES elements suggesting that healthy weight women and overweight/obese women interact with their infants during a meal similarly.

5.4.1 Implications:

Given that measurement one occurred when babies were very young, the significant findings were accounted for by mode of feeding. Therefore, the subsequent measurements were investigated to track changes over time.

5.5 Mealtime interactions; measurement 2-4. Babies' age ranged from 27-104 weeks.

5.5.1 General findings:

The characteristics of mothers and their infants at each of the subsequent visits are shown in Table 5-5. Maternal BMI was similar across visits with higher level of healthy-weight mothers compared to overweight and obese mothers overall. Significantly more Israeli mothers were working at the time of the second visit compared to mothers from the UK (P=0.02) with Israeli babies being significantly older than the UK babies at all visits (P=0.01; 0.04; 0.01 respectively).

By the second visit Israeli babies were heavier than UK babies (P=0.03), however, after adjusting for babies age (Z-scores for weight), no significant differences were found. High levels of missing data regarding infants' weights were seen in both countries and were significantly higher in the UK compared to Israel in the first and the second visit (P=0.01; P=0.02 respectively).

Table 5-5; Mother and infant characteristics during follow up visits.

	N (%)	Mean (SD)	Median	IQR	Missing data
2nd follow-up					
Mothers age (years)	41	35.3(3.7)	37	27-41	
Mothers BMI Kg/m^2	39	22.6(3.1)	22.5	16.1-30.3	5%
BMI<25	31(80%)				
BMI≥25	8(20%)				
Working Status:					
Working	24(59%)				
Not working	17(41%)				
Infants age at follow-up (weeks):	41	39.5(6.8)	36	27-56	
Israel	23	42(6.8)	42	32-56	
UK	18	36.5(5.7)	36	27-45	
Infants weight (Kg):	38	8.2(1.1)	8	6.4-11	7.3%
Infants Z-scores for weight:	37	-0.72(1.4)		-3.6+2.7	9.7%
3rd follow-up					
Mothers BMI Kg/m^2	38	22.5(3.1)		16.5-30.4	8%
BMI<25	31(82%)				
BMI≥25	7(18%)				
Working Status:					
Working	30(79%)				2.5
Not working	8(21%)				
baby's age at follow-up (weeks):	38	64(7.2)	61	51-80	2.5%
Israel	21	66(7)	66	56-80	
UK	17	61.4(6.8)	60	51-72	
Baby's weight (Kg):	29	10.4(1.2)	10.3	8.1-14	25%
Infants Z-scores for weight:	28	-0.11(1.2)		-2.5+2.3	28%
4th follow-up					
Mothers BMI Kg/m^2	38	22.4(3.1)		16.3-30.4	5%
BMI<25	31(84%)				
BMI≥25	6(16%)				
Working Status:					
Working	33(85%)				
Not working	6(15%)				
baby's age at follow-up (weeks):	39	87.4(8.8)	86	56-104	
Israel	22	90.4(6.8)	90	80-104	
UK	17	83.4(9.6)	84	56-96	
Baby's weight (Kg):	27	11.9(1.1)	12	10-14	31%
Infants Z-scores for weight:	26	0.14(0.96)		-1.8+1.4	33%

5.5.1 Mealtime interactions maternal characteristics:

Stay-at-home mothers encouraged their babies to self-feed more than working mothers (P=0.02), as seen in Table 5-6). In support, working mothers used eating commands more than stay-at-home mothers (r=0.23; P=0.00). Older mothers were more in-tune with their infant's eating pace compared to younger mothers (P=0.01). After the first measurement more mothers responded to disengagement cues and paused the feed accordingly (P<0.02).

Healthy weight women were less likely to use feeding commands compared to overweight or obese women (P=0.002) in the fourth measurement and were more likely to provide their infants a healthier meal (contains mainly fruit and vegetables and does not contain sugary food) compared to overweight and obese mothers, by the second time of the filming (P=0.02).

UK mothers enjoyed the mealtime interaction significantly more than Israeli mothers in the third visit (P=0.02). Also significantly more babies from the UK ate independently in the second visit compared to babies from Israel (P=0.01). As babies reached the age of 12-18 months, significantly more Israeli mothers paused the feed during a potent disengagement cue compared to mothers from the UK (P=0.04; see Table **5-6**).

Mealtime interactions were explored as well as associated with mothers eating behaviours and satisfaction with body. Mothers who restrained their eating fed their babies a less healthy type of meal at the age of 18-24 months (r=-0.38; P=0.02). As findings from this thesis note on higher levels of restrained eating for overweight and obese mothers (chapter 3), such findings support the findings from this chapter noting that overweight and obese mothers fed their babies less healthy type of meal. The findings indicate as well that mothers who ate according to external cues were less likely to feed their babies a healthy type of meal at the first follow-up (r=-0.32; P=0.04).

As the fruit and vegetables element indicates that a more ideal type of meal is a breastfeed meal (especially at the age of 2-6 months), the findings might indicate that mothers who ate according to external cues were less likely to breastfeed their infants.

Table 5-6; Multilevel regression modeling for the SFES, accounting for time of follow-up, country, mothers age, mother's working status, infant's sex and Z-scores for weight .

The SFES element	Outcome	Model Coefficient	95% CI	P-value
Setting	2nd follow-up vs. first	-1.11	-2.03,-0.21	*0.01
	3rd follow-up vs. first	-1.10	-1.98,-0.23	*0.01
	4th follow-up vs. first	-1.06	-1.91,-0.20	*0.01
Positioning	2nd follow-up vs. first	-0.33	-0.94,0.27	0.28
	3rd follow-up vs. first	-0.74	-1.33,-0.15	*0.01
	4th follow-up vs. first	-1.31	-1.88,-0.74	*0.001
Child Participation	Country (UK vs. Israel)	-0.29	-0.57,-0.02	*0.03
	Working status (Yes vs. No)	-0.29	-0.55,-0.04	*0.02
Pacing	2nd follow-up vs. first	0.26	-0.37,0.90	0.41
	3rd follow-up vs. first	0.60	-0.04,1.22	0.05
	4th follow-up vs. first	0.66	0.05,1.26	*0.03
	Mothers age (years)	-0.04	-0.08,-0.009	*0.01
Feeding while disengaging	2nd follow-up vs. first	0.78	0.09,1.48	*0.02
	3rd follow-up vs. first	1.36	0.70,2.02	*0.001
	4th follow-up vs. first	1.21	0.56,1.87	*0.002
	Mothers age (years)	-0.04	-0.07,-0.001	*0.04
	Baby's Z-scores for weight	0.14	0.02,0.26	*0.02
Qualitative aspects of verbal communication	2nd follow-up vs. first	0.54	0.08,1.00	*0.02
	3rd follow-up vs. first	0.57	0.13,1.00	*0.01
	4th follow-up vs. first	0.37	-0.05,0.80	0.09
	Working status (Yes vs. No)	0.29	0.08,0.51	*0.007
Fruit and vegetables	Country (UK vs. Israel)	0.28	0.07,0.50	*0.009

*Significant.

5.5.2 Mealtime interactions infants characteristics:

Baby's weight (r=-0.49; P=0.001) and age at follow-up (r=-0.35; P=0.001) were significantly correlated with baby's positioning (**Error! Reference source not found.**) indicating that lighter and younger babies were positioned in a more ideal form (allowing eye contact) compared to older and heavier babies. Our findings suggest as well that heavier babies were less likely to be fed while a disengagement cue was observed (P=0.02). In terms of meal content, those babies ate less healthy food compared to lighter babies (0.19; P=0.04).

5.5.3 Changes according to time:

Time of follow-up was a significant predictor for several elements of the SFES. For example, over time setting was less than ideal (more distractions by TV and toys; P=0.01). As time progressed mothers showed a wider variation in their mealtime interactions. Thus where mothers scored more ideal scores at the first follow up for most of the elements as time progressed these declined and a significantly wider variation was seen (r=-0.34; P=0.001).

Figure 5-2 illustrates the changes in participants' scores from the first to the final measurement. The figure notes that data were explored for each participant individually addressing the four occasions data were collected. The maximum score mothers could have achieved was 12 indicative that in each occasion they have scored more ideal scores (3) for the feeding. Findings are addressed through the second element of the scale: Positioning. As can be seen, none of the mothers positioned their baby ideally on all of the feeding occasions. Fifteen percent of mothers in this sample positioned their baby in a less ideal manner at the first measurement whereas by the fourth filming occasion 66% of the mothers fed their babies in such a way that no eye contact was possible (by leaving their baby to eat alone for example). Interestingly, in the second occasion most of the mothers positioned the babies in a more ideal way, probably as babies were fed while sitting in their feeding chair and the mother was facing them during the feed.

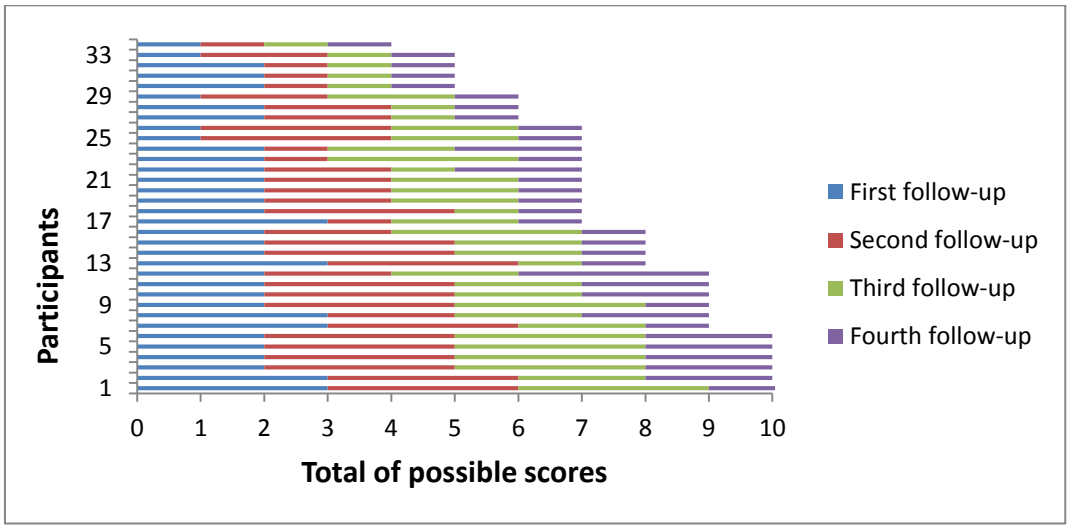


Figure 5-2; SFES; Positioning. Changes in participants' scores according to follow-up.

Similar trends were identified for most of the elements, as shown in Figure 5-3. For example, more mothers fed in the presence of a distractor and served their babies sweetened food as biscuits and sugary yogurts over time. For the positioning element, fewer mothers positioned their baby in a less ideal form in a younger age compared to at an older age.

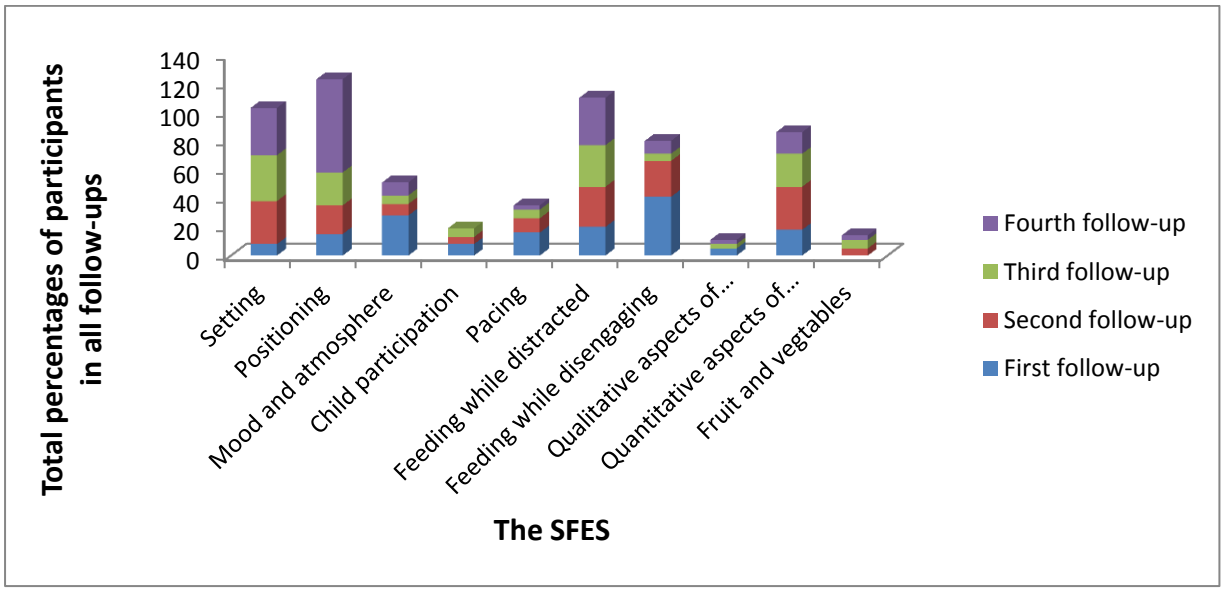


Figure 5-3; The SFES; scales explored by less ideal scores and time of follow-up.

To conclude, mealtime interactions were more positive when infants were younger. As time progressed, our findings indicate a wider variation in mothers' scores with more mothers following a less positive meal interaction. The SFES elements were correlated with each other noting a positive direction of correlation. For example, mother who fed in a more ideal posting, fed a more healthy type of meal and was more likely to allow the baby to self-feed.

5.6 Summary of main findings:

- During the first visit, most mothers scored the highest scores possible (more ideal) indicating that mothers were generally responsive to their infants at this time.
- Over time a wider variation in scores were seen indicating that mealtime interactions were scored as having fewer positive elements.
- Mode of feeding: breastfeeding mothers were more likely to feed their infants in a more ideal setting, without distractions and were more aware of disengagement cues compared to non-breastfeeding mothers.
- In the first measurement, no significant differences were seen between mealtime interactions and country indicating similar feeding behaviours for UK and Israeli mothers. Similar mealtime interactions were seen as well between healthy weight and overweight and obese women at the first visit.
- As infants' age increased healthy weight mothers were less likely to use feeding commands compared to overweight women and were more likely to feed their babies a healthier meal.

A summary of the main findings can be seen in Figure 5-4

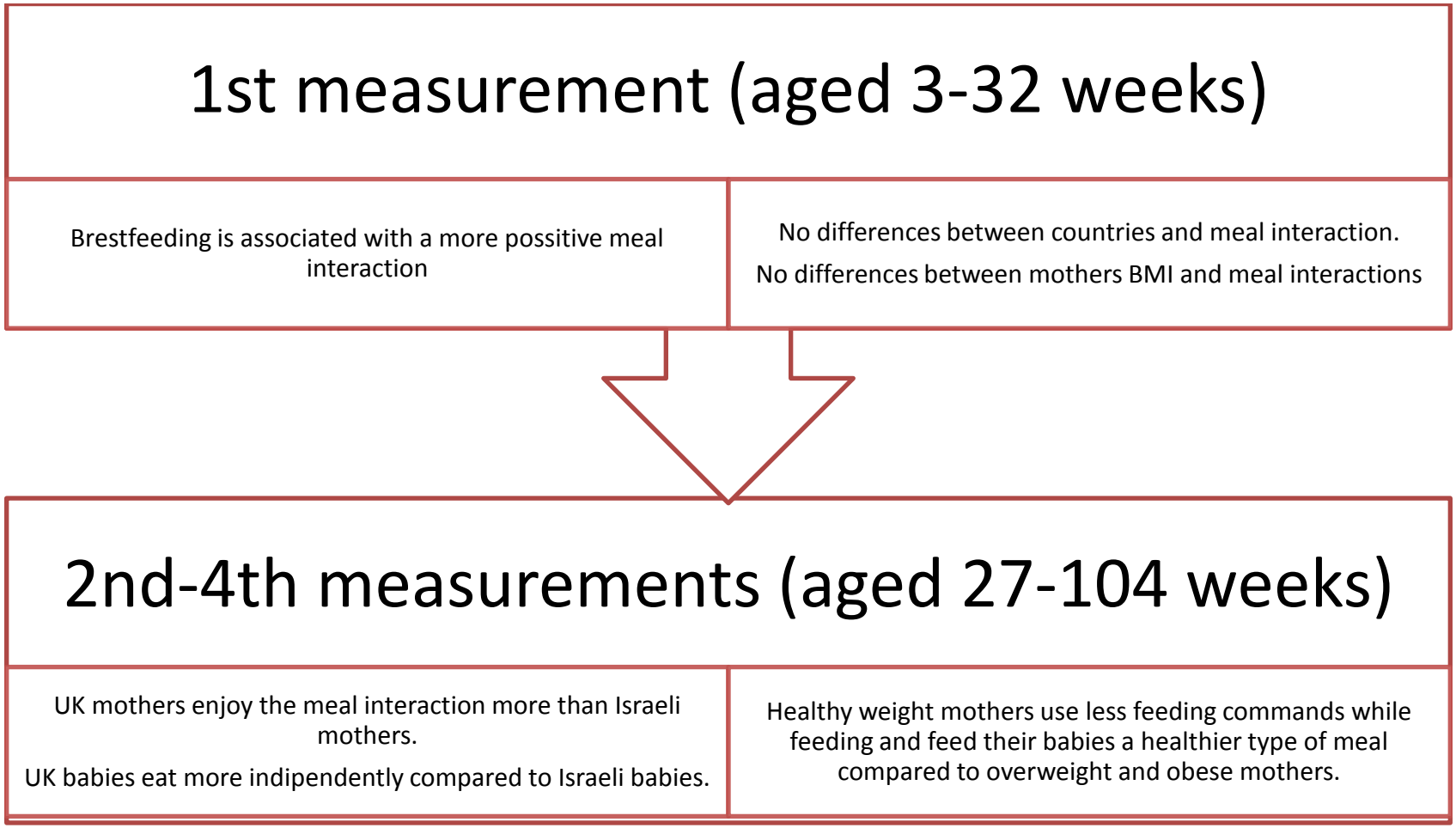


Figure 5-4; Summary of findings

5.7 Discussion:

The primary aim of the present study was to explore mealtime interactions of Israeli and UK mother-baby dyads. Data were collected four times in two years, every six months. A second aim of the study was to explore if mealtime interactions change according to the time of follow-up. Specific research questions included if feeding interactions varied by country and BMI.

Findings from this study indicate that feeding was positive in the first time mothers and infants were filmed (infants age ranged from 3-32 weeks) and as babies' age increased, a wider variation in mealtime interactions was observed. Thus young babies were more likely to eat in a more ideal setting (no TV or toys), in a better positioning (eye contact is allowed) and to eat a healthier type of meal (breast-milk, fruit and vegetables etc.) compared to older babies. Breastfeeding acted as a significant predictor for a more ideal feeding interaction and mothers who initiated breastfeeding during the filmed feed were more likely to feed in a better setting and without distractions compared to non-breastfeeding mothers.

Mothers who were filmed breastfeeding might have potentially transferred the positive mealtime interaction to the complementary feeding period as previously suggested by Britton et al (2007). However, and unfortunately, while exploring the rest of our data (2^{nd} -4^{th} measurements) no significant differences were identified in mealtime interactions between mothers who did and did not breastfeed (generally initiation of breastfeeding and not solely mothers who were filmed breastfeeding). We would like to suggest that based on our relatively small sample size and the high levels of breastfeeding in general (>80%), our analysis might have not been able to detect potential differences between the two samples. Therefore an improved study design should contain a larger sample of women with significant differences in the numbers of breastfeeding vs. never breastfeeding mothers.

As babies' age increased mealtime interactions were less ideal. Our findings indicate that in the fourth follow-up (infants age ranged from 56-104 weeks) significantly more mothers fed their babies while the babies were watching the television compared to during the second and third follow-up. Thus as babies' age increased the interaction during the meal somehow transferred from a baby-mother interaction to a baby-mother distraction (TV, toys) interaction. At this time 85% of the mothers returned to work and those mothers were significantly less likely to allow self-feeding compared to stay at-home mothers. Thus the reality of having to combine a full-time job with the role of motherhood might have resulted with a less ideal mealtime interaction. Mothers were also more aware of their babies disengagement cues when babies were older. The findings are supported by several studies noting that as infants develop physically and emotionally their abilities to interact with their mother increases and is performed via several facial and body movements including more clear signals of hunger and satiety (Skinner et al., 1988; Barnard et al., 1984).

An additional aim of this research was to explore potential associations between mealtime interactions and mothers' BMI. Healthy-weight mothers and overweight and obese mothers follow a different feeding routine as addressed in chapters 2 and 4. This was also supported by findings from the EMPOWER study indicating that obese mothers demonstrate pressure to eat or a restriction on eating depending on the size of their 9 month old infants (Barlow et al, 2012 report). A recent study by Shloim et al (2014) noted that heavier mothers were more likely to feed their infants according to a schedule compared to healthy-weight mothers. Thus significant differences in mealtime interactions were expected.

Findings from this study suggest that healthy weight mothers fed their babies a healthier meal compared to overweight and obese mothers as seen in the second follow-up. Thus differences in the type of the meal infants of healthy weight mothers were introduced to compare with infants of heavier mothers were identified before infants reached the age of two.

The findings are similar to findings by Wardle et al (2001) indicating that healthy weight mothers feed their children less fatty food compared to overweight and obese mothers. In support, research has argued that as women's BMI decreased the ability to recognise hunger cues increased (Augustus-Horvath et al., 2011; Carter and Jansen. 2012). Thus with agreement with findings from our study, healthy weight mothers might have been more familiar with their own hunger cues and accepted the existence of a similar mechanism in their infants.

Finally, in chapters 3-4 the maternal differences of Israeli and UK women are fully addressed. The findings indicate that the length of maternal leave varied between both countries (Shloim et al., 2014) which in relation to findings from this study might have affected mealtime interactions. Thus UK mothers enjoyed the mealtime interactions significantly more than the Israeli mothers and UK babies ate more independently compared to Israeli babies.

5.8 Limitations:

Most of the limitations have been addressed in chapters 3-4 as the current study addressed the same sample of mothers and infants. This chapter will therefore address the limitations which have not yet been addressed.

- Women were highly educated, originating from a relatively high socioeconomic status and most were healthy weight. This might have affected their decision and ability to breastfeed and might have contributed to a more positive feeding interaction. Exploring mealtime interaction within a more varied sample might have resulted in different findings.

- The filmed meal. Films were recorded in participants' homes and the study's strength lies in recording a feeding interaction in a familiar environment resembling as far as possible normality within the household. However, and although mothers were asked to ignore the researcher as much as possible, the filmed meal probably does not truly represent a routine none-filmed mealtime interaction. Ideally a 24 hour filmed feeding interaction is required. Clearly applying such methodology is complicated and expensive; however, it would eventually better address what babies eat and how their mothers interact with them during a feed.

- The SFES; few limitations were identified while using the scale:

  (1) As infants' age increased coding was more complicated and each element required more specification. For example, an ideal positioning in infancy differed from an ideal positioning when babies reached the age of 2 and ate independently (preferable with their family which is not allowing face to face with their mother).

  (2) The need for additional sub scales assessing mother-baby emotional well-being during the meal was identified.

  (3) The scale currently codes mealtime interactions as one interaction. As feeding interactions vary across the duration of the meal an improved version of the scale should address more sub-episodes such as the beginning, middle and towards the end of the meal.

5.9 Conclusions and Recommendations:

The present study is the first to explore feeding interactions in Israeli and UK mothers and their babies. The first findings from this study address mealtime interactions with infants' age ranging from 3-33 weeks and indicate the feasibility of assessing mother-infant meal time interactions at such a young age. Our findings contribute to previous research by its ability to detect differences between breastfeeding and other feeding methods during mealtime interactions. As babies' age increased mealtime interactions tended to be less positive thus it is important that interventions and recommendations should focus on younger babies in order to reduce the development of negative mealtime interactions in the future.

Thus, this study highlights the complications in truly assessing and understating the quality of mealtime interactions and as repeatedly mentioned mealtime interactions are not only about what the baby eats but are about how babies' and-mothers interact during the meal. Studying mealtime interactions offers an insight into the quality of the early feeding experience and searching the literature for similar studies has provided a paucity of research. There is a clear need to explore this area further within larger and more diverse populations.

6 Perceptions of motherhood

Abstract:

Motherhood is constructed differently in different contexts and varies according to cultural, political and historical influences. Nevertheless, not all women chose to become mothers and in UK, for example, being voluntarily childless is relatively common. In contrast, in Israel, having children is regarded as the main role in a women's life and women without children are considered to live empty lives. Moreover, although Israel is a modern country in which most women return to work following pregnancy, the traditional Jewish mother is still regarded as a stay at home mother who cook, clean and take care of her family. Given that maternal well-being and perceptions of feeding are likely to be associated with the role of a mother, this study focused on Israeli and UK women perceptions of motherhood. Forty one women were interviewed 2-6 months following birth regarding their pregnancy, eating behaviours and experience of motherhood. Data was analysed thematically. Findings from our study suggest that women experienced motherhood as 1) a devoting role in which a woman ignores her own needs; 2) as a role in which a mother acknowledges both her own and her babies' needs or 3) as a highly demanding role in which one might struggle and relate to motherhood as a burden. Our findings suggest that such experiences coexist within the same mother. UK women were able to address more openly the struggles within motherhood whereas a tendency towards idealising motherhood was seen for Israeli women. Knowing more about the experience of motherhood can contribute to knowledge and translation to the healthcare context.

6.1 Introduction:

Scholarly work on mothering defines motherhood as the social practice of nurturing and caring for dependent children. Thus mothering is a dynamic activity which is evolved with relationship with the other; the child (Arendell. 2000). Other scholars, such as Forcey (1994) related to motherhood as representing women's first identity and the form of which they learn their first place in society. Thus motherhood is associated with femininity, with women's gender identity (Chodrow. 1989; McMahon. 1995) and as the primary identity for most adult women (Forcey. 1994). Nevertheless, not all women choose to become mothers and nurturing children is no longer an exclusive domain of a woman's role in life (Ruddick. 1994).

Becoming a mother involves physical, emotional and psychological changes. However, and as suggested by Nelson (2003), researchers tend to explore physical changes from pregnancy to the postpartum rather than emotional and psychological well-being. In support, Pridham and Chang (1992) noted that definitions of motherhood are associated with the behavioural aspects of motherhood such as feeding the baby, taking care of the baby and are therefore limited.

Schneider (2002) explored perceptions of pregnancy in a sample of Australian women noting that women's need for support vary during pregnancy. As such, in the first trimester women tend to feel more emotional and ambivalent regarding their pregnancy. Such emotions decrease in the second trimester in which women feel more in control leading to a better stabilization of their emotions in the third trimester with higher levels of physical discomfort (Schneider (2002). Moreover, the physical stress of giving birth affects mother's emotional wellbeing as well and as such, women who experienced a traumatic childbirth might experience postnatal depression and less positive well-being which will affect their ability to mother their child (Ball. 1987; Oakley. 1980; Winson. 2009).

Thus the need for support in the transition to motherhood appears during and following pregnancy and in some Muslim societies women rest in near-isolation for 40 days following birth (Ockenden. 2000). Similarly, Jewish orthodox women are referred to a convalescence home for duration of seven days in the immediate postpartum (Berkowitz. 2008). In the UK historically the period after birth was called the "confinement" (Burton, 1994).

The recent years demonstrate a change within the structure of the traditional type of the family (that the father provides and the mother is a stay-home mum) and allow women, mothers, to participate in providing for their family. Maternal employment adds layers of complexity to women's role as a mother resulting in a high personal price trying to balance work and family demands (Daly. 1996). In support, Mischel and Fuhr (1998) state that many women compensate for their absence from home during working hours and spend intense interaction time with their children during non-working hours. Therefore it is not surprising that recent decades have shown a decrease in the number of children per family.

In the UK, for example, birth rates fell between 2000-2005 to an average of 1.79 children per family, compared with 2.04 during 1970-1975 (United Nations Department of Economic and Social Affairs, Population Division, 2007). A similar decrease can be seen in other western countries (Shaw, 2009). Higher levels of education and working status, later marriage and an increase in divorce rates have a major impact on women's decisions to become mothers (Shaw, 2011).
Nevertheless, in some parts of the world, birth rates remain the same or are increasing (http://data.worldbank.org/indicator). In Israel, for example, the average number of children is three per family (nearly twice that of other western countries; Remennick, 2000; Israel Central Bureau of Statistics [CBS], 2007). The literature suggests that the majority of Israelis perceive childless people to have empty lives (Glickman, 2003) and Israeli women with no children tend to be regarded as "not yet pregnant" ("*Adain lo beherayon")* rather than as voluntarily or involuntarily childless, which is prevalent in the UK, for example (Portuges, 1998). Moreover, for Jewish-Israeli communities, the Biblical prescription and experience of conflict and population threat contribute heavily to pronatalism (Birenbaum-Carmeli, 2009).

In this thesis perceptions of feeding were positively associated with maternal well-being (chapters 4,5) via the usage of quantitative methods. Aiming to provide an in-depth understanding of how such perceptions are associated women were interviewed regarding their experience of motherhood 2-6 months post-partum (Figure 6-1).

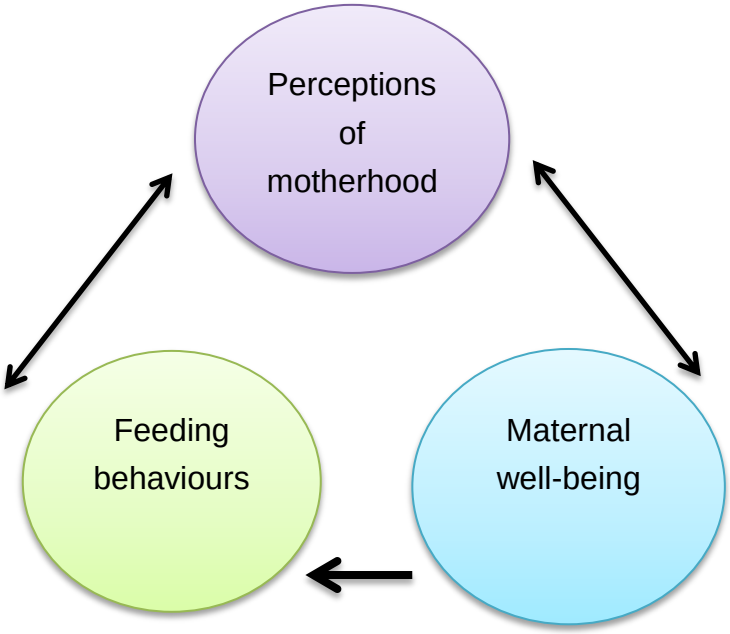


Figure 6-1; Proposed associations between perceptions of motherhood, maternal well-being and feeding behaviours.

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6.2 Methods:

6.2.1 Recruitment and Participants:

Recruitment and procedure are addressed in chapter 2. Of the 73 women who agreed to complete the questionnaires, 41 agreed (Israel=23; UK=18) to participate in an in-depth study involving a brief interview and filming of a feeding (chapter 5; Shloim et al., 2014. reviewed). During these interviews on feeding, mothers were interviewed more broadly about pregnancy and motherhood.

6.2.2 Design and Procedure:

Interviews took place in Israel and in the UK in the participants' homes. The interview was semi-structured (chapter 2) following a protocol that had been approved by the University of Leeds ethics committee (ref #11-0137). Participants were firstly asked about their eating behaviours during pregnancy, the postpartum and about their satisfaction with body. Such questions aimed to provide additional data regarding the general scope of this thesis addressing maternal eating behaviours and well-being (chapter 2).

An additional aim of this thesis was to understand if mothers well-being and general perception of the role of motherhood are associated with maternal feeding behaviours. Thus women were asked about their general experience as mothers. Specific questions addressed potential differences between perceptions of motherhood prior to giving birth and following birth.

Chapter 2 provides additional data regarding the questions women were asked.

Analytical procedure:

As indicated in the interview protocol women were asked about their eating behaviours during pregnancy and the postpartum, their satisfaction with their body and their general well-being. Women were also asked if being a mother is similar or different than what they have expected it to be. Having read and re-read the interviews and as eating behaviours and well-being were fully explored via quantitative methods these topics were not further explored. For the purpose of this study and the scope of the PhD, a richer description of the data were provided for women's role as a mother.

Women were encouraged to share their feelings and thoughts. The researcher, who is herself a mother and a trained psychotherapist emphasized that there is no right or wrong answer and asked women to give a voice of their experience of motherhood. In support, the researcher started this part of the interview with the question:

"…being a mother, is it always lovely, easy and just the best thing in life, or is it sometimes actually really hard or even frustrating as well?!

The coding process aimed to answer mainly two questions:

1. How do Israeli and UK women perceive their role as mothers 2-6 months postpartum?
2. Are such perceptions of motherhood associated with different feeding styles?

The themes were then identified at a latent level underlining the meaning of the themes and allowing the researcher more "freedom" within the interpretation and description of the themes. Finally, as this research compared between Israeli and UK mothers and throughout this thesis we were interested in identifying potential differences between both cultures, the

thematic analysis conducted in this chapter was driven from a constructionist perspective. As such, meanings were socially produced aiming to describe a sociocultural context.

To conclude, the thematic analysis undertaken in this chapter provided a richer description of one aspect of the data (Israeli and UK mothers perceptions of motherhood), which was driven mainly by the researcher's personal interest (theoretical thematic analysis). The themes are described and interpreted via a latent approach.

The following steps were applied while conducting the analysis as suggested by Braun and Clarke (2008).

- Becoming familiar with the data: Forty one interviews (23 in Hebrew; Israel and 18 in English; UK) were transcribed into English using Microsoft Word. Data which was originally recorded in Hebrew was translated by the researcher into English. The data were read several times resulting in better understanding of several themes and ideas it captures. Data were then sent to an additional researcher (OL) who is an expert in qualitative research for an additional read.

- Generating initial codes: Data were read and re-read allowing the researcher maximum familiarity with the data. The researcher highlighted important and more interesting parts of the text, extracted and finally coded such parts, as seen in the following example:

Data Extracted	Coded for
"The pregnancy was horrible. I could hardly carry her. It was so heavy, my whole body ached. I had to stop all". (1011. Israel).	1. Negative experience of pregnancy. 2. Discomfort with body.
"I always knew I would breastfeed my child. Breastfeeding is the best and what mum will not want the best for her baby?! It's like giving him a piece of me..." (1043. Israel).	1. Previous knowledge and intentions to breastfeed. 2. Positive concept of Breastfeeding 3. Breastfeeding associated with good motherhood.

The process was repeated for each interview separately and resulted in combining all the data into one large data set. An additional researcher (OL) have repeated the process and generated separated themes. The data was compared with the data of the primary researcher (NS) and discussed until reached an agreement (Shloim et al., 2014. Submitted).

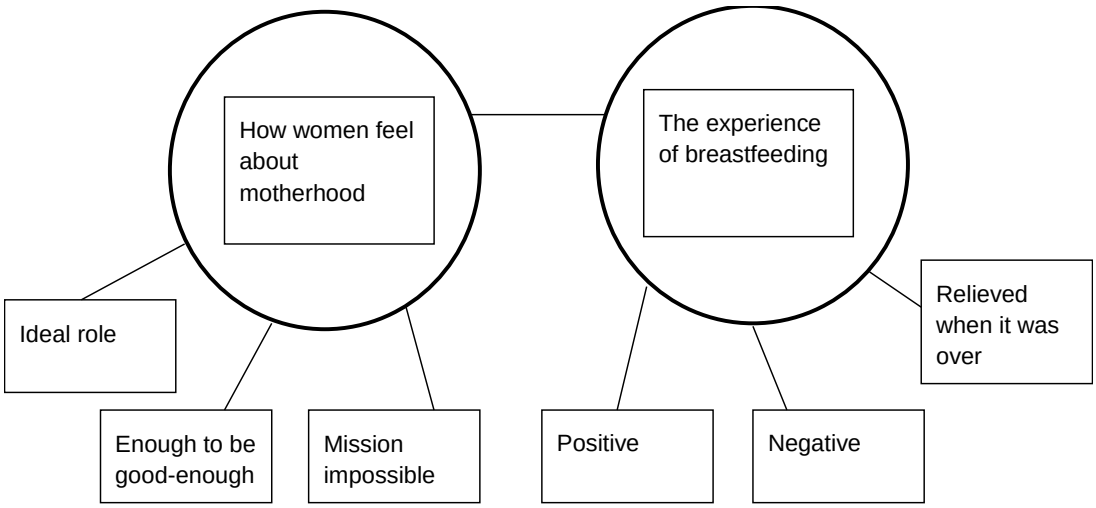
- Searching for themes: All the codes which were created and identified in phase 2 were gathered into themes. The analysis revealed 4 themes:

1) Body image and body satisfaction during and following pregnancy. Codes associated with the first theme addressed the acceptance of the change and grief for the lost body.
2) Feelings and well-being during pregnancy. Codes addressed anxiety, stress and excitement.
3) Breastfeeding and the experience of breastfeeding. Relevant codes addressed positive and negative experience if breastfeeding.
4) How women felt about motherhood. Codes addressed wishing to act as an ideal mother, accepting the ability to be good enough and relating to motherhood as a burden.

- Reviewing the themes: The four themes which have been finalised in phase 3 were reviewed again and re-read to verify they truly represent the generated codes from phase 2. The process revealed that theme 3 and theme 4 can be generated into one combined theme as the extracted data associated with breastfeeding were associated with motherhood as well.

  Then a thematic 'map' was created capturing all the themes from the entire data set, as seen in **Figure 6-2**.

Figure 6-2; Final thematic map showing the final two themes.



- Defining and naming themes: Each theme aimed to capture the data in a clear and manageable way. The extracted data were reviewed again and possible definitions were written for each theme. The process was conducted several times in an iterative way and shown to supervisors from the UK and from Israel. Aiming to verify the themes which emerged, the data were also sent to an external reader (Dr. Omer Lans; Shloim et al., 2014. Under-review). Although this male colleague was not familiar with the data and study, he was able to view these themes from an expert perspective as a psychologist living and working in the same region of Israel as the recruited mothers.

- Producing the report: The final report addressed all the identified themes and combined extracted data and examples from interviews.

6.3 Results:

Forty one women participated in the study. Table 6-1 summarises the main characteristics of the participants. Mothers mean age was 35.3±3.7 years and did not significantly vary between countries. 40 women were married (98%) and one was in a long-term relationship. 78% (N=32) of the women had elected to breastfeed.

Findings from our study indicate that 60% of the mothers have worked at the time of the follow-up with significantly more working mothers in Israel than in the UK (P=0.01). This can be explained as the duration of paid maternity leave varied between Israel and the UK as addressed in chapter 3-5. Interviews took place (thus infants' age) on average 15±6.8 weeks following birth.

Table 6-1; Israeli and UK women main characteristics at the time of follow-up.

	N (%)	Mean (SD)	Median	IQR	Missing data
Mothers age	41	35.3(3.7)	37	27-41	
Primiparous	14(35%)		1	0-8	2.2%
Multiparous	26(65%)				
Working status:					
Yes	24(60%)				
No	17(40%)				
Levels of education:					
No degree	3(7%)				
Degree/higher than a degree	36(93%)				4.4%
Infants age:	41	15.1(6.8)	12	3-32	
Israel	23	17.7(6.8)	18	8-32	
UK	18	11.8(5.3)	12	3-20	
Infants sex:					
Male	25(60%)				
Female	16(40%)				
Ever breastfed:					
Yes	32(78%)				
No	9(22%)				

6.3.1 Themes:

As previously addressed, the analysis generated the following four themes:

1) Body image and body satisfaction during and following pregnancy.
2) Feelings and well-being during pregnancy.
3) Breastfeeding and the experience of breastfeeding.
4) How women felt about motherhood.

The fourth theme captured as well parts of general well-being thus theme 3 and 4 were chosen for extensive development. Within the themes of breastfeeding and motherhood three distinct experiences emerged.

a. *I am always available for my children and my children are my entire world.*

This is a type of experience in which motherhood is idealised. Within this experience mothers appear to want to do the best thing for their children and tend to ignore their own needs. Breastfeeding was found to be positively associated with such experience of motherhood in a sense of giving one's self to the child.

b. *I am available for my children, but I have my own life as well.*

Such an experience of motherhood appears to balance what is best for the children with a mother's own needs. Thus such type of mothers are able to experience and acknowledge their role as mothers as less than perfect and by balancing the baby's needs with their own. As such, the mother is able both to hold and to let go of her children and is able to trust them and encourages their independence (as in a mother-baby dyad).
Such a type of mother is more likely to experience motherhood in a positive way.

For example, the experience of breastfeeding also is aligned with nourishing the self and hence mothers do not feel they have failed if they are unable to breastfeed.

c. *I am not sure I can do it...be a mum...*

This type of experience is expressed as more negative than the others. Women who meet this description experience motherhood as a burden. As such, they feel the heaviness and struggles of being a mother. Unlike the first two types of mothers, the third type will struggle to see the joy and satisfaction within motherhood and is also more likely to struggle with breastfeeding.

6.3.2 Findings:

a. “I am always available for my children and my children are my entire world”.

Several mothers addressed motherhood as a natural phase following pregnancy. Thus, their positive experience of pregnancy reflected on their motherhood, as addressed by participant (2008). For this woman, this was the first pregnancy and a planned pregnancy, arriving after she had been coping with an eating disorder for most of her life and just recovered from an additional severe illness prior to pregnancy. Thus, becoming pregnant captures much of joy and anticipation towards the future. Moreover, the experience of pregnancy and having a positive body image all concentrated into the development of her future mother to be.

> *"Pregnancy…it was wonderful…I loved being pregnant…I think it was the first time in my life I enjoyed my body…I loved my bump…and it wasn't an easy pregnancy as it was just after my illness, but I have to say that for 9 months I felt really good…mm….I suppose I always wanted to be a mother…" (2008. UK)*

Another woman (2067) related to pregnancy, birth and to motherhood as a natural event. For this woman as well, this was the first pregnancy. The mother was in her early 40 and was highly educated. For her, giving birth and being a mother seemed to naturally merge into her identity as a woman. During the interview, she constantly used baby talk and addressed herself as "we", thus related to herself and her baby as one, as a joint unit.

> *"It (pregnancy), it was all so new…The pregnancy went really smoothly and we didn't have any problems…**didn't we… (baby talk)…** We had a home birth and it was all so natural…**yes, it did, it did… (baby talk)**….And then I always knew I wanted to breastfeed. It just seems natural and with all the health benefits…It will be so sad to spoon feed, **it will, wont it (baby talk)…**It's so special and a nice thing to do (to breastfeed) and I am planning a maternity leave of a year…"(2067. UK)*

A few mothers experienced their motherhood as being always available for their children, doing everything for their convenience and always wanting to spend more time with them. For example, participant (1028), 33 years old mother who just gave birth to her second child. This mother was working full time before giving birth and planned to return to work when her maternity leave ended. She constantly compared herself to her mother and it seemed that there is a strong bond between the two. Interestingly enough, when the interview was completed, the maternal grandmother arrived to cook for the family and new grandchild, allowing the researcher a glance into the relations of two generations of mothers.

"Being a mother…well….my role model is my mum. She was always available and there for us, picking us up early from school….there was always homemade food at home, a hard worker…" (1028. Israel).

Experiencing motherhood as a total sense of devotion was the most common description women used, as noted by participant (1050) and (1043). However, such devotion was expressed mainly as a mother's duty to be present for her children (picking up from school, being at home etc.) and by their ability to nurture (breastfeeding in infancy and cooking home-made food for infants). Thus, all women who experienced motherhood as "an always available mum", expressed their devotion as available in the sense of "doing" (playing with the baby, teaching them, feeding them etc.) and obligation, they were less likely to relate to their ability to support their children emotionally, to "just be there for them". This understanding will be further addressed in the discussion.

"I am a total mum. I take my kid early from nursery so I can spend more time with him; other parents are working but not me. I want to teach my child and be with him. Be his mother…" (1050. Israel).

"I always knew I would breastfeed my child. Breastfeeding is the best and what mum will not want the best for her baby?! It's like giving him a piece of me..." (1043. Israel).

A few women were able to relate to the "price" of giving themselves to the other, the baby, relating to the experience of breastfeeding as highly demanding. As addressed by those women, the physical pain through pregnancy and birth, the sleepless nights and the struggles throughout breastfeeding were all interpreted as the devotional nature of motherhood.

“Giving birth…I had contractions for 3 days…and then, in the beginning, I couldn’t really breastfeed…So I used to drizzle formula drops on my breast…and he got used to it…he learned…and after that I had an infection…so overall it all took 3 months with him…and I didn’t give in as I had already breastfed my other two…” (2025. UK)

Thus although such mothers related to their own experience of motherhood as a total devotion, it seems that such descriptions captures as well the sense of the burden and struggle which is part of motherhood as well.

Several women addressed motherhood as a never ending role, as suggested by participant (1048). Participant (1048) who is a mother of three working fulltime described herself as “mother earth” and due to a stillbirth, was pregnant for the greater part of two years. Thus, to a certain extent this mother had very long periods of pregnancy yet she did not report fatigue or difficulties which might have been associated with such a demanding role but only related to the love and devotion.

“Motherhood…it’s something round…it never ends and it’s the most beautiful thing in the world…I love my children. Even at work everyone knows I am absolutely crazy about them…” (1048. Israel).

Nevertheless, such an endless role is challenging as well, as indicated by participant (1032). For this mother this was the second child after a very tiring pregnancy. As such, she used the image of a kangaroo to describe motherhood, since her child is constantly attached to her.

“I feel like a kangaroo…They are always with me…Physically and mentally…I mean, even now, when I am back to work, I still feel they are with me… (1032. Israel).

Thus, with the total devotion inherent to motherhood, even the “ideal mother” may also feel the endless nature of the role (“never ending”) and capture characteristics of the other types of mothers as well.

b. “I am available for my children, but I have my own life as well”.

Some mothers were clearly able to articulate both the devotional nature of motherhood whilst at the same time having time for themselves. This involved descriptions of being available for their children, enjoying the role of motherhood and relating to motherhood as a mother-baby unit, but also admitting that motherhood was not always easy. Thus such women were able to see both the beauty and joy in motherhood with the high responsibility which is involved in this role. For example, participant (2018) who had just given birth to her second child. This mother had breastfed her child and as her partner worked for long hours, spent most of the days alone with her children. She truly enjoyed motherhood and struggled to return to work. This mother repeatedly mentioned her main fulfilment is in staying at home and raising her children. Nevertheless, although such mother clearly enjoyed her motherhood, she openly spoke about the struggles and difficulties inherent in the role. By addressing the struggles she was also able to freely admit how she longs for some time for herself, with no kids, and breastfeeding.

> *“I always wanted to be a mum…first time was a shock…sleep deprivation…all say it’s lovely, but actually it’s horrible…And then you get used to it…”(2018. UK)*

Moreover, given the pivotal role of breastfeeding during the early period, such a type of mother might both enjoy breastfeeding but also admit that stopping breastfeeding can also be beneficial and is more likely to admit it than the first type of mother, the “ideal mother”, openly addressed by

participant (1029). This was her second pregnancy after giving birth in the first time to twins. In both pregnancies she initiated breastfeeding, however, and as indicated below, she addressed the termination of breastfeeding as the beginning of returning to herself and the reestablishment of herself as an individual as well.

In support, participant (1053) was able to acknowledge the emotional price initiating breastfeeding was for her and expressed her decision not to breastfeed as taking better care of herself meant being able to better look after her baby.

> *"Yes, sure I breastfed her, I also breastfed her sisters, but I felt free when it was over. I could wear my own normal clothes, I was more relaxed..." (1029. Israel).*

> *"I breastfed her for a week, until I understood the emotional price I am paying is simply too high…And I decided that for the benefit of my family and my own well-being I should stop and concentrate on being able to sleep…Nevertheless, it was a very complicated decision I had to make"*
> *(1053. Israel).*

This more realistic form of motherhood indicates both a level of devotion to the child, but also an acceptance of the importance of self. In some respects she shares aspects with the "ideal" mother, such as in her love and availability for her infant. She is more aware and accepting of her sometimes complex and even negative feelings towards her infant and will also admit the experience of ambivalent feelings. As such, she is also able to gradually let go of her baby and remain at a distance (separation) enabling the infant to develop independently (individuation).

> *"It's like holding a kite, sometimes I want them to be next to me and they want to fly away and then it's the opposite. It's like a game of holding and letting go…." (1022. Israel).*

Having to return to work was a topic most of the women addressed. For some women, returning to work was considered a positive experience, as indicated by participant (1011). However, for some of the mothers, and as previously discussed while exploring the more "ideal" type of mother, returning to work involved leaving the child with a child-minder thus could be viewed as negative ["I want to be his mum" (1072)]. For such women, an ideal mother is a stay-at-home mother which cannot be achieved by a working mum by definition.

In the example below, participant (1011) relates to her own needs (returning to work) and her baby's needs (breastfeeding) and expresses her role of motherhood as combining both. Clearly this mother combines a highly pressured job in the workplace and breastfeeding with the help of family.

> "*I am a solicitor and I have been working on a case I had to finalise and I agreed to work during my maternity leave…So when she (the baby) was two weeks old I went back to work, and her grandmother used to bring her to me so I can breastfeed her…" (1011. Israel).*

> *"This is the second one (baby), so it's easier than before as I know already what I am doing…But it's also more difficult as I am divided to two…to three if you include myself…and I am going back to work in 3 weeks so he will only be 3 months…last time I was away for so long (52 weeks) and I don't want to wait so long. I love my work…I'll get my life back faster and they will get a happier mum…" (2011. UK)*

This description encapsulates the devotional act of breastfeeding with the urgency of her role at work.

c. “I am not sure I can do it...be a mum...”

The third style of mother that emerged from the analysed data can be regarded as someone who perceives the enormity of her baby’s needs as all-consuming. As such, she feels that being a mother is a type of burden and struggles with the idea of motherhood, which she sits heavily on her shoulders, as suggested by participant (1053). For this mother, this was the first child after a relatively easy pregnancy. During pregnancy she read about breastfeeding and decided to breastfeed her new-born. However, breastfeeding turned out to be highly emotionally consuming resulting in giving up breastfeeding for *“the benefit of my family and my own well-being”.* Thus, the sense of self-sacrificing emerged from this mother’s decision about which mode of feeding to follow..

> *“Atlas…as all the world is on his shoulders…I think there is nothing to say about it, its clear…The good and the bad things, the complicated ones…” (1046. Israel).*

The sense of burden can emerge from mental fatigue and physical exhaustion and, in some cases, might even trigger depression and unhealthy interactions with the baby. Although only one mother chose a clear image of the Greek god Atlas (who was punished by Zeus to carry the world on his shoulders), the notion of a “struggle” was nevertheless present in the descriptions of all three types of mothers including the “good enough” mother and the “ideal”.

Findings from the research indicate that women in our study who related to motherhood as all-consuming have had a negative experience of pregnancy which highly affected their perceptions of their motherhood, as expressed by participant (2073).

> *“Pregnancy was difficult but giving birth in a caesarian was the worst experience in my life. I wanted to have a natural birth and then I had contractions for 5 days before I gave birth…and I asked for an epidural and it had no effect so when they cut me I felt it and fainted…It was all so traumatic and I am sure it caused my postnatal depression…” (2073. UK)*

Similarly, participant (2069), where this was her second pregnancy, related to the enormous tiredness having to take care of a new-born, with a sense of loneliness and no support. Interestingly enough, this participant related as well to postnatal depression and it suggests that mothers who related to motherhood as a type of a burden were more likely to struggle with different levels of postnatal depression.

> “*Giving birth, it was not at all as I expected…My parents live just around the corner and I expected them to help…but I felt so alone…there was no routine, no sleep…you got all of these expectations and no one tells you how it would be…”(2069. UK)*

Another participant, (1003), in her fourth pregnancy, spoke about the difficulties, anxiety and sense of helplessness during pregnancy. Having giving birth she felt better, however, when asked to describe what motherhood is like for her, she related to it first as giving, but then corrected it to self-sacrifice. During the interview this woman looked exhausted and weak. Her voice was very low and she was breastfeeding her baby during the whole length of the interview. In a way, it seemed that her new-born was literally sucking her energy, leaving her weaker and helpless as the interview progressed.

> *"I felt nauseous while being pregnant, but I mainly remember how anxious and worried I constantly was. I wasn't that young anymore and always worried something is wrong with the baby… Motherhood…motherhood for me is giving yourself…No, it's self-sacrificing…"* (1003. Israel).

Thus, although this participant does not directly express her inability to parent, a sense of helplessness does emerge as she relates to her motherhood as self-scarifying.

Although findings from this research reveal three different perceptions of motherhood, re-examining the data suggested that women tend to share more than one perception simultaneously. A possible explanation might be that being a mother is so complicated and challenging that mothers tend to address their motherhood as associated with a certain situation. For example, a mother who feels confident in feeding might address her motherhood as ideal or as good enough whereas a mother who struggles might address it as a burden.

An additional explanation might be associated with infant age. For example mothers might experience more challenges as babies get older possibly resulting in fewer mothers feeling that they are "ideal" mothers.

Finally, this was the first interview out of four and mothers might not have been fully comfortable sharing their struggles with the researcher. It is possible that analysing the second interviews (babies age 6-12 months) might reveal more mothers sharing several perceptions of motherhood simultaneously.

At this first interview most of the mothers associated their role as a mother with more than one construct. Only 6 mothers indicated experience of all three concepts of motherhood (illustrated by an asterisk in table 6 2).

Table 6-2; Individual Israeli and UK women illustrating their perception of motherhood within the three main themes extracted from mothers' talk.

Participant Number	Country	Ideal	Good Enough	Burden
1003	Israel	✓		✓
1005	Israel	✓	✓	
1006	Israel	✓	✓	
1011	Israel		✓	
1016	Israel	✓	✓	
1018	Israel	✓	✓	
1022	Israel		✓	
1029	Israel	✓	✓	
1031	Israel		✓	
1032	Israel		✓	✓
1040	Israel		✓	
1043	Israel	✓	✓	
1045	Israel	✓		
1046*	Israel	✓	✓	✓
1048	Israel	✓	✓	
1050	Israel	✓		
1053	Israel	✓	✓	
1055	Israel		✓	
1062	Israel		✓	
1064	Israel		✓	
1065	Israel		✓	✓
1067	Israel	✓		✓
1068	Israel	✓		
2008	UK	✓	✓	
2011	UK	✓	✓	
2018	UK	✓	✓	
2025	UK	✓	✓	
2052	UK	✓	✓	
2054	UK	✓	✓	
2055*	UK	✓	✓	✓
2057*	UK	✓	✓	✓
2059*	UK	✓	✓	✓
2062	UK	✓	✓	✓
2066	UK		✓	
2067*	UK	✓	✓	✓
2069	UK		✓	✓
2070	UK			✓
2073*	UK	✓		✓
2076	UK	✓		
2078	UK	✓	✓	
2082	UK		✓	
Total:		N =28(68%)	33(80%)	13(32%)
Israel:		14(67%)	18(86%)	5(24%)
UK:		14(77%)	15(83%)	8(44%)

6.4 Discussion:

This aspect of the research aimed to address perceptions of motherhood in women from Israel and the UK, 2-6 months after giving birth. The main findings suggest that women tend to relate to motherhood as either “ideal”, “good enough” or as a burden and associate motherhood with the mode of feeding. Thus, a breastfeeding mother regards herself more positively than a bottle feeding mother. The findings are in agreement with findings from chapter 5 indicating on positive mealtime interactions for breastfeeding mothers compared to non-breastfeeding mothers.

Our findings also indicate that although women in our study originally addressed their role as a mother as solely associated with one type of motherhood, re-examining the data revealed that the three types of mothers often co-existed in each woman. As such, most of the women regarded their motherhood at least at one point as good enough or as ideal with less women addressing motherhood as a burden as well.

Interviews took place in Israel and the UK and given that Israel is a country in which the majority of Israelis agree that living without children is empty (Glickman. 2003) differences in perceptions of motherhood were expected. Our findings suggest that more Israeli mothers addressed their motherhood as an “ideal” and aspired for an “ideal” motherhood, whereas UK mothers spoke more openly about postnatal depression and the struggles within motherhood. It is possible that such differences are a result of daily life in Israel, a country in which Jewish-Israeli women are subject to historical and political drives to counterbalance the current existential threat to the population in Israel and to regenerate the population following the Holocaust (Kahn, 2000). Moreover, even today, Israel is a country which encourages procreation; there is highly advanced care in fertility and reproduction treatments, restrictions against abortion (Teman, 2008) and a large number

of genetic tests offered that aim to prevent birth defects (Rosner et al., 2009; Remmenick. 2006). Thus, the high levels of pressure to regenerate the population might result with an inability to admit to the struggles of being a mother. In support, the social and cultural importance of women raising children as part of their identity, Israeli women with no children tend to be regarded as *"not yet pregnant" ("Adain lo beherayon")* rather than as voluntarily or involuntarily childless.

"I am always available for my children and my children are my entire world".

McMahon (1995) states that being a mother is commonly related to as being part of a woman's role in society. Similarly, Chodrow (1978) and Ruddick (1980) argue that because women are mainly responsible for childcare, girls remain connected to their mothers and develop an orientation towards nurturing through an attachment and identification process. In support, a study by Douglas and Michaels (2004) indicated that the context of "mums" promulgate standards of perfection that are beyond reach. Thus, both attitudes tend to obscure any difficulties inherent in motherhood (Marshall, 1998) and promulgate the myth of the "ideal mother", which has been defined as a mother who is always available and committed to the well-being of her child (Shelton and Johnson, 2006).

Most of the women in our study, and more Israeli mothers compared to mothers from the UK, expressed their desire to be an ideal mother, hence always being there for their children and totally available for them. In support, Ruth Ginsberg, who explored representations of motherhood in Hebrew novels between 1881-1992 (Ginsberg, 1997), argued that in most of this literature the Jewish mother is represented as a *Yiddisher mamma*, a stay at home mother who cooks and takes care of her family, a strong mother who ignores her own needs and is totally available to her children and family. Thus, our findings might suggest on higher levels of expectations from Israeli mothers to exceed in all traditional roles women are expected to follow. However, in reality, the "ideal mother" is unlikely to exist, but the image, which is easily conjured up by many mothers, establishes a very high

standard for what is a “good mother” and what can be regarded as a “not good one” (Parker, 1995).

“I am available for my children, but I have my own life as well”.

The second type of mother is described by women in our study as devoted to her child (like the first type of mother) but also allowing time for herself. Such mothers are aware and accepting of their ability to do their best, which may be sufficient in certain occasions and disappointing in others.
Our findings suggest that this type of mother was mainly regarded by participants as a mother-baby unit. As such, the mother provides a safe ground for mistakes and relates to motherhood as a journey. On a journey, although both mother and baby walk together, they are not equal partners, as it is the mother who transfers the knowledge and direct this journey. Such a journey might also be related to as part of maternity leave (as it has its enjoying parts and its struggles) and for Israeli women the length is shorter compared to mothers from the UK (http://www.gov.il/firstgov/english; https://www.gov.uk/maternity-pay-leave/overview).
Israeli women are encouraged to return to work 14 weeks following birth. Extending maternity leave might result in losing their job and given the low level of child allowance; women have no choice but to return to work. By contrast, our findings indicated that most of the UK mothers extended their maternal leave or reduced the amount of working hours per week. Thus, although the UK government encourage a long maternal leave, we would like to suggest a further observation, not directly associated with the length of maternal leave, for Israeli’s women return to work.
We would like to argue that Israeli women are pushed by society to be the best. Similar to other countries, Israel is a society with two providers in the home (Ekert-Jaffee and Stiert.2009) and 80% of Jewish women aged 25-54 are working (Kraus. 2002). However, although women are encouraged to work and earn money, they are also expected to act as the main caretakers of their family and are expected to work inside as hard and as much as they work outside the home. Having to highly succeed in both jobs and continue

to have children (90% of women have at least 2 children), Israeli women are naturally pushed into the pressure of being a full time mother and a full time employed woman. Having to face such levels of pressure and then face the stressful reality of having to leave their babies at such an early age and return to work, clearly reveal the conflict that Israeli mothers face between being pushed to be the best while having to accept that they can only be "good-enough". Moreover, our findings might suggest a sense of guilt arising from the gap between the internal perceived image of motherhood and the actual motherhood perceived by the participants. Taking into account that there is no such thing as an "ideal mother", it is important to acknowledge that there are times mothers feel helpless, as if they are carrying the entire burden of motherhood alone, as addressed in the third type of motherhood.

"I am not sure I can do it...be a mum..."

As previously discussed, the first type of mother we addressed is a type of mother who is always and completely available for her child. Such mothers can be regarded as situated at one end of the continuum, with the second type of mother, accepting her ability to simply do her best, in the middle. We suggest that the third type of mother is situated at the other end.
The third type of mother might be unable to provide her infant with a secure and adequate environment due to her sensing her own lack of confidence in her ability to be a mother. As such, she is likely to demonstrate an avoidance type of attachment, often leaving her infant on its own and being unable to fully take care of it. Our findings suggest that such mother feels the weight of the world on her shoulders. Arendell (2000) suggests that motherhood is often associated with negative psychological well-being. Thus, symptoms of depression, anxiety and lack of happiness are regarded as a common maternal experience. Moreover, being a mother and being responsible for the life of another is indeed a considerable responsibility. Not all mothers welcome the total dominance of the infant in their lives, nor do they all adjust well to the change in life this involves, especially in the first few weeks, when their own basic needs are postponed. This type of mother is unable to see

the positive aspects of motherhood, focusing instead on the loss of self to other as a high price to pay. As such, she identifies with her baby's sense of helplessness and, similar to her baby, she too feels helpless, alone and isolated.

Findings from our study indicate that slightly more UK mothers addressed helplessness within motherhood and faced postnatal depression. In support, Marshall et al (1998) argue that working mothers experience lower levels of distress compared to full time mothers. Our findings indicate that significantly more Israeli mothers returned to work compared to mothers from the UK while the interviews were conducted, potentially contributing to higher levels of depression and distress, and a sense of burden in the UK.

Although findings from this research indicate on three different perceptions of motherhood, re-examining the data suggested that women tend to share more than one perception simultaneity. A possible explanation might be that being a mother is so complicated and challenging that mothers tend to address their motherhood as associated with a certain situation. For example, a mother who feels confident in feeding might address her motherhood as ideal or as good enough whereas a mother who struggles might address it as a burden. An additional explanation might be associated with infants age. Thus, women might struggle more with mothering as babies age increase possibly resulting in fewer mothers feeling as ideal mothers. Finally, this was the first interview out of four and mothers might have still not felt fully comfortable sharing their struggles with the researcher. It is possible that analysing the second interviews (babies age 6-12 months) might reveal more mothers sharing several perceptions of motherhood simultaneity.

6.5 Conclusion:

Our study identified three types of experiences of motherhood ranging from the devotional to the burdened. Most likely motherhood involves this range within all mothers, and there are times when this experience shifts from bliss to burden within the same mother and even within the same day.

The findings suggest that the image of the “ideal mother” still exists, setting up a barrier to women who are unable to act according to such ‘impossible’ high standards. Findings from the study indicated as well that being an “ideal mother” is part of the Jewish and Israeli culture, not readily allowing mothers to admit the experience of burden within the context of a national mission to encourage motherhood and reproduction. Interestingly enough, UK mothers were more willing to admit their struggles compared to mothers from Israel, which does not necessarily indicate a better coping mechanism for Israeli women compared to women from the UK.

We would like to suggest that encouraging mothers to talk more about the struggles and stresses of being a mother, helping them to break the silent agreement that motherhood is always easy and joyful, might lead to an improvement in women’s general well-being and empower mothers’ beliefs in their ability to parent.

6.6 Strengths and limitations:

According to our knowledge this study was the first to address Israeli and UK women’s perceptions of motherhood. It was also the first to explore perceptions of motherhood in a country which highly embraces fertility. Our findings revealed the importance of better understanding of how women feel regarding being a mother. Nevertheless, this study should be considered with its limitations.

The first relates to the fact women were from a relatively high socio-economic status (SES) and all were highly educated. Thus, exploring perceptions of motherhood within a more varied sample might reveal

different findings. Second, the relevant interviews were part of a filmed feeding interaction between a mother and her baby. As such, some women breastfed while being filmed. They may therefore be particularly oriented towards questions related to eating, compared to questions addressing their experience as a mother, which might have affected the data. Moreover, as the lead researcher (NS) conducted the interviews she was not blind to mother's general mood and the atmosphere in the house which might have influenced her understanding of the themes. Finally, although we aimed to address potential cultural differences, the identified literature was limited with no research exploring Israeli mothers compared to mothers from other western countries or other countries in which women are expected to be fertile, as in Arab cultures for example. More data was available for mothers from the UK, however, this mainly concentrated in childless women or in teenage mothers. Thus, although we struggled in addressing our findings as related to similar studies in Israeli and UK culture, this study is important because of its novelty and future research should continue and focus on motherhood and the experience of motherhood in different cultures.

7 Discussion:

Pregnancy is a time when women are advised to maintain a healthy lifestyle and accept the increase with body weight linked to the healthy development of their fetus. Having giving birth then taking care of a newborn is all consuming and some women struggle to achieve a healthy lifestyle. It is not surprising therefore that the postpartum is often identified as a period of dissatisfaction including dissatisfaction with body weight and efforts to lose the “baby” weight through active dieting or restrained eating. Prior to pregnancy maternal eating behavior would have affected only one person but having given birth maternal eating habits and behaviours such as restraint have the potential to impact upon the child too.

The literature describes associations between maternal eating behaviours and its effect on the child however most of the research explores such associations in samples of pre-school children (Carper et al., 2000). The research exploring mother-infant eating behaviours addressed samples of women with eating disorders (Lacy and Smith. 1987; Stein and Fairburn. 1989) suggesting, for example, that mothers with bulimia tried to slim their babies whereas women with anorexia struggled in feeding. An earlier study by Stein et al (1994) observed mealtime interactions between mothers (with and without a previous eating disorder) and their 12-14 months infants and noted more intrusive interactions and expressed negative emotions during mealtime for mothers with a previous eating disorder.

The studies set out in this thesis were developed to explore Israeli and UK women feelings and eating behaviours from pregnancy until two years following birth using both quantitative and qualitative methods. The research aimed to explore if eating behaviours identified during pregnancy (Shloim et al., 2013) remained stable or changed after women gave birth.

An additional aim of this research was to explore mothers' perceptions of their infants' eating and to investigate mealtime interactions. The sample consisted of Israeli and UK women thus an additional component of this research was to compare findings from both countries. The main findings are discussed in this chapter followed by the implications, limitations and potential directions for future research.

The rationale for comparing between both countries is in part to compare cultures which differ in the extent to which body dissatisfaction is expressed and the pressure on women to become mothers is high. To our knowledge this is a unique comparison which was not made before.

In the introduction to this thesis the differences between Israel and the UK are stated. The findings suggest that although both Israel and the UK are considered as western countries, life in Israel is very different than life in the UK. Interesting enough, such differences were not previously addressed.

The literature search identified gaps in our knowledge especially exploration of maternal eating behaviours and well-being over time in a systematic way. Thus previous research rarely addressed how and what women eat while being pregnant, for example, and if such eating behaviours change in the postpartum. Understanding more about mother's eating behaviours and well-being and how these vary from pregnancy to the postpartum is important as it is likely to be associated with feeding perceptions and parenting styles. All have been previously associated with the risk of developing obesity later on (Costanzo et al., 1985; Birch et al., 2001; Olvera and Power. 2010).

The key finding from this thesis notes that mothers' BMI acted as the strongest predictor for self-esteem, eating behaviours and satisfaction with body. Thus during pregnancy and the postpartum heavier mothers had higher levels of self-esteem, restrained their eating more and were less satisfied with their body compared to healthy-weight mothers. Moreover, mothers' eating behaviours and well-being during pregnancy were positively

associated with eating behaviours and well-being in the postpartum. Mothers who restrained their own eating were more concerned for their babies being overweight compared to mothers who did not restrain their eating. Such mothers also reported on slower eating pace for their babies. Mothers with high levels of self-esteem during pregnancy and the postpartum reported on higher levels of enjoyment of food for their babies and were more aware of babies hunger and satiety cues. Such associations are the core foundation for this discussion.

The findings from this thesis indicate as well an overall high level of similarity in eating behaviours and well-being among women from both countries thus less than originally hypothesised. This may reflect a true result or may be attributable to a relatively small sample size. Nevertheless, Israeli mothers were more concerned with their appearance during pregnancy and the postpartum compared to mothers from the UK (chapter 3). They were also more concerned for their babies being overweight or overeating (chapter 4). Thus maternal dissatisfaction with body was associated with high concern for babies' appearance (being overweight) and eating.

Several unexpected, marginally significant differences were found as well, such as higher levels of emotional eating for Israeli pregnant women (P=0.07) and higher levels of food responsiveness for UK mothers in the second follow-up (P=0.06), however since these differences were observed only once in 4 measurement periods these may be spurious.

The key findings from each study in this thesis and the associations between mothers' well-being and eating behaviours and maternal perceptions of babies' eating are summarized in Figure 7-1.

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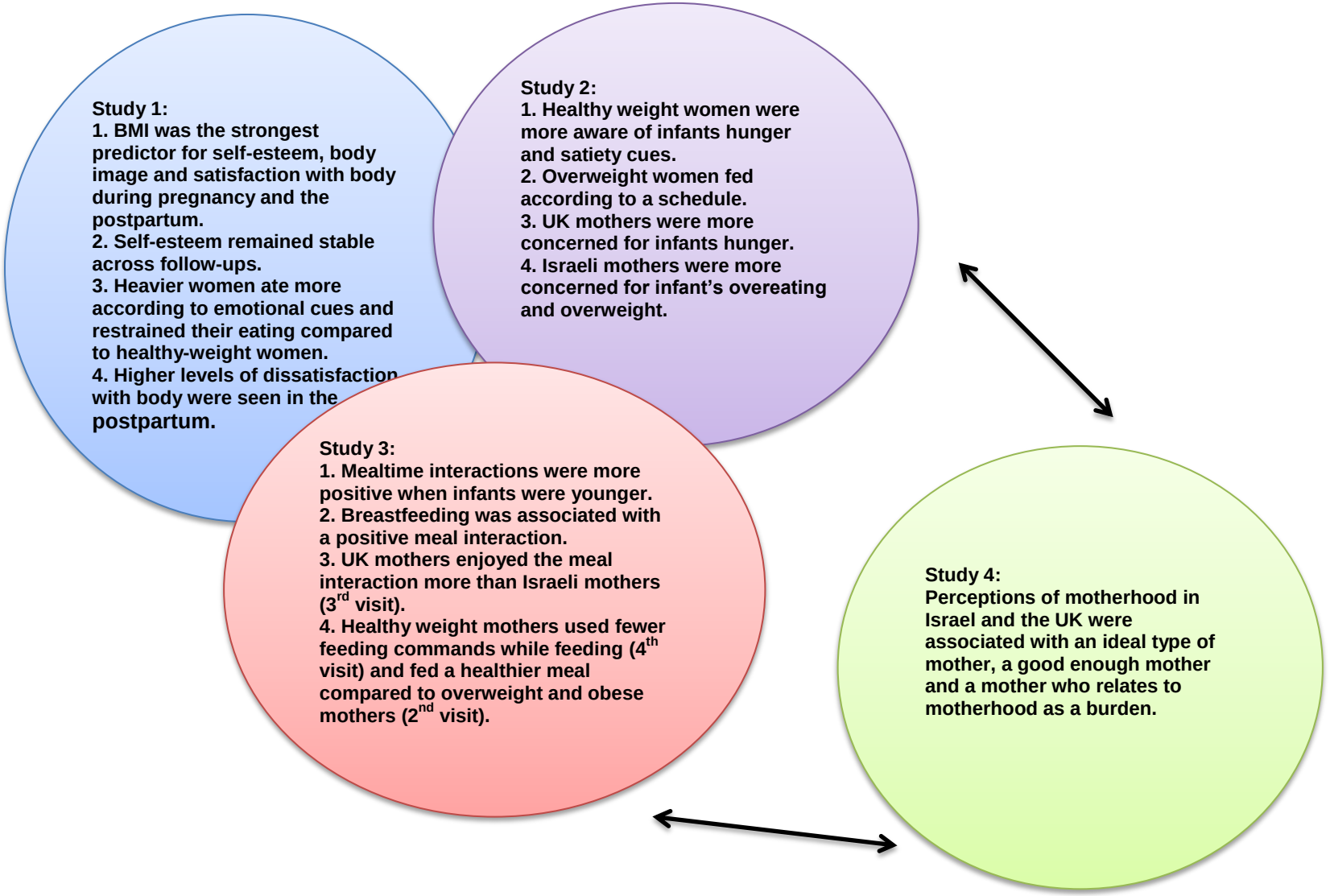

Figure 7-1; Summary of main findings of the thesis.

Study 1: Feelings and eating behaviours in the postpartum.
Study 2: Mothers perceptions of babies eating behaviours.
Study 3: Mealtime interactions.
Study 4: Perception of motherhood.

7.1 Synthesis of findings:

The first aim of this thesis was to explore maternal eating behaviours and well-being from early pregnancy to the postpartum. This was achieved by asking mothers to fill out questionnaires assessing self-esteem, eating behaviours and body image every six months for duration of two years (chapters 2-3).

The findings indicate that eating behaviours were similar in early pregnancy and the postpartum. Levels of restrained eating remained stable indicating that our sample consisted of women whose levels of restrained eating did not vary during and following pregnancy. Higher levels of emotional eating were identified 6-12 months postpartum compared to early pregnancy and significantly higher levels of external eating were seen 12-18 months postpartum.

The research literature suggests that women generally follow a healthy lifestyle during pregnancy (Stein and Fairburn. 1996; Verbekea and Bourdeaudhuij. 2006; Damton-Hill et al., 2004; WHO; 2014) whereas after giving birth women are more concerned with their weight and demonstrate a higher tendency to restrain and control eating behaviours (Rosner and Ohlin. 1995; Carter et al., 2000). Most women in our sample initiated breastfeeding and as such it is possible that in the first few months postpartum women maintained a healthy eating routine as they were aware of its importance for lactation (Shah et al., 2010) and the healthy development of their new-born. However, differences were identified between healthy weight mothers and overweight and obese mothers eating behaviours. Heavier mothers ate according to emotional cues compared to healthy weight mothers consistent with previous research indicating that as BMI increase levels of emotional eating increase as well (Geliebter and Aversa. 2003; Van Strein. 1995). To our knowledge this is the first time such associations were explored in pregnancy and the postpartum.

A possible explanation for the higher levels of emotional eating postpartum might be that in the first few months following birth mothers are still on maternal leave and enjoy the bond with their new-born. This period is challenging as women need to adjust to motherhood and learn to interpret their new-born's needs. In this time the baby is completely dependent on its mother thus the mother adapts her entire existence and subsequent behaviour to whatever the baby expresses as a wish or a desire (Winnicott. 1956). For some women the sense of total dependency is sensed as an opportunity to prove their total devotion to their new born whereas for some this may be experienced as a burden (chapter 6; Shloim et al., 2014. Submitted). Nevertheless, mothers are invested in their babies' needs resulting in less available time for them.

Findings from this research suggest as well that healthy weight mothers were more aware of their infants' hunger and satiety cues compared to overweight and obese mothers whereas overweight and obese mothers fed according to a schedule. Thus as overweight and obese women tend to be less aware of their own hunger and satiety cues (Nijs et al., 2010) and use external cue such as time/schedule for their own eating (Dressler and Smith. 2013) they are possibly applying a similar feeding strategy to their infants

Self-esteem remained stable during pregnancy and the postpartum as seen in chapter 3. The findings suggest as well that heavier women had higher levels of self-esteem compared to healthy-weight women. Although the RSEQ is the most validated tool for assessing self-esteem, asking one to assess its own worth is challenging and is likely to be biased and change according to external events. For example, women in this study might have filled out the questionnaire after having a complicated day with their baby, potentially resulting with them feeling less capable to mother him or her. For those women at that specific time levels of self-esteem might have been low.

On the other hand, women who had a more positive day might have felt in generally more capable and worth resulting with higher levels of self-esteem. Thus underrating ones sense of worth cannot be done solely via a questionnaire and should combine other methods such as interviews

In this thesis an in-depth study was conducted addressing women's perceptions of motherhood 2-6 months postpartum. The findings from this study noted that most women aspired for an "ideal" type of motherhood indicated that for many there is a gap between their perceived motherhood to their desired one.

Thus women who scored high in the self-esteem questionnaire (chapter 3) and showed stability within such high levels over time (the RSEQ) might have still felt worthless in certain times (chapter 6) as they "failed" to act as an "ideal" type of mother. Therefore understanding more about self-esteem in the postpartum is important as low self-esteem is associated with depression (Fontaine and Jones. 1997), firmer control over infants (Lutenbacher. 2002) and less ability to cope with daily stress (Gelfand et al.1996).

Those mothers with higher levels of self-esteem were also more aware of their baby's hunger and satiety cues and recorded higher levels of enjoyment of food for their babies compared to mothers with lower levels of self-esteem. Thus, and in support to previous findings addressing maternal satisfaction with body and perceptions of babies' eating behaviours, a mother who feels better about herself is likely to be more available for her infant's needs and be more responsive during feeding.

As time progress infants become less dependent on their mothers. For some women, and particularly for Israeli women, this is also a time of returning to work. Mothers have less time for themselves having to juggle between work and family life. With respect that women cope differently with stressful events and distress feelings, research suggests that emotional overeating is

a common coping strategy for heavier women (Kobrin and Lmft. 2012). Thus heavier women in our study might have overeaten as a coping mechanism with the struggles inherited within motherhood.

Mothers who ate according to emotional cues reported higher levels of emotional overeating for their babies (chapter 4). Those mothers also followed responsive feeding (chapter 4). Nevertheless, the baby seemed to identify with their mother's emotional state, observed her eating and followed the same eating style.

An additional possible explanation might be that the questionnaires are structured to address maternal perceptions of babies eating and as such, mothers who eat themselves according to emotional cues might hold similar perceptions of their babies eating behaviours as well.

Finally, the findings indicate as well that mothers who restrained their eating had babies who ate less rapidly compared to babies whose mothers did not restrain their eating. According to our knowledge restrained eating at such a young age has not yet been explored, however, it might be that a slow eating pace is a modified form of restrained eating as it allows the baby a better control on the amount of food it consumes. Therefore future research could benefit from exploring such associations which could be observed by measuring the amount of food babies eat.

Figure 7-2 presents a possible association between maternal well-being and infant eating traits. The figure illustrates only one possible scenario which is likely to vary between mothers. Nevertheless, it highlights the importance of addressing the possible negative link between mothers' eating to their baby's eating.

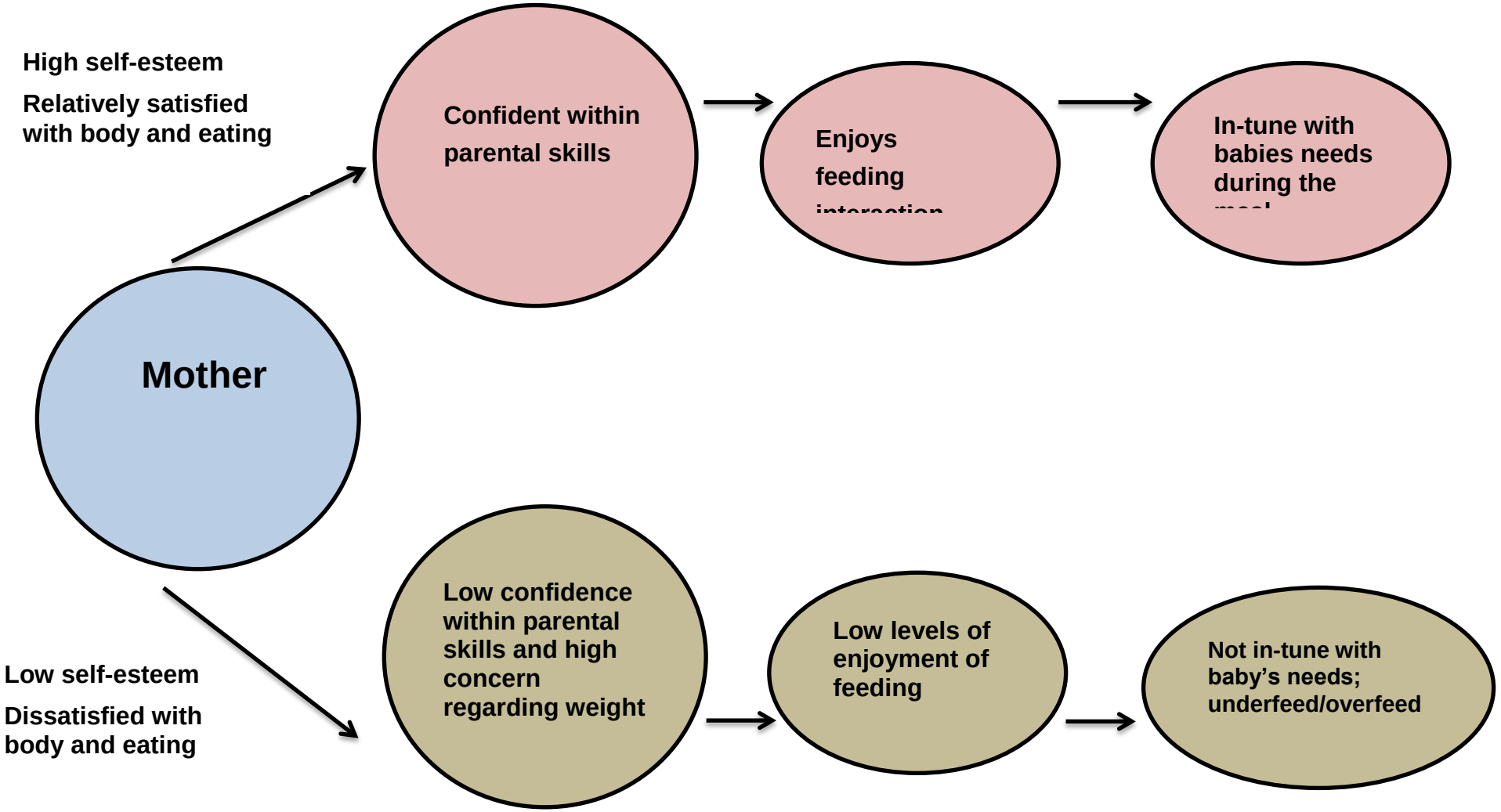

Figure 7-2; Possible scenario of feeding behaviours as associated with a mother's eating and well-being.

7.2 Summary:

The findings of the current thesis indicate that eating behaviours in early pregnancy are positively associated with eating behaviours in the postpartum and are associated as well with babies' eating traits. Given that eating experience in early life has an impact on later eating it is important to consider how to support mothers who are at risk for poor eating behaviours and whose wellbeing might influence poor parenting and feeding practices from early pregnancy to the postpartum. Supporting those mothers will encourage more positive meal interactions and parenting styles.

7.3 Limitations of the thesis:

The main limitations of the thesis are:

- The sample size and representativeness. A larger sample would have allowed further in-depth sub-group analysis within countries according to each follow-up and BMI (fully addressed in chapters 3-4).

- The self-reported weight and the high levels of missing data regarding babies' weight (fully addressed in chapters 2-5).

- The questionnaires which were used and were not originally designed for pregnancy and the postpartum (fully addressed in chapters 2-3).

- No specific questionnaires were used to identify cultural differences and it is likely that such specific questionnaires might have contributed to a better understating of the findings.

- Women were from a mainly high socio-economic status (SES) and education. As such, those women have the opportunity to buy healthy type of food and are probably more aware of the importance of healthy eating and breastfeeding compared to mothers from a low SES. They are also privileged by having the opportunity to worry about their baby overeating compared to other women, for example from a low SES, which are more likely to worry if their baby is hungry and they don't have enough food to feed it (fully addressed in chapters 4-5).
- Women in the study were asked to report on their self-esteem, eating behaviours, feeding perceptions and satisfaction with their body. It is possible that for some women being made more aware of their own eating behaviours resulted in some changes in eating. Thus the increased awareness may have resulted in either positive (healthier eating) or negative (more restrained eating) as a function of involvement in the study. However, we have no way of monitoring this.

Thus with respect to this thesis contributing to previous research mainly by noting on associations between maternal eating behaviours and well-being to perceptions of infants eating, the findings should perhaps be regarded only as representative for women from high SES. Having the chance to improve the methodology of this research, the recruitment would have focused on women from deprived areas as well which are likely to demonstrate very different mealtime interactions. This is an area the researcher (NS) is very keen to further explore. Finally, it is possible that by conducting repeated analyses some of the significant findings may have appeared by chance. This could potentially taking into account by changing the levels of significance from $P<0.05$ into $P<0.01$ or using the Bonferroni correction. However this was rejected because the power calculation showed we have sufficient power to detect significant differences and secondly where significant differences occurred these were associated with p values less than $p<0.01$.

7.4 Conclusions and future research:

Limited research explored self-esteem during pregnancy and the postpartum and the identified studies suffered from poor methodology and relied on a small sample. More studies were identified while exploring satisfaction with body however, none of them contained a follow-up for more than 12 months. Addressing women's eating behaviours identified several studies exploring eating disorders in pregnancy and the postpartum thus were not representative for the general population. No studies were identified as exploring self-esteem, eating behaviours and body image from early pregnancy until 2 years postpartum thus the research in this thesis is novel. Data were collected every six months and the analysis points to the first follow-up at 2-6 months postpartum as a critical time for assessing eating and feeding behaviours. During this period women decide for how long to breastfeed, when to begin weaning and participate in numerous feeding interactions. This is also a time women are more likely to experience the highest levels of dissatisfaction with their body which is likely to be associated with their eating behaviours. Thus with respect to the valuable findings from each of the follow-ups which are described in this thesis, future research should focus on the early postpartum as the tipping point for the evaluation of eating and feeding behaviours.

This thesis shows the feasibility in exploring such measurements in a cross-cultural sample for duration of two years postpartum. However, the questionnaires were not specified for pregnancy and the postpartum and as such might not be sensitive enough to identify possible differences regarding how eating behaviours and well-being might vary from usual. Therefore future research should aim to develop unique tools for this period. For example, in terms of eating behaviours women might restrain their eating attempting to avoid the consumption of unhealthy food but will still score high on the restrained scale.

Another example relates to levels of self-esteem. A novel questionnaire assessing self-esteem in pregnancy and the postpartum would benefit by including specific questions regarding motherhood and its potential effect on self-worth.

The questionnaires which were used to assess eating behaviours in infancy have been all previously validated and as such we feel the measures are representative for assessing babies eating. However, an additional competent of this thesis included filming a feeding interaction and the limitations of the scale (SFES) which was used in this thesis are addressed in chapter 5. Nevertheless, there is still a need to develop additional scale for assessing recorded mealtime observations. Such scales should be relatively short (not include too many items such as the NCAST) and easy to use. They should also contain both nutritional and psychological aspects which are associated with feeding and eating in young age.

Finally, future research should aim to generate a simple document which will be delivered to mothers. The document should include a short and clear message explaining how to identify infants hunger and satiety cues during the meal. Being aware to such cues is equal to a learning process of a new language and based on understandings from this research many mothers are not aware of the existence of such cues. Thus by sharing such information (in a basic form) with the mothers it is likely they will later on follow a more responsive feeding.

7.5 Final conclusions:

The prevalence of maternal obesity remains high and many women demonstrate high levels of dissatisfaction with body during pregnancy and the postpartum. Whiles during pregnancy women are expected to gain some weight, having given birth the expectation is to immediately return to the pre-pregnancy body size and weight. For some women such pressure is challenging resulting in restrained eating, high levels of dissatisfaction with body and less positive feeding behaviours. In this thesis we identified that women who restrained their eating during pregnancy were likely to restrain their eating in the postpartum as well and possibly restrain the infant's eating (indicated by mothers concern for infant's being overweight or overeating).

As eating behaviours are shaped in early life and maternal attachment is crucial for a healthy development of the baby, research should identify those mothers who are at risk for unhealthy eating behaviours and provide them with sufficient support allowing a healthy development for themselves and their new-born.

References:

Abraham, S., Taylor, A., & Conti, J. (2001). Postnatal depression, eating, exercise, and vomiting before and during pregnancy. *International Journal of Eating Disorders, 29*(4), 482-487.

Abrams, B., Altman, S. L., & Pickett, K. E. (2000). Pregnancy weight gain: still controversial. *The American journal of clinical nutrition, 71*(5), 1233s-1241s.

Agras, W. S., Hammer, L. D., Huffman, L. C., Mascola, A., Bryson, S. W., & Danaher, C. (2012). Improving healthy eating in families with a toddler at risk for overweight: A cluster randomized controlled trial. *Journal of developmental and behavioral pediatrics: JDBP, 33*(7), 529.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (2014). *Patterns of attachment: A psychological study of the strange situation*: Psychology Press.

Alfasi, G., Schwartz, F. A., Brake, S. C., Fifer, W. P., Fleischman, A. R., & Hofer, M. A. (1985). Mother-infant feeding interactions in preterm and full-term infants. *Infant behavior and Development, 8*(2), 167-180.

Allen, K. L., Byrne, S. M., McLean, N. J., & Davis, E. A. (2008). Overconcern with weight and shape is not the same as body dissatisfaction: Evidence from a prospective study of pre-adolescent boys and girls. *Body Image, 5*(3), 261-270.

Amador, N., Juárez, J. M., Guízar, J. M., & Linares, B. (2008). Quality of life in obese pregnant women: a longitudinal study. *American journal of obstetrics and gynecology, 198*(2), 203. e201-203. e205.

Amir, L. H., & Donath, S. (2007). A systematic review of maternal obesity and breastfeeding intention, initiation and duration. *BMC pregnancy and childbirth, 7*(1), 9.

Anderson, A., Campbell, D., & Shepherd, R. (1993). Nutrition knowledge, attitude to healthier eating and dietary intake in pregnant compared to non-pregnant women. *Journal of Human Nutrition and Dietetics, 6*(4), 335-353.

Anschutz, D. J., Kanters, L. J., Van Strien, T., Vermulst, A. A., & Engels, R. C. (2009). Maternal behaviors and restrained eating and body dissatisfaction in young children. *International Journal of Eating Disorders, 42*(1), 54-61.

Arendell, T. (2000). Conceiving and investigating motherhood: The decade's scholarship. *Journal of Marriage and Family, 62*(4), 1192-1207.

Armstrong, J., & Reilly, J. J. (2002). Breastfeeding and lowering the risk of childhood obesity. *The Lancet, 359*(9322), 2003-2004.

Apter, Alan; Shah, Mohammed Abu; Iancu, Iulain; Abramovitch, Henry; Weizman, A.; Tyano, S.

Genetic, Social, and General Psychology Monographs, Vol 120(1), Feb 1994, 83-99.

Aschemann-Witzel, J. (2013). Danish Mothers' Perception of the Healthiness of Their Dietary Behaviors During Transition to Parenthood. *Journal of Family Issues, 34*(10), 1335-1355.

Augustus-Horvath, C. L., & Tylka, T. L. (2011). The acceptance model of intuitive eating: a comparison of women in emerging adulthood, early adulthood, and middle adulthood. *Journal of Counseling Psychology,*

58(1), 110.

Baird, J., Fisher, D., Lucas, P., Kleijnen, J., Roberts, H., & Law, C. (2005). Being big or growing fast: systematic review of size and growth in infancy and later obesity. *BMJ: British Medical Journal, 331*(7522), 929.

Baker, R. S., Foote, J., Kemmeter, P., Brady, R., Vroegop, T., & Serveld, M. (2004). The science of stapling and leaks. *Obesity surgery, 14*(10), 1290-1298.

Balsam, R. H. (2003). The vanished pregnant body in psychoanalytic female developmental theory. *Journal of the American Psychoanalytic Association, 51*(4), 1153-1179.

Bar Dayan, Y., Elishkevits, K., Grotto, I., Goldstein, L., Goldberg, A., Shvarts, S., et al. (2005). The prevalence of obesity and associated morbidity among 17-year-old Israeli conscripts. *Public Health, 119*(5), 385-389.

Barlow, J., Whitlock, S., Hanson, S., Davis, H., Hunt, C., Kirkpatrick, S., et al. (2010). Preventing obesity at weaning: parental views about the EMPOWER programme. *Child: care, health and development, 36*(6), 843-849.

Barnard, K. E., Bee, H. L., & Hammond, M. A. (1984). Developmental changes in maternal interactions with term and preterm infants. *Infant behavior and Development, 7*(1), 101-113.

Barnes, J., Stein, A., Smith, T., & Pollock, J. (1997). Extreme attitudes to body shape, social and psychological factors and a reluctance to breast feed. *Journal of the Royal Society of Medicine, 90*(10), 551-559.

Barak, Y., Sirota, P., Tessler, M., Achiron, A., & Lampl, Y. (1994). Body esteem in Israeli university students. *Israel Journal of Psychiatry and*

Related Sciences.

Bartington, S., Griffiths, L. J., Tate, A. R., & Dezateux, C. (2006). Are breastfeeding rates higher among mothers delivering in Baby Friendly accredited maternity units in the UK? *International Journal of Epidemiology, 35*(5), 1178-1186.

Ball, J. A. (1987). *Reactions to motherhood: The role of post-natal care*. CUP Archive.

Baughcum, A. E., Powers, S. W., Johnson, S. B., Chamberlin, L. A., Deeks, C. M., Jain, A., et al. (2001). Maternal feeding practices and beliefs and their relationships to overweight in early childhood. *Journal of Developmental & Behavioral Pediatrics, 22*(6), 391-408.

Beck, C. T. (2001). Predictors of postpartum depression: an update. *Nursing Research, 50*(5), 275-285.

Beebe, B., & Lachmann, F. M. (1988). The contribution of mother-infant mutual influence to the origins of self-and object representations. *Psychoanalytic psychology, 5*(4), 305.

Bellew, M., & Hill, A. (1991). Schematic processing and the prediction of depression following childbirth. *Personality and Individual Differences, 12*(9), 943-949.

Bentley, M. E., Wasser, H. M., & Creed-Kanashiro, H. M. (2011). Responsive feeding and child undernutrition in low-and middle-income countries. *The Journal of nutrition, 141*(3), 502-507.

Berger-Achituv, S., Shohat, T., Romano-Zelekha, O., Ophir, E., Rachmani, S., Malovizky, D., et al. (2005). Widespread use of soy-based formula without clinical indications. *Journal of pediatric gastroenterology and*

nutrition, 41(5), 660-666.

Berthiaume, M., David, H., Saucier, J.-F., & Borgeat, F. (1998). Correlates of pre-partum depressive symptomatology: A multivariate analysis. *Journal of reproductive and infant psychology, 16*(1), 45-56.

Bhopal, K. (1998). *South Asian women in East London: Motherhood and social support.* Paper presented at the Women's Studies International Forum.

Bibring, G. L., Dwyer, T. F., Huntington, D. S., & Valenstein, A. F. (1961). A study of the psychological processes in pregnancy and of the earliest mother-child relationship. *The psychoanalytic study of the child*.

Birch, L. L. (2006). Child feeding practices and the etiology of obesity. *Obesity, 14*(3), 343-344.

Birch, L. L., & Fisher, J. O. (1998). Development of eating behaviors among children and adolescents. *Pediatrics, 101*(Supplement 2), 539-549.

Birch, L. L., Fisher, J. O., & Davison, K. K. (2003). Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *The American journal of clinical nutrition, 78*(2), 215-220.

Birenbaum-Carmeli, D. (2009). The politics of 'The Natural Family'in Israel: State policy and kinship ideologies. *Social Science & Medicine, 69*(7), 1018-1024.

Blissett, J. (2011). Relationships between parenting style, feeding style and feeding practices and fruit and vegetable consumption in early childhood. *Appetite, 57*(3), 826-831.

Blissett, J., & Farrow, C. (2007). Predictors of maternal control of feeding at 1

and 2 years of age. *International Journal of Obesity, 31*(10), 1520-1526.

Blissett, J., & Haycraft, E. (2008). Are parenting style and controlling feeding practices related? *Appetite, 50*(2), 477-485.

Blowers, L. C., Loxton, N. J., Grady-Flesser, M., Occhipinti, S., & Dawe, S. (2003). The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. *Eating behaviors, 4*(3), 229-244.

Boghossian, N. S., Yeung, E. H., Lipsky, L. M., Poon, A. K., & Albert, P. S. (2013). Dietary patterns in association with postpartum weight retention. *The American journal of clinical nutrition, 97*(6), 1338-1345.

Bongers, P., Jansen, A., Havermans, R., Roefs, A., & Nederkoorn, C. (2013). Happy eating. The underestimated role of overeating in a positive mood. *Appetite, 67*, 74-80.

Boscaglia, N., Skouteris, H., & Wertheim, E. H. (2003). Changes in body image satisfaction during pregnancy: A comparison of high exercising and low exercising women. *Australian and New Zealand journal of obstetrics and gynaecology, 43*(1), 41-45.

Bowlby, J. (1953). Some pathological processes set in train by early mother-child separation. *The British Journal of Psychiatry, 99*(415), 265-272.

Brandhagen, M., Lissner, L., Brantsaeter, A. L., Meltzer, H. M., Häggkvist, A.-P., Haugen, M., et al. (2014). Breast-feeding in relation to weight

retention up to 36 months postpartum in the Norwegian Mother and Child Cohort Study: modification by socio-economic status? *Public health nutrition, 17*(07), 1514-1523.

Brandt, K. D. (1998). The importance of nonpharmacologic approaches in management of osteoarthritis. *The American journal of medicine, 105*(1), 39S-44S.

Brannan, M. E., & Petrie, T. A. (2011). Psychological well-being and the body dissatisfaction–bulimic symptomatology relationship: An examination of moderators. *Eating behaviors, 12*(4), 233-241.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Britton, C., McCormick, F., Renfrew, M., Wade, A., & King, S. (2007). Support for breastfeeding mothers. *Cochrane Database Syst Rev, 1*(1).

Britton, C., McCormick, F., Renfrew, M., Wade, A., & King, S. (2007). Support for breastfeeding mothers (Review). *Cochrane Database Syst Rev, 1*, CD001141.

Brooten, D., Youngblut, J. M., Golembeski, S., Magnus, M. H., & Hannan, J. (2012). Perceived weight gain, risk, and nutrition in pregnancy in five racial groups. *Journal of the American Academy of Nurse Practitioners, 24*(1), 32-42.

Brown, A., & Lee, M. (2011). Maternal child-feeding style during the weaning period: association with infant weight and maternal eating style. *Eating behaviors, 12*(2), 108-111.

Brown, L. F., Thoyre, S., Pridham, K., & Schubert, C. (2009). The Mother-

Infant Feeding Tool. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 38*(4), 491-503.

Brown, R. E., Willis, T. A., Aspinall, N., Hunt, C., George, J., & Rudolf, M. C. (2013). term evaluation of the HENRY -Preventing child obesity: a long .approach .*Community Practitioner, 86*(7), 23-27.

Buhrmester, M. D., Blanton, H., & Swann Jr, W. B. (2011). Implicit self-esteem: nature, measurement, and a new way forward. *Journal of personality and social psychology, 100*(2), 365.

Bulbeck, C. (2001). *Articulating structure and agency: How women's studies students express their relationships with feminism.* Paper presented at the Women's Studies International Forum.

Bushneil, I., Sai, F., & Mullin, J. (1989). Neonatal recognition of the mother's face. *British Journal of Developmental Psychology, 7*(1), 3-15.

Cachelin, F. M., & Thompson, D. (2013). Predictors of maternal child-feeding practices in an ethnically diverse sample and the relationship to child obesity. *Obesity*.

Calogero, R. M., & Thompson, J. K. (2010). Gender and body image *Handbook of gender research in psychology* (pp. 153-184): Springer.

Campbell, F., Johnson, M., Messina, J., Guillaume, L., & Goyder, E. (2011). Behavioural interventions for weight management in pregnancy: a systematic review of quantitative and qualitative data. *BMC Public Health, 11*(1), 491.

Carnell, S., Kim, Y., & Pryor, K. (2012). Fat brains, greedy genes, and parent

power: A biobehavioural risk model of child and adult obesity. *International Review of Psychiatry, 24*(3), 189-199.

Carter, A. S., Baker, C. W., & Brownell, K. D. (2000). Body mass index, eating attitudes, and symptoms of depression and anxiety in pregnancy and the postpartum period. *Psychosomatic Medicine, 62*(2), 264-270.

Cash, T. F. (1989). Body-image affect: Gestalt versus summing the parts. *Perceptual and Motor Skills, 69*(1), 17-18.

Cash, T. F., Jakatdar, T. A., & Williams, E. F. (2004). The Body Image Quality of Life Inventory: Further validation with college men and women. *Body Image, 1*(3), 279-287.

Cash, T. F., Melnyk, S. E., & Hrabosky, J. I. (2004). The assessment of body image investment: An extensive revision of the Appearance Schemas Inventory. *International Journal of Eating Disorders, 35*(3), 305-316.

Cash, T. F., Morrow, J. A., Hrabosky, J. I., & Perry, A. A. (2004). How has body image changed? A cross-sectional investigation of college women and men from 1983 to 2001. *Journal of consulting and clinical psychology, 72*(6), 1081.

Cash, T. F., & Smolak, L. (2011). *Body image: A handbook of science, practice, and prevention*: Guilford Press.

Castellanos, E. H., Charboneau, E., Dietrich, M. S., Park, S., Bradley, B. P., Mogg, K., et al. (2009). Obese adults have visual attention bias for food cue images: evidence for altered reward system function. *International Journal of Obesity, 33*(9), 1063-1073.

Catalano, P. M. (2007). Management of obesity in pregnancy. *Obstetrics & Gynecology, 109*(2, Part 1), 419-433.

Caton, S. J., Ahern, S. M., & Hetherington, M. M. (2011). Vegetables by stealth. An exploratory study investigating the introduction of vegetables in the weaning period. *Appetite, 57*(3), 816-825.

Cebolla, A., Barrada, J., van Strien, T., Oliver, E., & Baños, R. (2014). Validation of the Dutch Eating Behavior Questionnaire (DEBQ) in a sample of Spanish women. *Appetite, 73*, 58-64.

Cedergren, M. I. (2004). Maternal morbid obesity and the risk of adverse pregnancy outcome. *Obstetrics & Gynecology, 103*(2), 219-224.

Chaidez, V., & Kaiser, L. L. (2011). Validation of an instrument to assess toddler feeding practices of Latino mothers. *Appetite, 57*(1), 229-236.

Chaidez, V., Townsend, M., & Kaiser, L. L. (2011). Toddler-feeding practices among Mexican American mothers. A qualitative study. *Appetite, 56*(3), 629-632.

Chang, S. R., Chao, Y. M. Y., & Kenney, N. J. (2006). I am a woman and I'm pregnant: Body image of women in Taiwan during the third trimester of pregnancy. *Birth, 33*(2), 147-153.

Chatoor, I., Getson, P., Menvielle, E., Brasseaux, C., O'Donnell, R., Rivera, Y., et al. (1997). A feeding scale for research and clinical practice to assess mother—infant interactions in the first three years of life. *Infant Mental Health Journal, 18*(1), 76-91.

Choi, P., Henshaw, C., Baker, S., & Tree, J. (2005). Supermum, superwife, supereverything: performing femininity in the transition to motherhood. *Journal of reproductive and infant psychology, 23*(2), 167-180.

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: the role

of control in the early environment. *Psychological bulletin, 124*(1), 3.

Chung, S. S., Yoo, I. Y., & Joung, K. H. (2013). Post-partum blues among Korean mothers: A structural equation modelling approach. *International journal of mental health nursing, 22*(4), 359-367.

Clark, A., Skouteris, H., Wertheim, E. H., Paxton, S. J., & Milgrom, J. (2009). My baby body: A qualitative insight into women's body-related experiences and mood during pregnancy and the postpartum. *Journal of reproductive and infant psychology, 27*(4), 330-345.

Clark, A., Skouteris, H., Wertheim, E. H., Paxton, S. J., & Milgrom, J. (2009). The Relationship between Depression and Body Dissatisfaction across Pregnancy and the Postpartum A Prospective Study. *Journal of health psychology, 14*(1), 27-35.

Clark, L., & Tiggemann, M. (2008). Sociocultural and individual psychological predictors of body image in young girls: a prospective study. *Developmental psychology, 44*(4), 1124.

Cohen, D., Lisles, C., Williams, W., Brunsdon, C., & Batstone, T. (2011). Exploratory study to evaluate the provision of additional midwifery support to teenage mothers. *Public Health, 125*(9), 632-638.

Contento, I. R., Randell, J. S., & Basch, C. E. (2002). Review and analysis of evaluation measures used in nutrition education intervention research. *Journal of nutrition education and behavior, 34*(1), 2-25.

Conti, J., Abraham, S., & Taylor, A. (1998). Eating behavior and pregnancy

outcome. *Journal of Psychosomatic Research, 44*(3), 465-477.

Corning, A. F., Gondoli, D. M., Bucchianeri, M. M., & Salafia, E. H. B. (2010). Preventing the development of body issues in adolescent girls through intervention with their mothers. *Body Image, 7*(4), 289-295.

Cornelis, M. C., Rimm, E. B., Curhan, G. C., Kraft, P., Hunter, D. J., Hu, F. B., & Dam, R. M. (2014). Obesity susceptibility loci and uncontrolled eating, emotional eating and cognitive restraint behaviors in men and women. *Obesity*,*22*(5), E135-E141.

Costanzo, P. R., & Woody, E. Z. (1985). Domain-specific parenting styles and their impact on the child's development of particular deviance: the example of obesity proneness. *Journal of Social and Clinical Psychology, 3*(4), 425-445.

Crockenberg, S. C., & Leerkes, E. M. (2003). Parental acceptance, postpartum depression, and maternal sensitivity: Mediating and moderating processes. *Journal of Family Psychology, 17*(1), 80.

Crombie, A. P., Ilich, J. Z., Dutton, G. R., Panton, L. B., & Abood, D. A. (2009). The freshman weight gain phenomenon revisited. *Nutrition reviews, 67*(2), 83-94.

Crow, S. J., Agras, W. S., Crosby, R., Halmi, K., & Mitchell, J. E. (2008). Eating disorder symptoms in pregnancy: a prospective study. *International Journal of Eating Disorders, 41*(3), 277-279.

Crystal, S. R., & Bernstein, I. L. (1998). Infant salt preference and mother's morning sickness. *Appetite, 30*(3), 297-307.

Culp, R. E., Appelbaum, M. I., Osofsky, J. D., & Levy, J. A. (1988). Adolescent and older mothers: Comparison between prenatal maternal variables and newborn interaction measures. *Infant behavior and Development, 11*(3), 353-362.

Culp, R. E., Culp, A. M., Osofsky, J. D., & Osofsky, H. J. (1991). Adolescent and older mothers' interaction patterns with their six-month-old infants. *Journal of Adolescence, 14*(2), 195-200.

Curry, M. A., Burton, D., & Fields, J. (1998). The Prenatal Psychosocial Profile: A research and clinical tool. *Research in nursing & health, 21*(3), 211-219.

Cushman, P. (1991). Ideology obscured: Political uses of the self in Daniel Stern's infant. *American Psychologist, 46*(3), 206.

Davies, K., & Wardle, J. (1994). Body image and dieting in pregnancy. *Journal of Psychosomatic Research, 38*(8), 787-799.

Davison, K., Markey, C., & Birch, L. (2000). Etiology of body dissatisfaction and weight concerns among 5-year-old girls. *Appetite, 35*(2), 143-151.

Davison, K. K., & Birch, L. L. (2001). Weight status, parent reaction, and self-concept in five-year-old girls. *Pediatrics, 107*(1), 46-53.

de Barse, L. M., Tharner, A., Micali, N., Jaddoe, V. V., Hofman, A., Verhulst, F. C., ... & Jansen, P. W. (2014). Does maternal history of eating disorders predict mothers' feeding practices and preschoolers' emotional eating?.*Appetite*.

Devine, C. M., Bove, C. F., & Olson, C. M. (2000). Continuity and change in women’s weight orientations and lifestyle practices through pregnancy and the postpartum period: the influence of life course trajectories and

transitional events. *Social Science & Medicine, 50*(4), 567-582.

Dietz, W. H., & Gortmaker, S. L. (2001). Preventing obesity in children and adolescents 1. *Annual review of public health, 22*(1), 337-353.

DiSantis, K., Hodges, E., Johnson, S., & Fisher, J. (2011). The role of responsive feeding in overweight during infancy and toddlerhood: a systematic review. *International Journal of Obesity, 35*(4), 480-492.

Dittmar, H., Halliwell, E., & Ive, S. (2006). Does Barbie make girls want to be thin? The effect of experimental exposure to images of dolls on the body image of 5-to 8-year-old girls. *Developmental psychology, 42*(2), 283.

Dohnt, H., & Tiggemann, M. (2006). The contribution of peer and media influences to the development of body satisfaction and self-esteem in young girls: a prospective study. *Developmental psychology, 42*(5), 929.

Dohnt, H. K., & Tiggemann, M. (2004). DEVELOPMENT OF PERCEIVED BODY SIZE AND DIETING AWARENESS IN YOUNG GIRLS 1. *Perceptual and Motor Skills, 99*(3), 790-792.

Dohnt, H. K., & Tiggemann, M. (2008). Promoting positive body image in young girls: an evaluation of ‘Shapesville’. *European Eating Disorders Review, 16*(3), 222-233.

Dressler, H., & Smith, C. (2013). Food choice, eating behavior, and food liking differs between lean/normal and overweight/obese, low-income women. *Appetite, 65*, 145-152.

Drewett, R., & Young, B. (1998). Methods for the analysis of feeding behaviour in infancy: sucklings. *Journal of reproductive and infant*

psychology, 16(1), 9-26.

Duncombe, D., Wertheim, E. H., Skouteris, H., Paxton, S. J., & Kelly, L. (2008). How well do women adapt to changes in their body size and shape across the course of pregnancy? *Journal of health psychology, 13*(4), 503-515.

Dunkel-Schetter, C., Sagrestano, L. M., Feldman, P., & Killingsworth, C. (1996). Social support and pregnancy *Handbook of social support and the family* (pp. 375-412): Springer.

Easter, A., Bye, A., Taborelli, E., Corfield, F., Schmidt, U., Treasure, J., et al. (2013). Recognising the symptoms: how common are eating disorders in pregnancy? *European Eating Disorders Review, 21*(4), 340-344.

Eimas, P. D., Siqueland, E. R., Jusczyk, P., & Vigorito, J. (1971). Speech perception in infants. *Science, 171*(3968), 303-306.

Eisenberg, M. E., Berge, J. M., Fulkerson, J. A., & Neumark-Sztainer, D. (2012). Associations between hurtful weight-related comments by family and significant other and the development of disordered eating behaviors in young adults. *Journal of behavioral medicine, 35*(5), 500-508.

Ekert-Jaffe, O., & Stier, H. (2009). Normative or economic behavior? Fertility and women's employment in Israel. *Social science research, 38*(3), 644-655.

Ekeus, C., Lindberg, L., Lindblad, F., & Hjern, A. (2006). Birth outcomes and pregnancy complications in women with a history of anorexia nervosa. *BJOG: An International Journal of Obstetrics & Gynaecology, 113*(8),

925-929.

Elgar, F. J., Roberts, C., Tudor-Smith, C., & Moore, L. (2005). Validity of self-reported height and weight and predictors of bias in adolescents. *Journal of Adolescent Health, 37*(5), 371-375.

Elgen, I., Sommerfelt, K., & Markestad, T. (2002). Population based, controlled study of behavioural problems and psychiatric disorders in low birthweight children at 11 years of age. *Archives of Disease in Childhood-Fetal and Neonatal Edition, 87*(2), F128-F132.

Espinoza, P., Penelo, E., & Raich, R. M. (2013). Prevention programme for eating disturbances in adolescents. Is their effect on body image maintained at 30 months later? *Body Image, 10*(2), 175-181.

Fairburn, C. G., Stein, A., & Jones, R. (1992). Eating habits and eating disorders during pregnancy. *Psychosomatic Medicine, 54*(6), 665-672.

Fairburn, C. G., & Welch, S. L. (1990). The impact of pregnancy on eating habits and attitudes to shape and weight. *International Journal of Eating Disorders, 9*(2), 153-160.

Faith, M. S., Scanlon, K. S., Birch, L. L., Francis, L. A., & Sherry, B. (2004). Parent-child feeding strategies and their relationships to child eating and weight status. *Obesity research, 12*(11), 1711-1722.

Farrow, C., & Blissett, J. (2006). Breast-feeding, maternal feeding practices and mealtime negativity at one year. *Appetite, 46*(1), 49-56.

Farrow, C., & Blissett, J. (2006). Does maternal control during feeding moderate early infant weight gain? *Pediatrics, 118*(2), e293-e298.

Farrow, C., & Blissett, J. (2006). Maternal cognitions, psychopathologic

symptoms, and infant temperament as predictors of early infant feeding problems: a longitudinal study. *International Journal of Eating Disorders, 39*(2), 128-134.

Farrow, C., & Blissett, J. (2007). The development of maternal self-esteem. *Infant Mental Health Journal, 28*(5), 517-535.

Feldman, S. S., Gowen, L. K., & Fisher, L. (1998). Family relationships and gender as predictors of romantic intimacy in young adults: A longitudinal study. *Journal of Research on Adolescence, 8*(2), 263-286.

FISHER, J. O., BIRCH, L. L., Smiciklas-Wright, H., & PICCIANO, M. (2000). Breast-feeding through the first year predicts maternal control in feeding and subsequent toddler energy intakes. *Journal of the American Dietetic Association, 100*(6), 641-646.

Fontaine, K. R., & Jones, L. C. (1997). Self-esteem, optimism, and postpartum depression. *Journal of clinical psychology, 53*(1), 59-63.

Forbes, G. B., Jung, J., Vaamonde, J. D., Omar, A., Paris, L., & Formiga, N. S. (2012). Body dissatisfaction and disordered eating in three cultures: Argentina, Brazil, and the US. *Sex Roles, 66*(9-10), 677-694.

Forcey, L. R. (1994). Feminist perspectives on mothering and peace. *Mothering: Ideology, experience, and agency*, 355-375.

Foster, S., Slade, P., & Wilson, K. (1996). Body image, maternal fetal attachment, and breast feeding. *Journal of Psychosomatic Research, 41*(2), 181-184.

Fox, P., & Yamaguchi, C. (1997). Body image change in pregnancy: a

comparison of normal weight and overweight primigravidas. *Birth, 24*(1), 35-40.

Fox, R., Heffernan, K., & Nicolson, P. (2009). 'I don't think it was such an issue back then': changing experiences of pregnancy across two generations of women in south-east England. *Gender, place and culture, 16*(5), 553-568.

Francis, D. D., Diorio, J., Plotsky, P. M., & Meaney, M. J. (2002). Environmental enrichment reverses the effects of maternal separation on stress reactivity. *The Journal of Neuroscience, 22*(18), 7840-7843.

Franko, D. L., & Walton, B. E. (1993). Pregnancy and eating disorders: a review and clinical implications. *International Journal of Eating Disorders, 13*(1), 41-47.

Fraser, L., Edwards, K., Tominitz, M., Clarke, G., & Hill, A. (2012). Food outlet availability, deprivation and obesity in a multi-ethnic sample of pregnant women in Bradford, UK. *Social Science & Medicine, 75*(6), 1048-1056.

French, S. A., Perry, C. L., Leon, G. R., & Fulkerson, J. A. (1995). Dieting behaviors and weight change history in female adolescents. *Health Psychology, 14*(6), 548.

Frey, K. S., & Ruble, D. N. (1985). What children say when the teacher is not around: Conflicting goals in social comparison and performance assessment in the classroom. *Journal of personality and social psychology, 48*(3), 550.

French, S. A., Story, M., Downes, B., Resnick, M. D., & Blum, R. W. (1995).

Frequent dieting among adolescents: psychosocial and health behavior correlates. *American Journal of Public Health*, *85*(5), 695-701.

Frisén, A., Lunde, C., & Hwang, P. (2009). Peer victimisation and its relationships with perceptions of body composition. *Educational studies, 35*(3), 337-348.

Furber, C. M., Garrod, D., Maloney, E., Lovell, K., & McGowan, L. (2009). A qualitative study of mild to moderate psychological distress during pregnancy. *International journal of nursing studies, 46*(5), 669-677.

Gardner, B., Croker, H., Barr, S., Briley, A., Poston, L., & Wardle, J. (2012). Psychological predictors of dietary intentions in pregnancy. *Journal of Human Nutrition and Dietetics, 25*(4), 345-353.

Gauthier, A. H. (2007). The impact of family policies on fertility in industrialized countries: a review of the literature. *Population Research and Policy Review, 26*(3), 323-346.

Gelfand, M. J., & Christakopoulou, S. (1999). Culture and negotiator cognition: Judgment accuracy and negotiation processes in individualistic and collectivistic cultures. *Organizational Behavior and Human Decision Processes, 79*(3), 248-269.

Geliebter, A., & Aversa, A. (2003). Emotional eating in overweight, normal weight, and underweight individuals. *Eating behaviors, 3*(4), 341-347.

Gergen, M. M., & Davis, S. N. (2013). *Toward a new psychology of gender: A reader*: Routledge.

Giles, D., Shaw, R. L., & Morgan, W. (2009). Representations of voluntary childlessness in the UK press, 1990—2008. *Journal of health psychology, 14*(8), 1218-1228.

Ginsburg, R. (1997). *The< i> Jewish Mother</i> turned monster: Representations of motherhood by Hebrew women novelists 1881–1993.* Paper presented at the Women's Studies International Forum.

Gjerdingen, D., Fontaine, P., Crow, S., McGovern, P., Center, B., & Miner, M. (2009). Predictors of mothers' postpartum body dissatisfaction. *Women & health, 49*(6-7), 491-504.

Glasser, S., Barell, V., Shoham, A., Ziv, A., Boyko, V., Lusky, A., et al. (1998). Prospective study of postpartum depression in an Israeli cohort: prevalence, incidence and demographic risk factors. *Journal of Psychosomatic Obstetrics & Gynecology, 19*(3), 155-164.

Goldstein, L. H., Diener, M. L., & Mangelsdorf, S. C. (1996). Maternal characteristics and social support across the transition to motherhood: Associations with maternal behavior. *Journal of Family Psychology, 10*(1), 60.

Gomes, K. R., & Speizer, I. S. (2010). Longitudinal study on self-esteem among recently pregnant Brazilian adolescents. *Journal of reproductive and infant psychology, 28*(4), 359-371.

Goodwin, A., Astbury, J., & McMeeken, J. (2000). Body image and psychological well-being in pregnancy. A comparison of exercisers and non-exercisers. *Australian and New Zealand journal of obstetrics and gynaecology, 40*(4), 442-447.

Gore, S. A., Brown, D. M., & West, D. S. (2003). The role of postpartum

weight retention in obesity among women: a review of the evidence. *Annals of Behavioral Medicine, 26*(2), 149-159.

Gow, R. W., Lydecker, J. A., Lamanna, J. D., & Mazzeo, S. E. (2012). Representations of celebrities' weight and shape during pregnancy and postpartum: a content analysis of three entertainment magazine websites. *Body Image, 9*(1), 172-175.

Greenberg, L., Cwikel, J., & Mirsky, J. (2007). Cultural correlates of eating attitudes: A comparison between native-born and immigrant university students in Israel. *International Journal of Eating Disorders, 40*(1), 51-58.

Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*(1), 1-16.

Groesz, L. M., McCoy, S., Carl, J., Saslow, L., Stewart, J., Adler, N., ... & Epel, E. (2012). What is eating you? Stress and the drive to eat. *Appetite*,*58*(2), 717-721.

Gross, R. S., Mendelsohn, A. L., Fierman, A. H., Racine, A. D., & Messito, M. J. (2012). Food insecurity and obesogenic maternal infant feeding styles and practices in low-income families. *Pediatrics, 130*(2), 254-261.

Groth, S. W., & Holland, M. L. (2013). Eighteen Years After Pregnancy Adolescent Gestational Weight Gain Still Affects Body Mass Index. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 42*(s1), S79-S80.

Guidotti-Hernandez, N. M. (2007). Dora the Explorer, constructing "latinidades" and the politics of global citizenship. *Latino Studies, 5*(2), 209-232.

Gunderson, E. P., & Abrams, B. (1999). Epidemiology of gestational weight gain and body weight changes after pregnancy. *Epidemiologic reviews, 21*(2), 261-275.

Haedt, A., & Keel, P. (2007). Maternal attachment, depression, and body dissatisfaction in pregnant women. *Journal of reproductive and infant psychology, 25*(4), 285-295.

Hall, L. A., Kotch, J. B., Browne, D., & Rayens, M. K. (1996). Self-esteem as a mediator of the effects of stressors and social resources on depressive symptoms in postpartum mothers. *Nursing Research, 45*(4), 231-238.

Harrington, J. W., Nguyen, V. Q., Paulson, J. F., Garland, R., Pasquinelli, L., & Lewis, D. (2010). Identifying the "tipping point" age for overweight pediatric patients. *Clinical pediatrics*.

Harris, H., Ellison, G., & Clement, S. (1999). Do the psychosocial and behavioral changes that accompany motherhood influence the impact of pregnancy on long-term weight gain'. *Journal of Psychosomatic Obstetrics & Gynecology, 20*(2), 65-79.

Harris, H., Ellison, G., Holliday, M., & Lucassen, E. (1997). The impact of pregnancy on the long-term weight gain of primiparous women in England. *International journal of obesity and related metabolic disorders: journal of the International Association for the Study of*

Obesity, 21(9), 747-755.

Harrison, K. (2000). Television viewing, fat stereotyping, body shape standards, and eating disorder symptomatology in grade school children. *Communication Research, 27*(5), 617-640.

Harrison, K. (2009). The Multidimensional Media Influence Scale: Confirmatory factor structure and relationship with body dissatisfaction among African American and Anglo American children. *Body Image, 6*(3), 207-215.

Harrison, K., & Hefner, V. (2006). Media exposure, current and future body ideals, and disordered eating among preadolescent girls: A longitudinal panel study. *Journal of Youth and Adolescence, 35*(2), 146-156.

Harter, S., & Whitesell, N. R. (2003). Beyond the debate: Why some adolescents report stable self-worth over time and situation, whereas others report changes in self-worth. *Journal of Personality, 71*(6), 1027-1058.

Haycraft, E., & Blissett, J. (2012). Predictors of paternal and maternal controlling feeding practices with 2-to 5-year-old children. *Journal of nutrition education and behavior, 44*(5), 390-397.

Haycraft, E., Farrow, C., Meyer, C., Powell, F., & Blissett, J. (2011). Relationships between temperament and eating behaviours in young children. *Appetite, 56*(3), 689-692.

Hayes, S., & Tantleff-Dunn, S. (2010). Am I too fat to be a princess? Examining the effects of popular children's media on young girls' body

image. *British Journal of Developmental Psychology, 28*(2), 413-426.

Hays, S. (1996). *The cultural contradictions of motherhood*: Yale University Press.

Heesacker, M., Samson, A. W., & Shir, J. L. (2000). Assessment of disordered eating by Israeli and American college women. *College Student Journal*, **34**, 572–584.

Hepper, P. G., Wells, D. L., Dornan, J. C., & Lynch, C. (2013). Long-term flavor recognition in humans with prenatal garlic experience. *Developmental psychobiology, 55*(5), 568-574.

Herring, S. J., Oken, E., Haines, J., Rich-Edwards, J. W., Rifas-Shiman, S. L., & Gillman, M. W. (2008). Misperceived pre-pregnancy body weight status predicts excessive gestational weight gain: findings from a US cohort study. *BMC pregnancy and childbirth, 8*(1), 54.

Hetherington, M. M., Cecil, J. E., Jackson, D. M., & Schwartz, C. (2011). Feeding infants and young children. From guidelines to practice. *Appetite, 57*(3), 791-795.

Hilbert, A., Braehler, E., Haeuser, W., & Zenger, M. (2014). Weight bias internalization, core self-evaluation, and health in overweight and obese persons. *Obesity, 22*(1), 79-85.

Hilson, J. A., Rasmussen, K. M., & Kjolhede, C. L. (2006). Excessive weight gain during pregnancy is associated with earlier termination of breast-feeding among white women. *The Journal of nutrition, 136*(1), 140-146.

Hodges, E. A., Hughes, S. O., Hopkinson, J., & Fisher, J. O. (2008). Maternal decisions about the initiation and termination of infant feeding.

Appetite, 50(2), 333-339.

Hoek, H. W., & Van Hoeken, D. (2003). Review of the prevalence and incidence of eating disorders. *International Journal of Eating Disorders, 34*(4), 383-396.

Hoffman, E. R., Hodges, E. A., Propper, C., Zipkin, E. C., Bentley, M. E., Ward, D. S., et al. (2013). Behavioral and Psychophysiological Responsiveness During Child Feeding in Mothers with Histories of Eating Disorders: A Pilot Study. *Journal of psychopathology and behavioral assessment, 35*(4), 578-591.

Holditch-Davis, D., Miles, M. S., & Belyea, M. (2000). Feeding and nonfeeding interactions of mothers and prematures. *Western Journal of Nursing Research, 22*(3), 320-334.

Holmqvist, K. and Frisén, A. (2010), Body dissatisfaction across cultures: Findings and research problems. Eur. Eat. Disorders Rev., 18: 133–146. doi: 10.1002/erv.965

Holub, S. C. (2008). Individual differences in the anti-fat attitudes of preschool-children: The importance of perceived body size. *Body Image, 5*(3), 317-321.

Hooper, L., Ryder, J., Kurzer, M., Lampe, J., Messina, M., Phipps, W., et al. (2009). Effects of soy protein and isoflavones on circulating hormone concentrations in pre-and post-menopausal women: a systematic review and meta-analysis. *Human reproduction update, 15*(4), 423-440.

Hopper, K. M., & Aubrey, J. S. (2011). Examining the Impact of Celebrity Gossip Magazine Coverage of Pregnant Celebrities on Pregnant

Women's Self-Objectification. *Communication Research*, 0093650211422062.

Houston-Price, C., Burton, E., Hickinson, R., Inett, J., Moore, E., Salmon, K., et al. (2009). Picture book exposure elicits positive visual preferences in toddlers. *Journal of experimental child psychology, 104*(1), 89-104.

Huang, T.-T., Wang, H.-S., & Dai, F.-T. (2010). Effect of pre-pregnancy body size on postpartum weight retention. *Midwifery, 26*(2), 222-231.

Jahromi, L. B., Putnam, S. P., & Stifter, C. A. (2004). Maternal regulation of infant reactivity from 2 to 6 months. *Developmental psychology, 40*(4), 477.

Jarvis, M., & Wardle, J. (2005). Social patterning of individual health behaviours: the case of cigarette smoking.

Jenkin, W., & Tiggemann, M. (1997). Psychological effects of weight retained after pregnancy. *Women & health, 25*(1), 89-98.

Jenkins, P. E., Hoste, R. R., Meyer, C., & Blissett, J. M. (2011). Eating disorders and quality of life: A review of the literature. *Clinical Psychology Review, 31*(1), 113-121.

Jesse, D. E., & Swanson, M. S. (2007). Risks and resources associated with antepartum risk for depression among rural southern women. *Nursing Research, 56*(6), 378-386.

Johnson, S. (2010). II. Discursive Constructions of the Pregnant Body: Conforming to or Resisting Body Ideals? *Feminism & Psychology, 20*(2), 249-254.

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(3), 361-374.

Johnson, S. L., & Birch, L. L. (1994). Parents' and children's adiposity and eating style. *Pediatrics, 94*(5), 653-661.

Jomeen, J. (2004). The importance of assessing psychological status during pregnancy, childbirth and the postnatal period as a multidimensional construct: A literature review. *Clinical Effectiveness in Nursing, 8*(3), 143-155.

Jomeen, J., & Martin, C. R. (2005). Self-esteem and mental health during early pregnancy. *Clinical Effectiveness in Nursing, 9*(1), 92-95.

Jomeen, J., & Martin, C. R. (2008). The impact of choice of maternity care on psychological health outcomes for women during pregnancy and the postnatal period. *Journal of evaluation in clinical practice, 14*(3), 391-398.

Jordan, K., Capdevila, R., & Johnson, S. (2005). Baby or beauty: a Q study into post pregnancy body image. *Journal of reproductive and infant psychology, 23*(1), 19-31.

Kahn, S. M. (2000). *Reproducing Jews: A cultural account of assisted conception in Israel*: Duke University Press.

Kamysheva, E., Skouteris, H., Wertheim, E. H., Paxton, S. J., & Milgrom, J. (2008). Examination of a multi-factorial model of body-related experiences during pregnancy: The relationships among physical symptoms, sleep quality, depression, self-esteem, and negative body attitudes. *Body Image, 5*(2), 152-163.

Katz, R., & Peres, Y. (1986). The sociology of the family in Israel: An outline of its development from the 1950s to the 1980s. *European Sociological*

Review, 2(2), 148-159.

Katz, R., & Lavee, Y. (2005). Families in Israel. *Handbook of world families*, 486-506.

Bradshaw, J., & Finch, N. (2002). *A comparison of child benefit packages in 22 countries*. Corporate Document Services.

Kaye, W. H., Bulik, C. M., Plotnicov, K., Thornton, L., Devlin, B., Fichter, M. M., et al. (2008). The genetics of anorexia nervosa collaborative study: methods and sample description. *International Journal of Eating Disorders, 41*(4), 289-300.

Kazmierczak, M., & Goodwin, R. (2011). Pregnancy and body image in Poland: Gender roles and self-esteem during the third trimester. *Journal of reproductive and infant psychology, 29*(4), 334-342.

Kendall, A., Olson, C. M., & Frongillo Jr, E. A. (2001). Evaluation of psychosocial measures for understanding weight-related behaviors in pregnant women. *Annals of Behavioral Medicine, 23*(1), 50-58.

Keppel, K. G., & Taffel, S. M. (1993). Pregnancy-related weight gain and retention: implications of the 1990 Institute of Medicine guidelines. *American Journal of Public Health, 83*(8), 1100-1103.

Kerns, J., Vanjani, R., Freedman, L., Meckstroth, K., Drey, E. A., & Steinauer, J. (2012). Women's decision making regarding choice of second trimester termination method for pregnancy complications. *International Journal of Gynecology & Obstetrics, 116*(3), 244-248.

Kim, Y. K., Hur, J. W., Kim, K. H., Oh, K. S., & Shin, Y. C. (2008). Prediction of postpartum depression by sociodemographic, obstetric and psychological factors: A prospective study. *Psychiatry and clinical*

neurosciences, 62(3), 331-340.

Klein, M. (1952). The origins of transference. *The International Journal of Psychoanalysis*.

Klein, P. S. (1988). Stability and change in interaction of Israeli mothers and infants. *Infant behavior and Development, 11*(1), 55-70.

Knoph, C., Von Holle, A., Zerwas, S., Torgersen, L., Tambs, K., Stoltenberg, C., et al. (2013). Course and predictors of maternal eating disorders in the postpartum period. *International Journal of Eating Disorders, 46*(4), 355-368.

Kobrin, S., & Lmft, S. K. M. (2012). *The Satisfied Soul: Transforming Your Food and Weight Worries*: AuthorHouse.

Konttinen, H., Männistö, S., Sarlio-Lähteenkorva, S., Silventoinen, K., & Haukkala, A. (2010). Emotional eating, depressive symptoms and self-reported food consumption. A population-based study. *Appetite, 54*(3), 473-479.

Kouba, S., Hällström, T., Lindholm, C., & Hirschberg, A. L. (2005). Pregnancy and neonatal outcomes in women with eating disorders. *Obstetrics & Gynecology, 105*(2), 255-260.

Koubaa, S., Hällström, T., & Hirschberg, A. L. (2008). Early maternal adjustment in women with eating disorders. *International Journal of Eating Disorders, 41*(5), 405-410.

Kral, T. V., & Rauh, E. M. (2010). Eating behaviors of children in the context of their family environment. *Physiology & behavior, 100*(5), 567-573.

Kumar, R., Robson, K., & Smith, A. (1984). Development of a self-administered questionnaire to measure material adjustment and material attitudes during pregnancy and after delivery. *Journal of Psychosomatic Research, 28*(1), 43-51.

Kuzela, A. L., Stifter, C. A., & Worobey, J. (1990). Breastfeeding and mother-infant interactions. *Journal of Reproductive and Infant Psychology, 8*(3), 185-194.

Lai, B. P. y., Tang, C. S. k., & Tse, W. K. l. (2006). A longitudinal study investigating disordered eating during the transition to motherhood among Chinese women in Hong Kong. *International Journal of Eating Disorders, 39*(4), 303-311.

Lai, B. P.-y., & Tang, C. S.-k. (2008). The negative impact of maternal bulimic symptoms on parenting behavior. *Journal of Psychosomatic Research, 65*(2), 181-189.

Lai, B. P.-Y., Tang, C. S.-K., & Tse, W. K.-L. (2005). Prevalence and psychosocial correlates of disordered eating among Chinese pregnant women in Hong Kong. *Eating Disorders, 13*(2), 171-186.

Laraia, B. A., Siega-Riz, A. M., Dole, N., & London, E. (2009). Pregravid weight is associated with prior dietary restraint and psychosocial factors during pregnancy. *Obesity, 17*(3), 550-558.

Larouche, R., Saunders, T. J., Faulkner, G. E. J., Colley, R., & Tremblay, M.

(2014). Associations between active school transport and physical activity, body composition and cardiovascular fitness: a systematic review of 68 studies. *J Phys Act Health, 11*(1), 206-227.

Laungani, P. D. (2006). *Understanding cross-cultural psychology: Eastern and Western perspectives*. Sage.

Larsen, J. K., Ouwens, M., Engels, R. C., Eisinga, R., & van Strien, T. (2008). Validity of self-reported weight and height and predictors of weight bias in female college students. *Appetite, 50*(2), 386-389.

Lavee, Y., & Katz, R. (2003). The family in Israel: Between tradition and modernity. *Marriage & Family Review, 35*(1-2), 193-217.

Lawler, S. (2000). *Mothering the self: Mothers, daughters, subjects*: Psychology Press.

Legerstee, M. (1992). A review of the animate-inanimate distinction in infancy: Implications for models of social and cognitive knowing. *Early Development and Parenting, 1*(2), 59-67.

Leigh, B., & Milgrom, J. (2008). Risk factors for antenatal depression, postnatal depression and parenting stress. *BMC psychiatry, 8*(1), 24.

Leland, H. E. (2006). Predictions of default probabilities in structural models of debt. *The credit market handbook: Advanced modeling issues (H. Gifford Fong, Editor)*, 39-64.

Lemish, D. (2005). Guest Editor's Introduction: The media gendering of war and conflict. *Feminist Media Studies, 5*(3), 275-280.

Letherby, G. (2002). Childless and bereft?: Stereotypes and realities in relation to ‘voluntary’and ‘involuntary’childlessness and womanhood. *Sociological Inquiry, 72*(1), 7-20.

Levy, K. N., Ellison, W. D., Scott, L. N., & Bernecker, S. L. (2011). Attachment style. *Journal of clinical psychology, 67*(2), 193-203.

Levy, Y. (2010). The clash between feminism and religion in the Israeli military: a multilayered analysis. *Social Politics: International Studies in Gender, State & Society, 17*(2), 185-209.

Lewis, C. E., Smith, D. E., Caveny, J. L., Perkins, L. L., Burke, G. L., & Bild, D. E. (1994). Associations of Body Mass and Body Fat Distribution with Parity Among African-American and Caucasian Women: The CARDIA Study. *Obesity research, 2*(6), 517-525.

Li, R., Fein, S. B., & Grummer-Strawn, L. M. (2010). Do infants fed from bottles lack self-regulation of milk intake compared with directly breastfed infants? *Pediatrics, 125*(6), e1386-e1393.

Lix, L. M., Keselman, J. C., & Keselman, H. J. (1996). Consequences of assumption violations revisited: A quantitative review of alternatives to the one-way analysis of variance F test. *Review of educational research*, *66*(4), 579-619.

Lim, S., Chun, J., & Cho, W. (2008). Effect of pregnancy on food consumption and consciousness factors associated with food satisfaction. *Appetite, 50*(2), 519-528.

Linne, Y. (2004). Effects of obesity on women's reproduction and complications during pregnancy. *Obesity reviews, 5*(3), 137-143.

Llewellyn, C. H., van Jaarsveld, C. H., Johnson, L., Carnell, S., & Wardle, J. (2010). Nature and nurture in infant appetite: analysis of the Gemini twin birth cohort. *The American journal of clinical nutrition, 91*(5), 1172-1179.

Llewellyn, C. H., van Jaarsveld, C. H., Johnson, L., Carnell, S., & Wardle, J. (2011). Development and factor structure of the Baby Eating Behaviour Questionnaire in the Gemini birth cohort. *Appetite, 57*(2), 388-396.

Llewellyn, C. H., van Jaarsveld, C. H., Plomin, R., Fisher, A., & Wardle, J. (2012). Inherited behavioral susceptibility to adiposity in infancy: a multivariate genetic analysis of appetite and weight in the Gemini birth cohort. *The American journal of clinical nutrition, 95*(3), 633-639.

Logsdon, M. C., & Usui, W. (2001). Psychosocial predictors of postpartum depression in diverse groups of women. *Western Journal of Nursing Research, 23*(6), 563-574.

Loth, K. A., Bauer, K. W., Wall, M., Berge, J., & Neumark-Sztainer, D. (2011). Body satisfaction during pregnancy. *Body Image, 8*(3), 297-300.

Lowry, K. W., Sallinen, B. J., & Janicke, D. M. (2007). The effects of weight management programs on self-esteem in pediatric overweight populations. *Journal of Pediatric Psychology, 32*(10), 1179-1195.

Lutenbacher, M. (2002). Relationships between psychosocial factors and abusive parenting attitudes in low-income single mothers. *Nursing Research, 51*(3), 158-167.

Ma, J.-Q., Zhou, L.-L., Hu, Y.-Q., Liu, J.-R., Liu, S.-S., Zhang, J., et al. (2012). Feeding and growth of normal birth weight infants during the first year of life in Shanghai. *Early human development, 88*(10), 831-836.

Mallan, K. M., Liu, W.-H., Mehta, R. J., Daniels, L. A., Magarey, A., & Battistutta, D. (2013). Maternal report of young children's eating styles.

Validation of the Children's Eating Behaviour Questionnaire in three ethnically diverse Australian samples. *Appetite, 64*, 48-55.

Mariotti, P. (2012). Mothering in body and mind. *The Maternal Lineage: Identification, Desire, and Transgenerational Issues*, 45.

Marleau, J. D., & Saucier, J.-F. (2000). PREGNANT WOMEN'S SOCIAL STATUS, STRESS, SELF-ESTEEM, AND THEIR INFANTS'SEX RATIO AT BIRTH. *Perceptual and Motor Skills, 91*(2), 697-702.

Marshall, N. L., Barnett, R. C., & Sayer, A. (1997). The changing workforce, job stress, and psychological distress. *Journal of Occupational Health Psychology, 2*(2), 99.

Martijn, C., Vanderlinden, M., Roefs, A., Huijding, J., & Jansen, A. (2010). Increasing body satisfaction of body concerned women through evaluative conditioning using social stimuli. *Health Psychology, 29*(5), 514.

McAndrew, F., Thompson, J., Fellows, L., Large, A., Speed, M., & Renfrew, M. J. (2012). Infant feeding survey 2010. *Leeds: Health and Social Care Information Centre*.

McFadden, A., & Toole, G. (2006). Exploring women's views of breastfeeding: a focus group study within an area with high levels of socio-economic deprivation. *Maternal & child nutrition, 2*(3), 156-168.

McHale, S. M., Corneal, D. A., Crouter, A. C., & Birch, L. L. (2001). Gender and weight concerns in early and middle adolescence: Links with well-being and family characteristics. *Journal of Clinical Child Psychology,*

30(3), 338-348.

McMahon, M. (1995). *Engendering motherhood: Identity and self-transformation in women's lives*: Guilford Press.

McMeekin, S., Jansen, E., Mallan, K., Nicholson, J., Magarey, A., & Daniels, L. (2013). Associations between infant temperament and early feeding practices. A cross-sectional study of Australian mother-infant dyads from the NOURISH randomised controlled trial. *Appetite, 60*, 239-245.

McVey, G. L., Davis, R., Tweed, S., & Shaw, B. F. (2004). Evaluation of a school-based program designed to improve body image satisfaction, global self-esteem, and eating attitudes and behaviors: A replication study. *International Journal of Eating Disorders, 36*(1), 1-11.

Mehta, U. J., Siega-Riz, A. M., Herring, A. H., Adair, L. S., & Bentley, M. E. (2011). Maternal obesity, psychological factors, and breastfeeding initiation. *Breastfeeding Medicine, 6*(6), 369-376.

Mellor, D., Fuller-Tyszkiewicz, M., McCabe, M. P., & Ricciardelli, L. A. (2010). Body image and self-esteem across age and gender: A short-term longitudinal study. *Sex Roles, 63*(9-10), 672-681.

Mendelson, B. K., & White, D. R. (1982). Relation between body-esteem and self-esteem of obese and normal children. *Perceptual and Motor Skills, 54*(3), 899-905.

Mentro, A. M., Steward, D. K., & Garvin, B. J. (2002). Infant feeding responsiveness: a conceptual analysis. *Journal of advanced nursing, 37*(2), 208-216.

Mercer, R. T., & Ferketich, S. L. (1995). Experienced and inexperienced mothers' maternal competence during infancy. *Research in nursing & health, 18*(4), 333-343.

Mériaux, B. G., Berg, M., & Hellström, A. L. (2010). Everyday experiences of life, body and well-being in children with overweight. *Scandinavian journal of caring sciences, 24*(1), 14-23.

Messina, J., Johnson, M., Campbell, F., Everson Hock, E., Guillaume, L., Duenas, A., et al. (2009). Systematic review of weight management interventions after childbirth. *The University of Sheffield: ScHARR Public Health Collaboration Centre*.

Micali, N., Simonoff, E., & Treasure, J. (2007). Risk of major adverse perinatal outcomes in women with eating disorders. *The British Journal of Psychiatry, 190*(3), 255-259.

Micali, N., & Treasure, J. (2009). Biological effects of a maternal ED on pregnancy and foetal development: a review. *European Eating Disorders Review, 17*(6), 448-454.

Micali, N., Treasure, J., & Simonoff, E. (2007). Eating disorders symptoms in pregnancy: a longitudinal study of women with recent and past eating disorders and obesity. *Journal of Psychosomatic Research, 63*(3), 297-303.

Micali, N., Northstone, K., Emmett, P., Naumann, U., & Treasure, J. L. (2012). Nutritional intake and dietary patterns in pregnancy: a longitudinal

study of women with lifetime eating disorders. *British Journal of Nutrition*, *108*(11), 2093-2099.

Mitchell, A. M., & Bulik, C. M. (2006). Eating disorders and women's health: An update. *Journal of midwifery & women's health, 51*(3), 193-201.

Monteiro, C. R. O. (2012). Ganho de Peso Gestacional e tempo de amamentação em Mulheres participantes num curso de preparação para o parto e parentalidade.

Morin, K. H., Brogan, S., & Flavin, S. K. (2002). Attitudes and perceptions of body image in postpartum African American women: Does weight make a difference? *MCN: The American Journal of Maternal/Child Nursing, 27*(1), 20-25.

Muhlenkamp, A. F., & Sayles, J. A. (1986). Self-esteem, social support, and positive health practices. *Nursing Research, 35*(6), 334-338.

Mulder, C., Kain, J., Uauy, R., & Seidell, J. C. (2009). Maternal attitudes and child-feeding practices: relationship with the BMI of Chilean children. *Nutr J, 8*(1), 37.

Nakar, S., Peretz, O., Hoffman, R., Grossman, Z., Kaplan, B., & Vinker, S. (2007). Attitudes and knowledge on breastfeeding among paediatricians, family physicians, and gynaecologists in Israel. *Acta Paediatrica, 96*(6), 848-851.

Nash, M. (2012). Weighty matters: Negotiating 'fatness' and 'in-betweenness' in early pregnancy. *Feminism & Psychology, 22*(3), 307-323.

Nelson, L. J., & Fazio, A. F. (1995). Emotional content of talk to the fetus and

healthy coping behaviors during pregnancy. *Infant Mental Health Journal, 16*(3), 179-191.

Nelson, A. M. (2003). Transition to motherhood. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *32*(4), 465-477.

Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M., & Berge, J. M. (2010). Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *Journal of Adolescent Health, 47*(3), 270-276.

Nicklaus, S., & Remy, E. (2013). Early origins of overeating: Tracking between early food habits and later eating patterns. *Current Obesity Reports, 2*(2), 179-184.

Nicolson, P. (1999). Loss, happiness and postpartum depression: The ultimate paradox. *Canadian Psychology/Psychologie Canadienne, 40*(2), 162.

Nieland, M. N., & Roger, D. (1997). Symptoms in post-partum and non-post-partum samples: Implications for postnatal depression. *Journal of reproductive and infant psychology, 15*(1), 31-42.

Nijs, I. M., Muris, P., Euser, A. S., & Franken, I. H. (2010). Differences in attention to food and food intake between overweight/obese and normal-weight females under conditions of hunger and satiety. *Appetite, 54*(2), 243-254.

Nunes, M. A., Ferri, C. P., Manzolli, P., Soares, R. M., Drehmer, M., Buss, C., et al. (2010). Nutrition, mental health and violence: from pregnancy to postpartum Cohort of women attending primary care units in Southern

Brazil-ECCAGE study. *BMC psychiatry, 10*(1), 66.

Oakley, A. (1981). Interviewing women: A contradiction in terms. *Doing feminist research*, *30*(6), 1.

O'DEA, J. A. (2004). Evidence for a self-esteem approach in the prevention of body image and eating problems among children and adolescents. *Eating Disorders, 12*(3), 225-239.

Oddy, W. H., Li, J., Whitehouse, A. J., Zubrick, S. R., & Malacova, E. (2011). Breastfeeding duration and academic achievement at 10 years. *Pediatrics, 127*(1), e137-e145.

Ogden, C. L., Carroll, M. D., Curtin, L. R., Lamb, M. M., & Flegal, K. M. (2010). Prevalence of high body mass index in US children and adolescents, 2007-2008. *JAMA: the journal of the American Medical Association, 303*(3), 242-249.

Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA: the journal of the American Medical Association, 288*(14), 1728-1732.

Ohlin, A., & Rössner, S. (1990). Maternal body weight development after pregnancy. *International Journal of Obesity, 14*(2), 159-173.

Ölin, A., & Rössner, S. (1996). Factors related to body weight changes during and after pregnancy: the Stockholm Pregnancy and Weight Development Study. *Obesity research, 4*(3), 271-276.

Olson, C., Strawderman, M., Hinton, P., & Pearson, T. (2003). Gestational weight gain and postpartum behaviors associated with weight change from early pregnancy to 1 y postpartum. *International Journal*

of Obesity, 27(1), 117-127.

Olson, C. M. (2005). Tracking of food choices across the transition to motherhood. *Journal of nutrition education and behavior, 37*(3), 129-136.

Orth, U., Robins, R. W., & Roberts, B. W. (2008). Low self-esteem prospectively predicts depression in adolescence and young adulthood. *Journal of personality and social psychology, 95*(3), 695.

Orth, U., Trzesniewski, K. H., & Robins, R. W. (2010). Self-esteem development from young adulthood to old age: a cohort-sequential longitudinal study. *Journal of personality and social psychology, 98*(4), 645.

Orubuloye, I. O., & Caldwell, J. C. (1975). The impact of public health services on mortality: a study of mortality differentials in a rural area of Nigeria. *Population Studies, 29*(2), 259-272.

Parker, R. (1995). *Mother love/mother hate: The power of maternal ambivalence*: BasicBooks.

Patel, P., Lee, J., Wheatcroft, R., Barnes, J., & Stein, A. (2005). Concerns about body shape and weight in the postpartum period and their relation to women's self-identification. *Journal of reproductive and infant psychology, 23*(4), 347-364.

Pearce, J., & Langley-Evans, S. (2013). The types of food introduced during complementary feeding and risk of childhood obesity: a systematic review. *International Journal of Obesity, 37*(4), 477-485.

Pedersen, D. E. (2012). The good mother, the good father, and the good

parent: Gendered definitions of parenting. *Journal of Feminist Family Therapy, 24*(3), 230-246.

Pelham, B. W., & Swann, W. B. (1989). From self-conceptions to self-worth: on the sources and structure of global self-esteem. *Journal of personality and social psychology, 57*(4), 672.

Peres, Y., & Katz, R. (1981). Stability and centrality: The nuclear family in modern Israel. *Social Forces*, 687-704.

Pike, K. M., & Borovoy, A. (2004). The rise of eating disorders in Japan: issues of culture and limitations of the model of “westernization”. *Culture, medicine and psychiatry, 28*(4), 493-531.

Porter, J. S., Stern, M., Mazzeo, S. E., Evans, R. K., & Laver, J. (2012). Relations among teasing, body satisfaction, self-esteem, and depression in treatment-seeking obese African American adolescents. *Journal of Black Psychology*, 0095798412454680.

Pridham, K. F., & Chang, A. S. (1992). Transition to being the mother of a new infant in the first 3 months: maternal problem solving and self-appraisals.*Journal of Advanced Nursing*, *17*(2), 204-216.

Puhl, R., & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity research, 9*(12), 788-805.

Punamäki, R.-L. (1986). Stress among Palestinian women under military occupation; Women's appraisal of stressors, their coping modes, and their mental health. *International Journal of Psychology, 21*(1-4), 445-462.

Räikkönen, K., Pesonen, A.-K., Järvenpää, A.-L., & Strandberg, T. E. (2004). Sweet babies: chocolate consumption during pregnancy and infant

temperament at six months. *Early human development, 76*(2), 139-145.

Reba-Harrelson, L., Von Holle, A., Hamer, R. M., Torgersen, L., Reichborn-Kjennerud, T., & Bulik, C. M. (2010). Patterns of maternal feeding and child eating associated with eating disorders in the Norwegian Mother and Child Cohort Study (MoBa). *Eating behaviors, 11*(1), 54-61.

Redsell, S. A., Atkinson, P., Nathan, D., Siriwardena, A. N., Swift, J. A., & Glazebrook, C. (2010). Parents' beliefs about appropriate infant size, growth and feeding behaviour: implications for the prevention of childhood obesity. *BMC Public Health, 10*(1), 711.

Remennick, L. (2006). The quest for the perfect baby: why do Israeli women seek prenatal genetic testing? *Sociology of health & illness, 28*(1), 21-53.

Ricciardelli, L. A., & McCabe, M. P. (2001). Children's body image concerns and eating disturbance: A review of the literature. *Clinical Psychology Review, 21*(3), 325-344.

Richards, R., Merrill, R. M., Baksh, L., & McGarry, J. (2011). Maternal health behaviors and infant health outcomes among homeless mothers: US Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) 2000–2007. *Preventive Medicine, 52*(1), 87-94.

Richardson, A., Liddington, M., Jaskowski, A., Murie, J., Gillmer, M., & Morris, P. (1990). Pregnancy in a renal transplant recipient complicated by

rupture of a transplant renal artery aneurysm. *British Journal of Surgery, 77*(2), 228-229.

Ritchie, L. D., Whaley, S. E., Spector, P., Gomez, J., & Crawford, P. B. (2010). Favorable impact of nutrition education on California WIC families. *Journal of nutrition education and behavior, 42*(3), S2-S10.

Ritter, C., Hobfoll, S. E., Lavin, J., Cameron, R. P., & Hulsizer, M. R. (2000). Stress, psychosocial resources, and depressive symptomatology during pregnancy in low-income, inner-city women. *Health Psychology, 19*(6), 576.

Robertson, J., Puckering, C., Parkinson, K., Corlett, L., & Wright, C. (2011). Mother–child feeding interactions in children with and without weight faltering; nested case control study. *Appetite, 56*(3), 753-759.

Robinson, S. A., Webb, J. B., & Butler-Ajibade, P. T. (2012). Body image and modifiable weight control behaviors among black females: a review of the literature. *Obesity, 20*(2), 241-252.

Rocco, P. L., Orbitello, B., Perini, L., Pera, V., Ciano, R. P., & Balestrieri, M. (2005). Effects of pregnancy on eating attitudes and disorders: a prospective study. *Journal of Psychosomatic Research, 59*(3), 175-179.

Rochat, P. (2010). The innate sense of the body develops to become a public affair by 2–3 years. *Neuropsychologia, 48*(3), 738-745.

Rodgers, R. F., Paxton, S. J., McLean, S. A., Campbell, K. J., Wertheim, E. H., Skouteris, H., et al. (2013). Do maternal body dissatisfaction and dietary restraint predict weight gain in young pre-school children? A 1-year follow-up study. *Appetite, 67*, 30-36.

Rogan, S. C., Payne, J. L., & Meltzer-Brody, S. (2014). Relationship Between Depressive Mood and Maternal Obesity: Implications for Postpartum Depression *Obesity During Pregnancy in Clinical Practice* (pp. 99-120): Springer.

Rooney, B. L., & Schauberger, C. W. (2002). Excess pregnancy weight gain and long-term obesity: One decade later. *Obstetrics & Gynecology, 100*(2), 245-252.

Rosenberg, M. (1965). Rosenberg self-esteem scale (RSE). *Acceptance and Commitment Therapy. Measures Package, 61*.

ROSSEM, L., Taveras, E. M., Gillman, M. W., Kleinman, K. P., RIFAS-SHIMAN, S. L., Raat, H., et al. (2011). Is the association of breastfeeding with child obesity explained by infant weight change? *International Journal of Pediatric Obesity, 6*(2Part2), e415-e422.

Rössner, S. (1997). Weight gain in pregnancy. *Human reproduction, 12*(suppl 1), 110-115.

Rössner, S., & Öhlin, A. (1995). Pregnancy as a risk factor for obesity: lessons from the Stockholm Pregnancy and Weight Development Study. *Obesity research, 3*(S2), 267s-275s.

Roth, H., Homer, C., & Fenwick, J. (2012). Bouncing back": How Australia's leading women's magazines portray the postpartum 'body. *Women and Birth, 25*(3), 128-134.

Ruddick, S. (1996). 1 Thinking Mothers/Conceiving Birth. *Representations of motherhood*, 29.

Rudolf, M., Hunt, C., George, J., Hajibagheri, K., & Blair, M. (2010). HENRY:

development, pilot and long-term evaluation of a programme to help practitioners work more effectively with parents of babies and pre-school children to prevent childhood obesity. *Child: care, health and development, 36*(6), 850-857.

Ryan, D. (2007). Obesity in women: a life cycle of medical risk. *International Journal of Obesity, 31*, S3-S7.

Sadler, L. S., Slade, A., & Mayes, L. C. (2006). Minding the baby: A mentalization-based parenting program. *Practice in Handbook of Mentalization-Based Treatment. Edited by Allen JG, Fonagy P. West Sussex, UK, John Wiley & Sons*, 271-288.

Safir, M. P., Flaisher-Kellner, S., & Rosenmann, A. (2005). When gender differences surpass cultural differences in personal satisfaction with body shape in Israeli college students. *Sex Roles*, *52*(5-6), 369-378.

Saigal, S., Lambert, M., Russ, C., & Hoult, L. (2002). Self-esteem of adolescents who were born prematurely. *Pediatrics, 109*(3), 429-433.

Satter, E. (1986). Childhood eating disorders. *Journal of the American Dietetic Association, 86*(3), 357-361.

Satter, E. (1990). The feeding relationship: problems and interventions. *The Journal of pediatrics, 117*(2), S181-S189.

Saxon, T., Gollapalli, A., Mitchell, M., & Stanko, S. (2002). Demand feeding or schedule feeding: infant growth from birth to 6 months. *Journal of reproductive and infant psychology, 20*(2), 89-99.

Scaglioni, S., Salvioni, M., & Galimberti, C. (2008). Influence of parental attitudes in the development of children eating behaviour. *British*

Journal of Nutrition, 99(S1), S22-S25.

Schack-Nielsen, L., Sørensen, T. I., Mortensen, E. L., & Michaelsen, K. F. (2010). Late introduction of complementary feeding, rather than duration of breastfeeding, may protect against adult overweight. *The American journal of clinical nutrition, 91*(3), 619-627.

Schneider, Z. (2002). An Australian study of women's experiences of their first pregnancy. *Midwifery*, *18*(3), 238-249.

Schmied, V., & Lupton, D. (2001). The externality of the inside: Body images of pregnancy. *Nursing Inquiry, 8*(1), 32-40.

Schmitt, N., Nicholson, W., & Schmitt, J. (2007). The association of pregnancy and the development of obesity–results of a systematic review and meta-analysis on the natural history of postpartum weight retention. *International Journal of Obesity, 31*(11), 1642-1651.

Schuetzmann, M., Richter-Appelt, H., Schulte-Markwort, M., & Schimmelmann, B. G. (2008). Associations among the perceived parent–child relationship, eating behavior, and body weight in preadolescents: results from a community-based sample. *Journal of Pediatric Psychology, 33*(7), 772-782.

Schulze, P. A., Harwood, R. L., & Schoelmerich, A. (2001). Feeding practices and expectations among middle-class Anglo and Puerto Rican mothers of 12-month-old infants. *Journal of Cross-Cultural Psychology, 32*(4), 397-406.

Schwartz, M. B., & Brownell, K. D. (2007). Actions necessary to prevent childhood obesity: creating the climate for change. *The Journal of Law, Medicine & Ethics, 35*(1), 78-89.

Shah, B. S., Freeland-Graves, J. H., Cahill, J. M., Lu, H., & Graves, G. R. (2010). Diet quality as measured by the healthy eating index and the association with lipid profile in low-income women in early postpartum. *Journal of the American Dietetic Association, 110*(2), 274-279.

Shaw, R. L. (2011). Women's experiential journey toward voluntary childlessness: An interpretative phenomenological analysis. *Journal of community & applied social psychology, 21*(2), 151-163.

Shaw, R. L., & Giles, D. C. (2009). Motherhood on ice? A media framing analysis of older mothers in the UK news. *Psychology and health, 24*(2), 221-236.

Shelton, N., & Johnson, S. (2006). 'I think motherhood for me was a bit like a double-edged sword': the narratives of older mothers. *Journal of community & applied social psychology, 16*(4), 316-330.

Shields, L., Mamun, A. A., O'Callaghan, M., Williams, G. M., & Najman, J. M. (2010). Breastfeeding and obesity at 21 years: a cohort study. *Journal of clinical nursing, 19*(11-12), 1612-1617.

Shloim, N., Hetherington, M., Rudolf, M., & Feltbower, R. (2014). Adjusting to motherhood-the importance of BMI in predicting maternal well-being, eating behaviour and feeding practice within a cross cultural setting. *Appetite*.

Shloim, N., Hetherington, M. M., Rudolf, M., & Feltbower, R. G. (2013). Relationship between body mass index and women's body image, self-esteem and eating behaviours in pregnancy: A cross-cultural study. *Journal of health psychology*, 1359105313502568.

Shrestha, I., Sunuwar, L., Bhandary, S., & Sharma, P. (2010). Correlation between gestational weight gain and birth weight of the infants. *Nepal Medical College journal: NMCJ, 12*(2), 106-109.

Skinner, J. D., Carruth, B. R., Houck, K., Moran III, J., Reed, A., Coletta, F., et al. (1998). Mealtime communication patterns of infants from 2 to 24 months of age. *Journal of Nutrition Education, 30*(1), 8-16.

Skouteris, H., Carr, R., Wertheim, E. H., Paxton, S. J., & Duncombe, D. (2005). A prospective study of factors that lead to body dissatisfaction during pregnancy. *Body Image, 2*(4), 347-361.

Skouteris, H., Wertheim, E. H., Rallis, S., Milgrom, J., & Paxton, S. J. (2009). Depression and anxiety through pregnancy and the early postpartum: an examination of prospective relationships. *Journal of affective disorders, 113*(3), 303-308.

Slaughter, V., Heron, M., & Sim, S. (2002). Development of preferences for the human body shape in infancy. *Cognition, 85*(3), B71-B81.

Smith, D. E., Lewis, C. E., Caveny, J. L., Perkins, L. L., Burke, G. L., & Bild, D. E. (1994). Longitudinal changes in adiposity associated with pregnancy: The CARDIA study. *Jama, 271*(22), 1747-1751.

Smith, G. E., Gerrard, M., & Gibbons, F. X. (1997). Self-esteem and the relation between risk behavior and perceptions of vulnerability to unplanned pregnancy in college women. *Health Psychology, 16*(2), 137.

Smith, J. D., Dishion, T. J., Moore, K. J., Shaw, D. S., & Wilson, M. N. (2013). Effects of Video Feedback on Early Coercive Parent–Child Interactions: The Intervening Role of Caregivers' Relational Schemas. *Journal of Clinical Child & Adolescent Psychology, 42*(3), 405-417.

Smolak, L. (2004). Body image in children and adolescents: where do we go from here? *Body Image, 1*(1), 15-28.

Soares, R. M., Nunes, M. A., Schmidt, M. I., Giacomello, A., Manzolli, P., Camey, S., et al. (2009). Inappropriate eating behaviors during pregnancy: prevalence and associated factors among pregnant women attending primary care in southern Brazil. *International Journal of Eating Disorders, 42*(5), 387-393.

Sovio, U., Ntzani, E. E., & Tzoulaki, I. (2013). Infant Growth and Adult Obesity: Relationship and Factors Affecting Them *Nutrition in Infancy* (pp. 357-366): Springer.

Stein, A., & Fairburn, C. G. (1996). Eating habits and attitudes in the postpartum period. *Psychosomatic Medicine, 58*(4), 321-325.

Stein, A., Woolley, H., Cooper, S., Winterbottom, J., Fairburn, C. G., & Cortina-Borja, M. (2006). Eating habits and attitudes among 10-year-old children of mothers with eating disorders Longitudinal study. *The British Journal of Psychiatry, 189*(4), 324-329.

Stice, E., & Shaw, H. E. (1994). Adverse effects of the media portrayed thin-ideal on women and linkages to bulimic symptomatology. *Journal of Social and Clinical Psychology, 13*(3), 288-308.

Stifter, C. A., Anzman-Frasca, S., Birch, L. L., & Voegtline, K. (2011). Parent use of food to soothe infant/toddler distress and child weight status. An exploratory study. *Appetite, 57*(3), 693-699.

Stotland, N. E., Haas, J. S., Brawarsky, P., Jackson, R. A., Fuentes-Afflick, E., & Escobar, G. J. (2005). Body mass index, provider advice, and target gestational weight gain. *Obstetrics & Gynecology, 105*(3), 633-638.

STRANG, V. R., & SULLIVAN, P. L. (1985). Body image attitudes during pregnancy and the postpartum period. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 14*(4), 332-337.

Strauss, R. S. (2000). Childhood obesity and self-esteem. *Pediatrics, 105*(1), e15-e15.

Striegel-Moore, R. H., Dohm, F. A., Kraemer, H. C., Taylor, C. B., Daniels, S., Crawford, P. B., et al. (2003). Eating disorders in white and black women. *American Journal of Psychiatry, 160*(7), 1326-1331.

Stunkard, A. (2000). Old and new scales for the assessment of body image. *Perceptual and Motor Skills, 90*(3), 930-930.

Stunkard, A., Berkowitz, R., Schoeller, D., Maislin, G., & Stallings, V. (2004). Predictors of body size in the first 2 y of life: a high-risk study of human obesity. *International journal of obesity, 28*(4), 503-513.

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*(4), 203-208.

Sweeney, A. C., & Fingerhut, R. (2013). Examining Relationships Between Body Dissatisfaction, Maladaptive Perfectionism, and Postpartum Depression Symptoms. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 42*(5), 551-561.

Szwajcer, E. M., Hiddink, G. J., Koelen, M. A., & van Woerkum, C. M. (2007). Nutrition awareness and pregnancy: Implications for the life course perspective. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 135*(1), 58-64.

Tanentsapf, I., Heitmann, B. L., & Adegboye, A. R. (2011). Systematic review of clinical trials on dietary interventions to prevent excessive weight gain during pregnancy among normal weight, overweight and obese women. *BMC pregnancy and childbirth, 11*(1), 81.

Taveras, E. M., Scanlon, K. S., Birch, L., Rifas-Shiman, S. L., Rich-Edwards, J. W., & Gillman, M. W. (2004). Association of breastfeeding with maternal control of infant feeding at age 1 year. *Pediatrics, 114*(5), e577-e583.

Taylor, A., Wilson, C., Slater, A., & Mohr, P. (2012). Self-esteem and body dissatisfaction in young children: Associations with weight and perceived parenting style. *Clinical Psychologist, 16*(1), 25-35.

Teman, E. (2008). The social construction of surrogacy research: An anthropological critique of the psychosocial scholarship on surrogate motherhood. *Social Science & Medicine, 67*(7), 1104-1112.

Terry, D. J., Mayocchi, L., & Hynes, G. J. (1996). Depressive symptomatology in new mothers: A stress and coping perspective. *Journal of Abnormal Psychology, 105*(2), 220.

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior, 52*(2), 145-161.

Thomas, K., Ricciardelli, L. A., & Williams, R. J. (2000). Gender traits and self-concept as indicators of problem eating and body dissatisfaction among children. *Sex Roles, 43*(7-8), 441-458.

Thompson, A. L., Mendez, M. A., Borja, J. B., Adair, L. S., Zimmer, C. R., & Bentley, M. E. (2009). Development and validation of the infant feeding style questionnaire. *Appetite, 53*(2), 210-221.

Thompson, J. K., & Altabe, M. N. (1991). Psychometric qualities of the figure rating scale. *International Journal of Eating Disorders, 10*(5), 615-619.

Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*: American Psychological Association.

Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current directions in psychological science, 10*(5), 181-183.

Thompson, S. H., Corwin, S. J., & Sargent, R. G. (1997). Ideal body size beliefs and weight concerns of fourth-grade children. *International Journal of Eating Disorders, 21*(3), 279-284.

Tiggemann, M. (2004). Body image across the adult life span: Stability and change. *Body Image, 1*(1), 29-41.

Tiggemann, M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology, 23*(1), 23-44.

Tilden, V. P. (1983). The relation of life stress and social support to emotional disequilibrium during pregnancy. *Research in nursing & health, 6*(4), 167-174.

Tluczek, A., Clark, R., McKechnie, A. C., Orland, K. M., & Brown, R. L. (2010). Task-Oriented and Bottle Feeding Adversely Affect the Quality of Mother-Infant Interactions Following Abnormal Newborn Screens. *Journal of developmental and behavioral pediatrics: JDBP, 31*(5), 414.

Turner, J. J., Parrott, A. C., Moore, D., Goodwin, J., Fulton, S., Min, M. O., et al. (2013). *Reduced depression after quitting ecstasy/MDMA: Psychiatric gains in young mothers following the cessation of stimulant drug use.* Paper presented at the Second International Conference on Novel Psychoactive Substances, Swansea, Wales, UK, Conference Abstract.

Tzavara, C., Tzonou, A., Zervas, I., Ravens-Sieberer, U., Dimitrakaki, C., & Tountas, Y. (2012). Reliability and validity of the KIDSCREEN-52 health-related quality of life questionnaire in a Greek adolescent population. *Annals of general psychiatry, 11*(3), 1-7.

Upton, R. L., & Han, S. S. (2003). Maternity and Its Discontents “Getting The Body Back” After Pregnancy. *Journal of contemporary ethnography, 32*(6), 670-692.

van den Berg, P. A., Keery, H., Eisenberg, M., & Neumark-Sztainer, D. (2010). Maternal and adolescent report of mothers’ weight-related concerns and behaviors: Longitudinal associations with adolescent body dissatisfaction and weight control practices. *Journal of Pediatric Psychology, 35*(10), 1093-1102.

van der Horst, F. C., & van der Veer, R. (2010). The ontogeny of an idea: John Bowlby and contemporaries on mother–child separation. *History of psychology, 13*(1), 25.

Van Jaarsveld, C. H., Johnson, L., Llewellyn, C., & Wardle, J. (2010). Gemini: a UK twin birth cohort with a focus on early childhood weight trajectories, appetite and the family environment. *Twin Research and Human Genetics, 13*(01), 72-78.

Van Poppel, M. N., Hartman, M. A., Hosper, K., & Van Eijsden, M. (2012). Ethnic differences in weight retention after pregnancy: the ABCD study. *The European Journal of Public Health, 22*(6), 874-879.

Van Strien, T., Frijters, J. E., Bergers, G., & Defares, P. B. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders, 5*(2), 295-315.

Vander Wal, J. S. (2004). Eating and body image concerns among average-weight and obese African American and Hispanic girls. *Eating behaviors, 5*(2), 181-187.

Vander Wal, J. S., & Thelen, M. H. (2000). Eating and body image concerns among obese and average-weight children. *Addictive Behaviors, 25*(5), 775-778.

Verbeke, W., & De Bourdeaudhuij, I. (2007). Dietary behaviour of pregnant versus non-pregnant women. *Appetite, 48*(1), 78-86.

Vereijken, C., Weenen, H., & Hetherington, M. (2011). Feeding infants and young children. From guidelines to practice-conclusions and future directions. *Appetite, 57*(3), 839-843.

Walker, L. O., Crain, H., & Thompson, E. (1986). Maternal role attainment and identity in the postpartum period: Stability and change. *Nursing Research, 35*(2), 68-71.

Walker, L. O., & Freeland-Graves, J. (1998). Lifestyle Factors Related to Postpartum Weight Gain and Body Image in Bottle-and Breastfeeding Women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 27*(2), 151-160.

Wallace, J., Horgan, G., & Bhattacharya, S. (2012). Placental weight and efficiency in relation to maternal body mass index and the risk of pregnancy complications in women delivering singleton babies. *Placenta, 33*(8), 611-618.

Wang, F., Wild, T., Kipp, W., Kuhle, S., & Veugelers, P. J. (2009). The influence of childhood obesity on the development of self-esteem. *Health Rep, 20*(2), 21-27.

Wardle, J., & Johnson, F. (2002). Weight and dieting: examining levels of weight concern in British adults. *International journal of obesity and related metabolic disorders: journal of the International Association for the Study of Obesity, 26*(8), 1144-1149.

Wardle, J., Sanderson, S., Guthrie, C. A., Rapoport, L., & Plomin, R. (2002). Parental Feeding Style and the Inter-generational Transmission of Obesity Risk. *Obesity Research, 10*(6), 453-462.

Warfield, J. J., Kondo-Ikemura, K., & Waters, E. (2011). Measuring infant attachment security in rhesus macaques (Macaca mulatta): adaptation of the attachment Q-set. *American journal of primatology, 73*(2), 109-118.

Waters, E., de Silva Sanigorski, A., Hall, B., Brown, T., Campbell, K., Gao, Y., et al. (2011). Interventions for preventing obesity in children (review). *Cochrane collaboration*(12), 1-212.

Weaver, J. J., & Ussher, J. M. (1997). How motherhood changes life a discourse analytic study with mothers of young children. *Journal of reproductive and infant psychology, 15*(1), 51-68.

Weir, Z., Bush, J., Robson, S. C., McParlin, C., Rankin, J., & Bell, R. (2010). Physical activity in pregnancy: a qualitative study of the beliefs of overweight and obese pregnant women. *BMC pregnancy and childbirth, 10*(1), 18.

Weis, K. L., & Ryan, T. W. (2012). Mentors Offering Maternal Support: A Support Intervention for Military Mothers. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 41*(2), 303-314.

Wen, L. M., Flood, V. M., Simpson, J. M., Rissel, C., & Baur, L. A. (2010). Dietary behaviours during pregnancy: findings from first-time mothers in southwest Sydney, Australia. *Int J Behav Nutr Phys Act, 7*(13), 1-7.

Wen, L. M., Simpson, J. M., Rissel, C., & Baur, L. A. (2013). Maternal “Junk Food” Diet During Pregnancy as a Predictor of High Birthweight: Findings from the Healthy Beginnings Trial. *Birth, 40*(1), 46-51.

Whitaker, R. C., Wright, J. A., Pepe, M. S., Seidel, K. D., & Dietz, W. H. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine, 337*(13), 869-873.

Wiltheiss, G. A., Lovelady, C. A., West, D. G., Brouwer, R. J., Krause, K. M., & Østbye, T. (2013). Diet quality and weight change among overweight and obese postpartum women enrolled in a behavioral intervention program. *Journal of the Academy of Nutrition and Dietetics, 113*(1), 54-62.

Wingood, G. M., DiClemente, R. J., Harrington, K., & Davies, S. L. (2002). Body image and African American females' sexual health. *Journal of women's health & gender-based medicine, 11*(5), 433-439.

Winnicott, D. (1956). *Primary maternal preoccupation*: Tavistock London.

Winnicott, D. W. (1958). Collected papers: Through paediatrics to psycho-analysis.

Winson, N. (2009). Transition to motherhood. *The social context of birth*, 145-160.

Berkowitz, B. (2008). Cultural aspects in the care of the orthodox Jewish woman. *Journal of Midwifery & Women's Health*, *53*(1), 62-67.

Worobey, J., & Worobey, H. S. (2014). Body-size stigmatization by preschool girls: In a doll's world, it is good to be "Barbie". *Body Image, 11*(2), 171-174.

Wright, C. M., & Parker, L. (2004). Forty years on: the effect of deprivation on growth in two Newcastle birth cohorts. *International Journal of Epidemiology, 33*(1), 147-152.

Wright, C. M., Parkinson, K. N., Shipton, D., & Drewett, R. F. (2007). How do toddler eating problems relate to their eating behavior, food preferences, and growth? *Pediatrics, 120*(4), e1069-e1075.

Yakura, N., Kasagi, T., & Hiroe, K. (1997). Mothers' Body Perception Biased

to Obesity and its Effects on Nursing Behaviors. *Yonago Acta medica, 40*(3), 137-145.

Young, B., & Drewett, R. (1998). Methods for the analysis of feeding behaviour in infancy: weanlings. *Journal of reproductive and infant psychology, 16*(1), 27-44.

Young, B., & Drewett, R. (2000). Eating behaviour and its variability in 1-year-old children. *Appetite, 35*(2), 171-177.

Yu, Z., Han, S., Cao, X., Zhu, C., Wang, X., & Guo, X. (2012). Genetic Polymorphisms in Adipokine Genes and the Risk of Obesity: A Systematic Review and Meta-Analysis. *Obesity, 20*(2), 396-406.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of personality and social psychology, 9*(2p2), 1.

Zajonc, R. B. (2001). Mere exposure: A gateway to the subliminal. *Current directions in psychological science, 10*(6), 224-228.

Zocca, J. M., Shomaker, L. B., Tanofsky-Kraff, M., Columbo, K. M., Raciti, G. R., Brady, S. M., et al. (2011). Links between mothers' and children's disinhibited eating and children's adiposity. *Appetite, 56*(2), 324-331.

8 Appendices:

8.1 Appendices A: Example forms

School of Psychology and Sciences

University of Leeds

UNIVERSITY OF LEEDS

INFORMATION SHEET FOR PARTICIPANTS

How feelings and eating in pregnancy affect the baby

We are contacting you as you took part in a research project while you were pregnant. You will recall that we were studying how women feel about themselves and how they eat when they are pregnant. We plan to explore whether mother's feelings and behaviour during pregnancy affects interactions between mothers and babies including play, engagement and feeding over time.

We hope that you might be interested in taking part again. Before you decide, we would like to explain why the study is being done and what it will involve. Please take time to read this, and feel free to ask any questions.

Why we are carrying out this study

Research shows how important nutrition is during pregnancy. A number of studies have shown that what pregnant mothers eat can have an impact on their babies and how they grow during childhood. We have taken this work further in the previous project by exploring women's feelings and the way they eat when they are pregnant. We would now like to extend the research to see how women who participated in the study view their babies, their attitudes towards feeding them and how the babies feed. We hope to increase our understanding about the impact that mothers' feelings and the way they eat during pregnancy has on their child.

What happens if I decide to take part?

If you decide to take part in the study, you will be asked to complete the questionnaires you completed previously every 6 months until your baby is 2 years old (four occasions). They take no more than 30 minutes to complete and you can return them by email or post or we can arrange to meet at home or in a place that is convenient to you. The questionnaires, as you may remember, ask you some general brief questions, how happy you feel about yourself, what you feel about your appearance and how you relate to food. There are also two questionnaires about how you see your baby and your experience of feeding him or her. We will also ask you to provide us with any weight or length measurements that your health visitor or doctor has made.

I will be happy to clarify any questions for you and if you have difficulty reading in English I can help you. If there are any questions that you would rather not answer you do not have to. If you decide while you are completing the questionnaires, or later on, that you would rather not have taken part in the research you can withdraw and your questionnaire and details will be destroyed.

An additional component of the research involves videoing some of the babies. If you take part in this we will record your baby at a mealtime at around the age of 4, 12, 18 and 24 months. We will then review the video to gain an idea of your baby's enjoyment of food, how you feed him or her, and the way he or she eats. We can then relate this to the questionnaires you have completed. We are also interested to see how your baby plays with dolls when he or she is 12, 18 months and two years old. I will bring along three dolls of different shapes and sizes and see if your baby prefers one over another.

We can only carry out the videoing on a selection of the babies. If you take part the videoing can take place in your home.

What are the possible benefits of taking part?

Most people enjoy filling out these questionnaires and you may find them interesting. If you take part in the videoing, we will provide you with a copy of the video for you to keep if you would like. By participating in the study we hope that you will help us gain a better understanding of how women feel after being pregnant and how feelings before

and after pregnancy affect their children and the way they eat. We hope that this knowledge will eventually lead to benefits for women during pregnancy and their families. There are no risks involved in taking part.

Will taking part in this project be kept confidential?

Your participation on the project will be completely confidential. The questionnaires, videos and your personal details will be locked in a safe before entering them onto a computer, which only we can access. We will give your questionnaire and video a code and will not enter any personal details that would allow you to be identified. When we analyze the questionnaires and videos we pool all the results so they cannot be linked to any individual.

What will happen to the results of the research project?

I am carrying out this research as part of my PhD at the Institute of Psychological Sciences at the University of Leeds. We hope that the results of this study will also be published in a professional journal and presented at academic meetings. I am planning on writing a summary of our findings for women who have taken part and I will send you a copy if you wish.

Contact for further information

I would be happy to provide with further details and to answer any questions that you have. Please feel free to contact me by phone or email:

netalieshalom1977@gmail.com

or 0113-2265725.

You may also enter my email into Skype and contact me via Skype.

Username: Netalie shalom.

Thank you for taking time to read this information.

Netalie Shloim

PhD student

Marion Hetherington

Professor of Biopsychology

How feelings and eating in pregnancy affect the baby

Please complete this sheet yourself

Please confirm the statements by putting your initials in the box below	
	I have read and understood the participant information sheet
	I have had the opportunity to ask questions and discuss this study
	I have received satisfactory answers to all of my questions
	I have received enough information about the study
	I understand that I am free to withdraw from the study at any time and without having to give a reason for withdrawing
	I understand that any information I provide, including personal details, will be treated as confidential, stored securely and only accessed by those carrying out the study.
	I agree to take part in the study
	I am interested in taking part in the additional component of the research that involves having my baby videoed
Participant Signature …… Date	
Name of Participant	
Researcher Signature …… Date	
Name of Researcher NETALIE SHLOIM	

Thank you for agreeing to take part in this study.

[Participant Consent Form July 2011]

Version 1

UNIVERSITY OF LEEDS

How women feel two years after pregnancy

Dear participant,

It has been nearly three years since I contacted you for the first time. You were pregnant then and I was working on my MSc in nutrition. You kindly agreed to contribute your time and share your feelings with me, helping me to better understand how women feel and eat during pregnancy.

When I decided to continue my research as part of a PhD, I contacted you again, and again, you agreed to continue and contribute your time, feelings and understandings. Since then we spoke every six months, allowing me to first learn more about the changes in your eating behaviours and feelings, and then better understand how your baby eats.

I cannot thank you enough for all your help, time and support.

In the last two years I managed to write 4 papers. The first explores women feelings and eating behaviours during pregnancy. The second explored perceptions of motherhood and the third explores feelings and eating behaviours 2-6 months after pregnancy. I am currently working on my fourth paper exploring feeding interactions 6 months post pregnancy.

As publishing a paper is a very long process, I am pleased to say the first paper has just been accepted for publication. As soon as it's available online, I will send you the link for this. The other papers are currently under review and hopefully will be published soon. I promise to send you a copy of each publication.

In September 2013 I am starting the third year of my PhD. This is my last year and in this year I will concentrate in the analysis of all the data I managed to collect and in writing my thesis.

When this part is over I will email you again a letter with the summary of the main findings of this intensive work.

I am now starting the last part of the study, the fourth follow up. This part is similar to the third time you filled out the questionnaires and should not take longer than 15 minutes, for the most, to answer.
There are some additional questions regarding specific eating behaviours and I would appreciate your support in providing some answers for this part as well. You will also find a section in which you are encouraged to write any comments, advice or feelings you had while participating in this study.
Please feel free to contact me with any questions you have.

I wish you and your family only well and health and thanks again for all your time!!!
I could have never reached this point without your support!

Best wishes
Netalie

8.2 Appendices B: Standardised Questionnaires.

UNIVERSITY OF LEEDS

General demographic information:

These questions are to provide us with some background information about you and your family

Participant number: Date:

Are you

Married Have a long-term partner

Single Divorced

Are you currently working?

Yes No

Have you had any medical problems after pregnancy?

Yes No

If so could you provide some details

Does your baby go to a child minder or nursery? Yes No

If yes, how many hours per week:

Less than 10 hours

More than 10 hours but less than 20

More than 20 but less than 30

More than 30 hours

What is your current weight and height?

Weight [ ] **Height [ ]**

The Rosenberg Self-Esteem Questionnaire:

	Strongly Agree	Agree	Disagree	Strongly Disagree
On the whole, I am satisfied with myself.	[ ]	[ ]	[ ]	[ ]
At times I think I am no good at all.	[ ]	[ ]	[ ]	[ ]
I feel that I have a number of good qualities.	[ ]	[ ]	[ ]	[ ]
I am able to do things as well as most other people.	[ ]	[ ]	[ ]	[ ]
I feel I do not have much to be proud of.	[ ]	[ ]	[ ]	[ ]
I certainly feel useless at times.	[ ]	[ ]	[ ]	[ ]
I feel that I'm person of worth, at least on an equal plane with others.	[ ]	[ ]	[ ]	[ ]
I wish I could have more respect for myself.	[ ]	[ ]	[ ]	[ ]
All in all, I am inclined to feel that I am a failure.	[ ]	[ ]	[ ]	[ ]
I take a positive attitude toward myself.	[ ]	[ ]	[ ]	[ ]

The Dutch Eating Behaviours questionnaire:

		Never	Seldom	Some-times	Often	Very Often
1.	If you put on weight, do you try to eat less than you usually did?	[ ]	[ ]	[ ]	[ ]	[ ]
2.	Do you have a desire to eat when you are irritated?	[ ]	[ ]	[ ]	[ ]	[ ]
3.	If food tastes good to you, do you eat more than you usually do?	[ ]	[ ]	[ ]	[ ]	[ ]
4.	Do you try and eat less at mealtimes than you would like to eat?	[ ]	[ ]	[ ]	[ ]	[ ]
5.	Do you have a desire to eat when you have nothing to do?	[ ]	[ ]	[ ]	[ ]	[ ]
6.	Do you have a desire to eat when you are fed up?	[ ]	[ ]	[ ]	[ ]	[ ]
7.	If food smells and looks good, do you eat more than you usually do?	[ ]	[ ]	[ ]	[ ]	[ ]
8.	How often do you refuse food or drink offered because you are worried about how much you weigh?	[ ]	[ ]	[ ]	[ ]	[ ]
9.	Do you have a desire to eat when you are feeling lonely?	[ ]	[ ]	[ ]	[ ]	[ ]
10.	If you see or smell something delicious, do you have a desire to eat it?	[ ]	[ ]	[ ]	[ ]	[ ]
11.	Do you watch exactly what you eat?	[ ]	[ ]	[ ]	[ ]	[ ]
12.	Do you have a desire to eat when somebody disappoints you?	[ ]	[ ]	[ ]	[ ]	[ ]

	Never	Seldom	Sometimes	Often	Very Often
13. If you have something delicious to eat, do you eat it straight away?	[ ]	[ ]	[ ]	[ ]	[ ]
14. Do you deliberately eat foods that are slimming?	[ ]	[ ]	[ ]	[ ]	[ ]
15. Do you have a desire to eat when you are cross?	[ ]	[ ]	[ ]	[ ]	[ ]
16. Do you have a desire to eat when you are expecting something to happen?	[ ]	[ ]	[ ]	[ ]	[ ]
17. If you walk past the baker do you have a desire to buy something delicious?	[ ]	[ ]	[ ]	[ ]	[ ]
18. When you have eaten too much do you eat less than usual on the following days?	[ ]	[ ]	[ ]	[ ]	[ ]
19. Do you get a desire to eat when you are anxious, worried or tense?	[ ]	[ ]	[ ]	[ ]	[ ]
20. If you walk past a snack bar or café, do you have a desire to buy something delicious?	[ ]	[ ]	[ ]	[ ]	[ ]
21. Do you deliberately eat less in order not to become heavier?	[ ]	[ ]	[ ]	[ ]	[ ]
22. Do you have a desire to eat when things are going against you or when things have gone wrong?	[ ]	[ ]	[ ]	[ ]	[ ]
23. If you see others eating, do you also have a desire to eat?	[ ]	[ ]	[ ]	[ ]	[ ]
24. How often do you try not to eat between meals because you are watching your weight?	[ ]	[ ]	[ ]	[ ]	[ ]
25. Do you have a desire to eat when you are frightened?	[ ]	[ ]	[ ]	[ ]	[ ]

	Never	Seldom	Sometimes	Often	Very Often
26. Can you resist eating delicious foods?	[ ]	[ ]	[ ]	[ ]	[ ]
27. How often in the evening do you try not to eat because you are watching your weight?	[ ]	[ ]	[ ]	[ ]	[ ]
28. Do you have a desire to eat when you are disappointed?	[ ]	[ ]	[ ]	[ ]	[ ]
29. Do you eat more than usual when you see others eating?	[ ]	[ ]	[ ]	[ ]	[ ]
30. Do you think about how much you weigh before deciding how much to eat?	[ ]	[ ]	[ ]	[ ]	[ ]
31. Do you have a desire to eat when you are upset?	[ ]	[ ]	[ ]	[ ]	[ ]
32. When you see someone preparing a meal, does it make you want to eat something?	[ ]	[ ]	[ ]	[ ]	[ ]
33. Do you have a desire to eat when you are bored or restless?	[ ]	[ ]	[ ]	[ ]	[ ]

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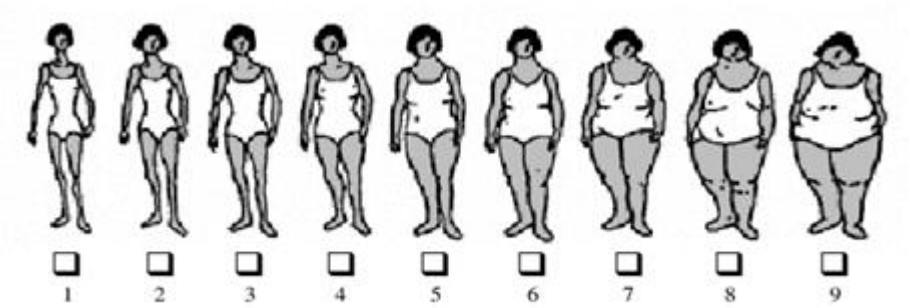
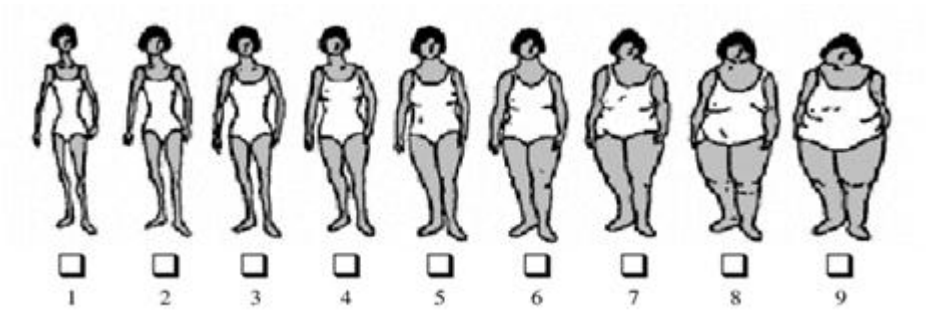
The Body Image Scale:

Here are some pictures of women.

Please circle the picture that best describes how you see yourself now



Please circle the picture that best describes how you would like to be



The Body image Disturbance Questionnaire:

Are you concerned about your appearance or some part of your body, which you consider especially unattractive?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
If you are at least somewhat concerned, do these concerns preoccupy you? That is, you think about them a lot and are they hard to stop thinking about?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
Has your appearance often caused you a lot of distress, torment, or pain? How much?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
Has your appearance caused you impairment in social, occupational or other important areas of functioning? How much?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
Has your appearance significantly interfered with your social life? How much?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
Has your appearance significantly interfered with your job, or your ability to function in your role? How much?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*
Do you ever avoid things because of your appearance? How often?	*Not at all concerned*	*Somewhat concerned*	*Moderately concerned*	*Very much concerned*	*Extremely concerned*

The Baby Eating Behaviours questionnaire:

		Never	Rarely	Sometimes	Often	Always
1.	My baby seems contented while feeding	[ ]	[ ]	[ ]	[ ]	[ ]
2.	My baby frequently wants more milk than I provide	[ ]	[ ]	[ ]	[ ]	[ ]
3.	My baby loves milk	[ ]	[ ]	[ ]	[ ]	[ ]
4.	My baby has a big appetite	[ ]	[ ]	[ ]	[ ]	[ ]
5.	My baby finishing feeding quickly	[ ]	[ ]	[ ]	[ ]	[ ]
6.	My baby becomes distressed while feeding	[ ]	[ ]	[ ]	[ ]	[ ]
7.	My baby gets full up easily	[ ]	[ ]	[ ]	[ ]	[ ]
8.	If allowed to, my baby would take too much milk	[ ]	[ ]	[ ]	[ ]	[ ]
9.	My baby takes more than 30 minutes to finish feeding	[ ]	[ ]	[ ]	[ ]	[ ]
10.	My baby gets full before taking all the milk I think he/she should have	[ ]	[ ]	[ ]	[ ]	[ ]
11.	My baby feeds slowly	[ ]	[ ]	[ ]	[ ]	[ ]

	Never	Rarely	Sometimes	Often	Always
12. Even when my baby has just eaten well, he/she is happy to feed again if offered.	[ ]	[ ]	[ ]	[ ]	[ ]
13. My baby finds it difficult to manage a complete feed	[ ]	[ ]	[ ]	[ ]	[ ]
14. My baby is always demanding a feed	[ ]	[ ]	[ ]	[ ]	[ ]
15. My baby sucks more and more slowly during the course of a feed	[ ]	[ ]	[ ]	[ ]	[ ]
16. If given the chance, my baby would always be feeding	[ ]	[ ]	[ ]	[ ]	[ ]
17. My baby enjoys feeding time	[ ]	[ ]	[ ]	[ ]	[ ]
18. My baby can easily take a feed within 30 minutes of the last one	[ ]	[ ]	[ ]	[ ]	[ ]

The Infant Feeding Questionnaire:

		Always	Often	Sometimes	Rarely	Never
1.	**I let my baby eat whenever he wants to**	[ ]	[ ]	[ ]	[ ]	[ ]
2.	**I worry that my baby is not eating enough**	[ ]	[ ]	[ ]	[ ]	[ ]
3.	**I only allow my baby to eat at set times**	[ ]	[ ]	[ ]	[ ]	[ ]
4.	**I let my baby decide when he finishes to eat**	[ ]	[ ]	[ ]	[ ]	[ ]
5.	**I feed my baby extra to be sure he gets enough to eat**	[ ]	[ ]	[ ]	[ ]	[ ]
6.	**When my baby gets fussy, feeding him is the first thing I do**	[ ]	[ ]	[ ]	[ ]	[ ]
7.	**I worry that my baby is eating too much**	[ ]	[ ]	[ ]	[ ]	[ ]
8.	**It is a struggle getting my baby to eat**	[ ]	[ ]	[ ]	[ ]	[ ]
9.	**I get upset if my baby eats too much**	[ ]	[ ]	[ ]	[ ]	[ ]
10.	**To make sure my baby does not get fussy, I feed him even when I think he is not hungry**	[ ]	[ ]	[ ]	[ ]	[ ]
11.	**I talk or sing to my baby while feeding him**	[ ]	[ ]	[ ]	[ ]	[ ]
12.	**I get upset if he does not eat enough**	[ ]	[ ]	[ ]	[ ]	[ ]
13.	**I put infant cereal in my baby's bottle so he will sleep longer at night**	[ ]	[ ]	[ ]	[ ]	[ ]
14.	**I hold my baby when giving him a bottle**	[ ]	[ ]	[ ]	[ ]	[ ]
15.	**When my baby was under 4 months of age, he wanted more than just formula and or/breast milk?**	[ ]	[ ]	[ ]	[ ]	[ ]

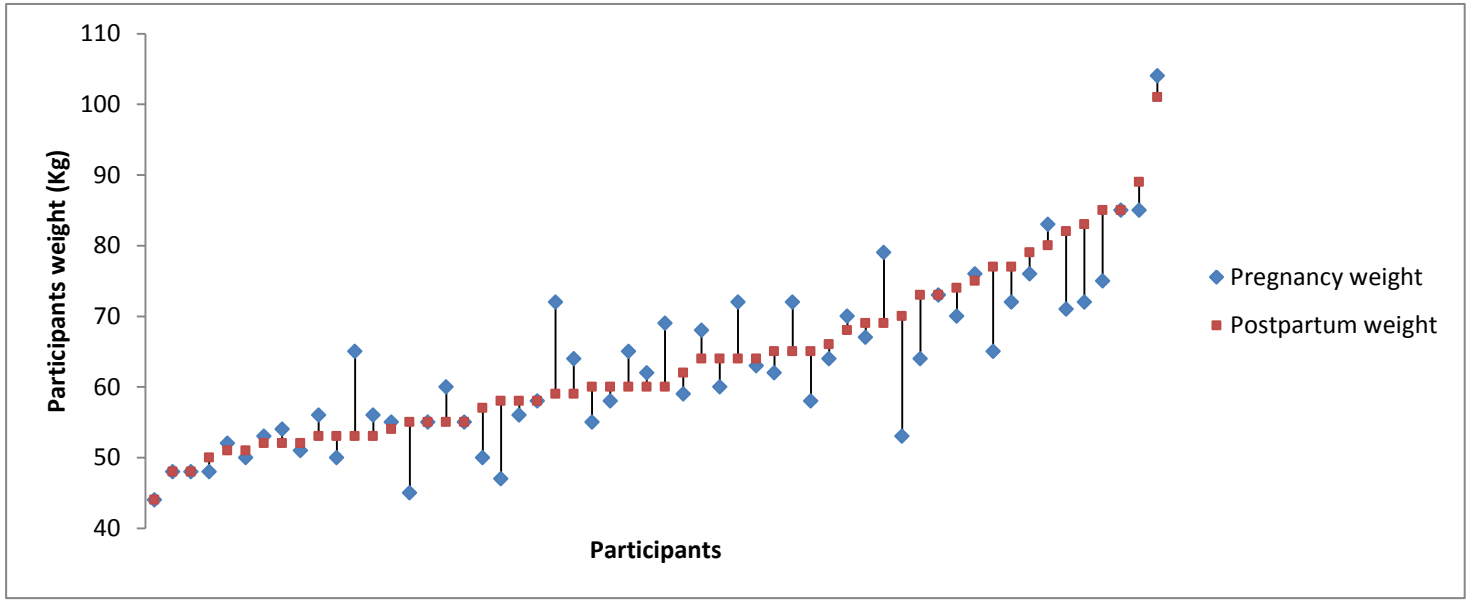
		Always	Often	Sometimes	Rarely	Never
16.	**I put cereal in my baby's bottle so he will stay full longer**	[ ]	[ ]	[ ]	[ ]	[ ]
17.	**If I see a baby who is the same age as my baby, but weighs more, I feel as if I am not doing a good job feeding my child**	[ ]	[ ]	[ ]	[ ]	[ ]
18.	**If I do not encourage my child to eat, he does not eat enough**	[ ]	[ ]	[ ]	[ ]	[ ]
19.	**Feeding my baby is the best way to stop his fussiness**	[ ]	[ ]	[ ]	[ ]	[ ]
20.	**I know when my baby is hungry**	[ ]	[ ]	[ ]	[ ]	[ ]
21.	**I know when my baby has eaten enough**	[ ]	[ ]	[ ]	[ ]	[ ]
22.	**Feeding my baby is the best way to get him to sleep longer**	[ ]	[ ]	[ ]	[ ]	[ ]
23.	**I believe it is important for my baby to finish all the formula in his bottle**	[ ]	[ ]	[ ]	[ ]	[ ]
24.	**I am worried that my baby will be underweight**	[ ]	[ ]	[ ]	[ ]	[ ]
25.	**I know when my baby is full**	[ ]	[ ]	[ ]	[ ]	[ ]
26.	**My baby knows when he is hungry**	[ ]	[ ]	[ ]	[ ]	[ ]
27.	**I am worried that my baby will become overweight**	[ ]	[ ]	[ ]	[ ]	[ ]
28.	**My baby knows when he is full**	[ ]	[ ]	[ ]	[ ]	[ ]

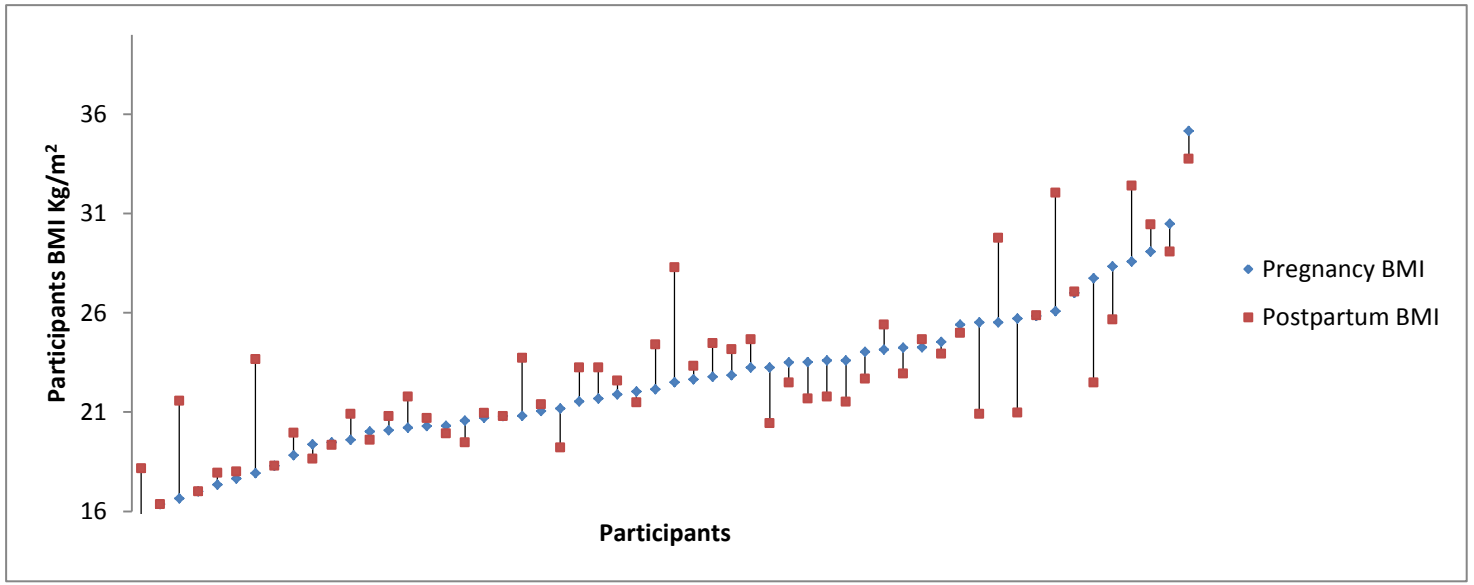
The Child Eating Behaviours Questionnaire:

		Never	Rarely	Sometimes	Often	Always
1.	My child loves food	[ ]	[ ]	[ ]	[ ]	[ ]
2.	My child eats more when worried	[ ]	[ ]	[ ]	[ ]	[ ]
3.	My child has a big appetite	[ ]	[ ]	[ ]	[ ]	[ ]
4.	My child finishes his/her meal quickly	[ ]	[ ]	[ ]	[ ]	[ ]
5.	My child is interested in food	[ ]	[ ]	[ ]	[ ]	[ ]
6.	My child is always asking for a drink	[ ]	[ ]	[ ]	[ ]	[ ]
7.	My child refuses new foods at first	[ ]	[ ]	[ ]	[ ]	[ ]
8.	My child eats slowly	[ ]	[ ]	[ ]	[ ]	[ ]
9.	My child eats less when angry	[ ]	[ ]	[ ]	[ ]	[ ]
10.	My child enjoys tasting new foods	[ ]	[ ]	[ ]	[ ]	[ ]
11.	My child eats less when s/he is tired	[ ]	[ ]	[ ]	[ ]	[ ]
12.	My child is always asking for food	[ ]	[ ]	[ ]	[ ]	[ ]
13.	My child eats more when annoyed	[ ]	[ ]	[ ]	[ ]	[ ]
14.	If allowed to, my child would eat too much	[ ]	[ ]	[ ]	[ ]	[ ]
15.	My child eats more when anxious	[ ]	[ ]	[ ]	[ ]	[ ]
16.	My child enjoys a wide variety of foods	[ ]	[ ]	[ ]	[ ]	[ ]
17.	My child leaves food on his/her plate at the end of a meal	[ ]	[ ]	[ ]	[ ]	[ ]
18.	My child takes more than 30 minutes to finish a meal	[ ]	[ ]	[ ]	[ ]	[ ]

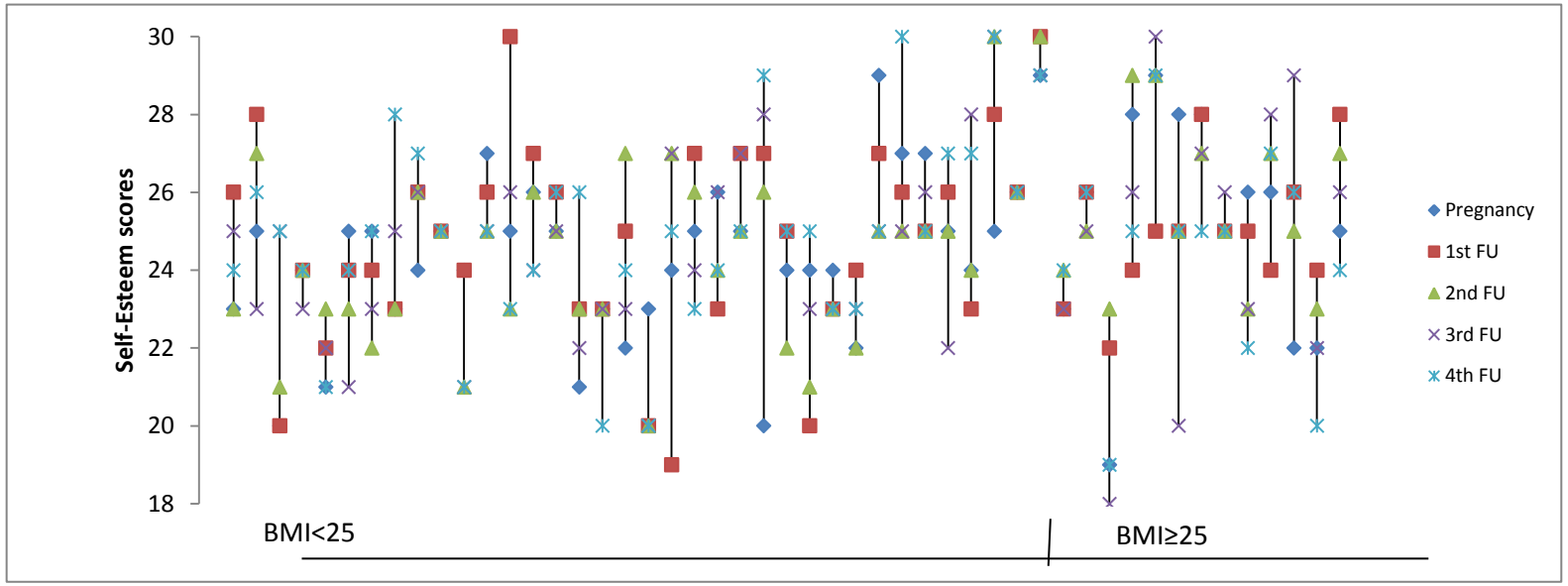
	Never	Rarely	Sometimes	Often	Always
19. Given the choice, my child would eat most of the time	[ ]	[ ]	[ ]	[ ]	[ ]
20. My child looks forward to mealtimes	[ ]	[ ]	[ ]	[ ]	[ ]
21. My child gets full before his/her meal is finished	[ ]	[ ]	[ ]	[ ]	[ ]
22. My child enjoys eating	[ ]	[ ]	[ ]	[ ]	[ ]
23. My child eats more when she is happy	[ ]	[ ]	[ ]	[ ]	[ ]
24. My child is difficult to please with meals	[ ]	[ ]	[ ]	[ ]	[ ]
25. My child eats less when upset	[ ]	[ ]	[ ]	[ ]	[ ]
26. My child gets full up easily	[ ]	[ ]	[ ]	[ ]	[ ]
27. My child eats more when s/he has nothing else to do	[ ]	[ ]	[ ]	[ ]	[ ]
28. Even if my child is full up s/he finds room to eat his/her favorite food	[ ]	[ ]	[ ]	[ ]	[ ]
29. If given the chance, my child would drink continuously throughout the day	[ ]	[ ]	[ ]	[ ]	[ ]
30. My child cannot eat a meal if s/he has had a snack just before	[ ]	[ ]	[ ]	[ ]	[ ]
31. If given the chance, my child would always be having a drink	[ ]	[ ]	[ ]	[ ]	[ ]
32. My child is interested in tasting food s/he hasn't tasted before	[ ]	[ ]	[ ]	[ ]	[ ]
33. My child decides that s/he doesn't like a food, even without tasting it	[ ]	[ ]	[ ]	[ ]	[ ]
34. If given the chance, my child would always have food in his/her mouth	[ ]	[ ]	[ ]	[ ]	[ ]
35. My child eats more and more slowly during the course of a meal					

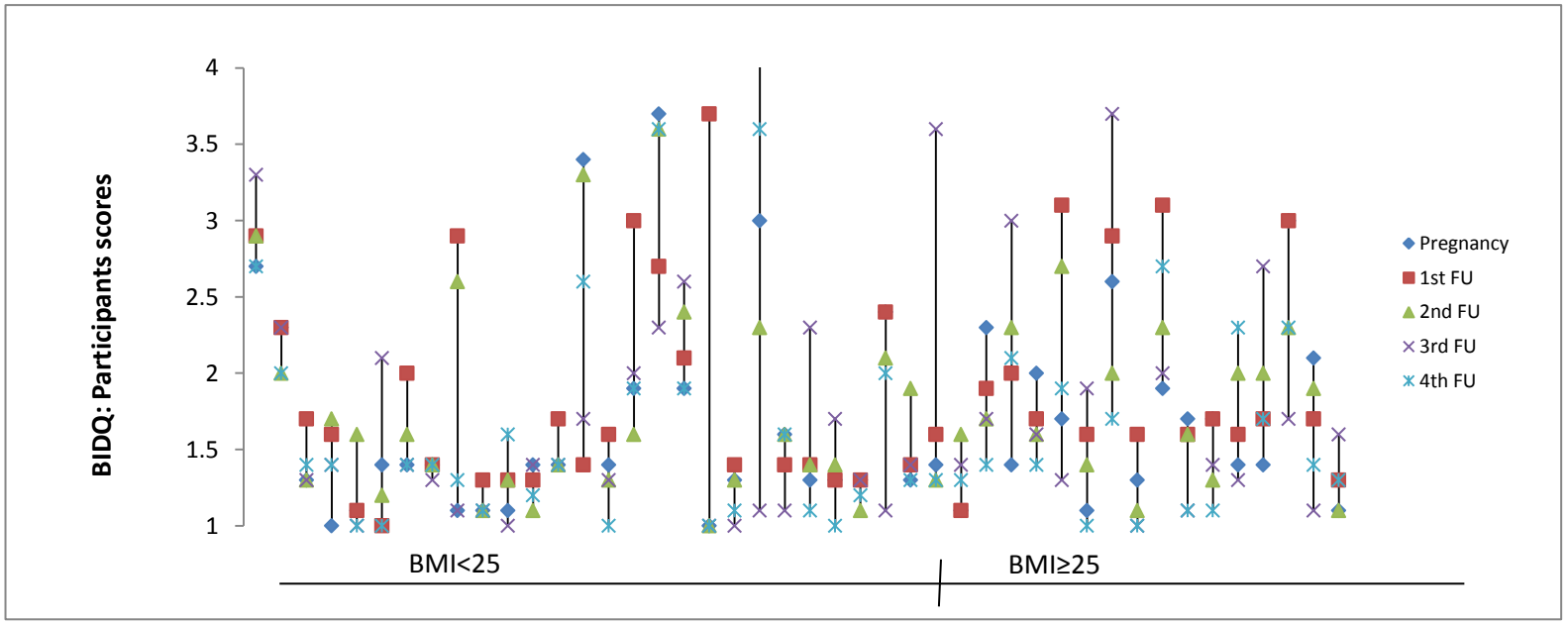
8.3 Appendices C: Additional analysis.





Changes in individuals weight/BMI from early pregnancy to two years postpartum.





Individuals scores for the RSEQ and the BIDQ across the follow-ups.

Chapter 4: Infant eating behaviours- impact of age, maternal BMI and country

Table 1:Multilevel linear regression modelling for the BEBQ (2-6 months).

BEBQ	Variable	Multivariable model Coefficient	95% CI	*P value
Food responsive.	Country(UK vs. Israel)	0.21	-0.06,0.50	0.46
	Mother's age (years)	-0.02	-0.06,0.008	0.40
	BMI	-0.13	-0.43,0.16	0.11
	Breastfeeding (yes vs.no)	-0.03	-0.35,0.27	0.14
	Baby's weight	0.10	-0.03,0.24	0.14
	Infant's sex(male vs. female)	-0.29	-0.22,0.72	0.24
Enjoyment of food	Country(UK vs. Israel)	0.01	-0.23,0.10	*0.03
	Mother's age (years)	-0.004	-0.03,0.03	0.81
	BMI	0.05	-0.21,0.31	0.69
	Breastfeeding (yes vs.no)	0.13	-0.14,0.40	0.13
	Baby's weight	-0.03	-0.13,0.15	0.41
	Infant's sex(male vs. female)	0.05	-0.26,0.37	0.72
Satiety Responsive.	Country(UK vs. Israel)	-0.50	-0.80,-0.10	*0.001
	Mother's age (years)	-0.01	-0.05,0.02	0.59
	BMI	0.13	-0.17,0.45	0.38
	Breastfeeding (yes vs.no)	-0.20	-0.54,0.12	0.21
	Baby's weight	0.15	-0.02,0.33	0.08
	Infant's sex(male vs. female)	0.13	-0.47,0.74	0.64
Slowness in Eating	Country(UK vs. Israel)	-0.02	-0.30,0.25	0.86
	Mother's age (years)	-0.03	-0.07,0.000	*0.03
	BMI	0.06	-0.22,0.35	0.64
	Breastfeeding (yes vs.no)	-0.11	-0.41,0.19	0.46
	Baby's weight	0.09	-0.07,0.25	0.25
	Infant's sex(male vs. female)	-0.10	-0.67,0.47	0.71
General Appetite	Country(UK vs. Israel)	-0.01	-0.55,0.52	0.95
	Mother's age (years)	0.008	-0.06,0.08	0.82
	BMI	-0.06	-0.62,0.49	0.82
	Breastfeeding (yes vs.no)	0.12	-0.45,0.71	0.65
	Baby's weight	1.44	-2.3,5.2	0.43
	Infant's sex(male vs. female)	-0.06	-1.09,0.95	0.88

*Significant

Table 2: Multilevel linear regression modelling for the BEBQ (6-12 months)

	Variable	Model Coefficient	95% CI	P-value
Food Responsiveness	Time of follow-up (2^{nd} vs. 1^{st})	-0.33	-0.59,-0.06	*0.01
	Country (UK vs. Israel)	0.04	-0.23,0.32	0.73
	Mother's age (years)	-0.03	-0.07,0.007	0.11
	BMI Kg/m^2	0.02	-0.005,0.04	0.12
	Breastfeeding (yes vs. no)	-0.10	-0.46,0.24	0.54
	Infant's age (weeks)	-0.004	-0.01,0.009	0.53
	Infant's sex (female vs. male)	-0.29	-0.59,0.002	*0.04
Enjoyment of food	Time of follow-up (2^{nd} vs. 1^{st})	0.22	0.07,0.37	*0.003
	Country (UK vs. Israel)	0.20	-0.13,0.55	0.23
	Mother's age (years)	-0.0004	-0.04,0.04	0.98
	BMI Kg/m^2	-0.001	-0.03,0.02	0.93
	Breastfeeding (yes vs. no)	0.09	-0.34,0.54	0.66
	Infant's age (weeks)	0.008	-0.006,0.02	0.27
	Infant's sex (female vs. male)	0.28	-0.09,0.65	0.14
Satiety Responsiveness	Time of follow-up (2^{nd} vs. 1^{st})	-0.06	-0.33,0.19	0.61
	Country (UK vs. Israel)	-0.23	-0.49,0.03	0.08
	Mother's age (years)	-0.02	-0.06,0.01	0.18
	BMI Kg/m^2	-0.008	-0.03,0.01	0.50
	Breastfeeding (yes vs. no)	0.34	0.003,0.68	*0.04
	Infant's age (weeks)	-0.006	-0.01,0.005	0.28
	Infant's sex (female vs. male)	0.10	-0.18,0.40	0.48

	Variable	Model Coefficient	95% CI	P-value
Slowness in Eating	Time of follow-up (2^{nd} vs. 1^{st})	0.14	-0.07,0.36	0.20
	Country (UK vs. Israel)	0.16	-0.11,0.43	0.24
	Mother's age (years)	-0.06	-0.10,-0.02	*0.001
	BMI Kg/m^2	0.02	-0.002,0.04	0.07
	Breastfeeding (yes vs. no)	0.56	0.21,0.91	*0.002
	Infant's age (weeks)	-0.001	-0.01,0.01	0.85
	Infant's sex (female vs. male)	-0.21	-0.51,0.08	0.16
General Appetite	Time of follow-up (2^{nd} vs. 1^{st})	0.03	-0.28,0.35	0.82
	Country (UK vs. Israel)	0.14	-0.23,0.52	0.44
	Mother's age (years)	0.005	-0.04,0.06	0.83
	BMI Kg/m^2	0.008	-0.02,0.04	0.63
	Breastfeeding (yes vs. no)	-0.20	-0.69,0.28	0.41
	Infant's age (weeks)	-0.007	-0.02,0.009	0.37
	Infant's sex (female vs. male)	-0.32	-0.72,0.07	0.11

Table 3: Multilevel regression modelling for the CEBQ-EF (12-18 months)

	Variable	Multivariable model Coefficient	95% CI	P value
CEBQ-Enjoyment of Food	Country (UK vs. Israel)	0.79	0.22-1.3	*0.009
	Age of measurements (weeks)	-0.10	-0.03-0.01	0.37
	Z-scores for weight	-0.02	-0.24-0.18	0.78
	Breastfed (Yes vs. No)	0.003	-0.85-0.86	0.99
	Age introduced to solid food (>4 months vs. < 4 months)	0.30	0.006-0.59	*0.04
	Weekly family meals (>3 times vs. < 3 times per week)	0.15	-0.24-0.55	0.43
	Eating in front of the televising (>3 times vs. < 3 times per week)	-0.22	-0.54-0.08	0.14

CEBQ-EF. (Child Eating Behaviour Questionnaire; Enjoyment of Food.

*Significant at the 5% level (P<0.05)

Table 4: Multilevel linear regression modelling for the CEBQ, accounting for the time of the fourth follow-up.

	FR			EO			EOF			DD		
	MMC	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**
Country(UK vs. Israel)	-0.18	-0.57,0.20	0.34	-0.11	-0.47,0.24	0.51	0.33	-0.02,0.68	0.07	-0.42	-0.75,-0.08	*0.01
Follow-up (4th vs. 3rd)	0.40	-0.22,1.02	0.20	0.48	-0.10,1.06	0.10	0.12	-0.45,0.71	0.66	0.14	-0.38,0.66	0.59
Mothers working status (no vs. yes)	-0.37	-0.85,0.09	0.11	-0.04	-0.49,0.39	0.82	-0.30	-0.74,0.13	0.17	-0.30	-0.69,0.09	0.13
Baby's weight	0.19	0.06,0.32	*0.004	0.08	-0.03,0.21	0.14	0.10	-0.01,0.22	0.09	0.01	-0.09,0.12	0.78
Baby's age	-0.02	-0.04,0.008	*0.005	-0.02	-0.04,0.004	*0.01	-0.01	-0.02,0.006	0.21	-0.01	-0.03,-0.001	*0.04
Baby's sex (female vs. male)	0.11	-0.26,0.48	0.55	0.05	-0.29,0.39	0.77	0.002	-0.34,0.34	0.99	0.21	-0.10,0.52	0.18
Age introduced to solid food	0.20	-0.05,0.46	0.11	-0.01	-0.25,0.22	0.91	0.22	-0.01,0.46	0.06	0.01	-0.19,0.23	0.86
Weekly family meals (more than 3 vs. less than 3)	-0.07	-0.39,0.23	0.61	-0.03	-0.32,0.25	0.82	0.14	-0.14,0.43	0.33	-0.24	-0.50,0.02	0.07
Eating in front of TV(no vs. yes)	-0.11	-0.35,0.11	0.31	0.03	-0.18,0.25	0.77	-0.07	-0.29,0.14	0.51	-0.05	-0.25,0.14	0.60

*Significant. Multivariable model coefficient (MMC). Food Responsiveness (FR); Emotional Overeating (EO); Enjoyment of Food (EOF); Desire to Drink (DD); Satiety Responsiveness (SR); Slowness in Eating (SIE); Emotional Under-Eating (EUE); Food Fussiness (FF).

	SR			SIE			EUE			FF		
	MMC	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**	**MMC**	**95% CI**	**P-value**
Country(UK vs. Israel)	-0.02	-0.25,0.20	0.85	0.02	-0.17,0.22	0.81	0.15	-0.27,0.59	0.46	0.21	0.07,0.35	*0.003
Follow-up (4th vs. 3rd)	0.27	-0.09,0.65	0.14	0.26	-0.06,0.59	0.11	0.28	-0.41,0.98	0.71	0.07	-0.15,0.30	0.51
Mothers working status (no vs. yes)	-0.11	-0.39,0.16	0.42	-0.06	-0.31,0.17	0.58	0.11	-0.41,0.64	0.47	-0.15	-0.33,0.01	0.07
Baby's weight	-0.01	-0.09,0.06	0.64	0.01	-0.06,0.08	0.69	0.01	-0.13,0.15	0.85	-0.02	-0.07,0.01	0.22
Baby's age	-0.007	-0.01,0.004	0.21	-0.008	-0.01,0.002	0.11	-0.01	-0.03,0.008	0.25	-0.007	-0.008,0.006	0.81
Baby's sex (female vs. male)	-0.08	-0.30,0.14	0.46	0.09	-0.10,0.08	0.34	-0.06	-0.48,0.35	0.75	-0.01	-0.15,0.12	0.80
Age introduced to solid food	0.04	-0.10,0.19	0.55	-0.008	-0.14,0.002	0.89	-0.24	-0.53,0.03	0.09	-0.03	-0.12,0.05	0.46
Weekly family meals (more than 3 vs. less than 3)	-0.02	-0.21,0.16	0.79	0.09	-0.18,0.08	0.77	0.05	-0.29,0.40	0.73	0.03	-0.08,0.14	0.57
Eating in front of TV(no vs. yes)	-0.03	-0.17,0.10	0.59	-0.008	-0.02,0.22	0.10	0.05	-0.20,0.31	0.67	0.08	0.002,0.17	*0.04

*Significant. Multivariable model coefficient (MMC). Food Responsiveness (FR); Emotional Overeating (EO); Enjoyment of Food (EOF); Desire to Drink (DD); Satiety Responsiveness (SR); Slowness in Eating (SIE); Emotional Under-Eating (EUE); Food Fussiness (FF).

Chapter 5: mother-infant mealtime interactions.

The SFES correlations with each other and changes according to time of follow-up:

The Pearson correlation was applied to determine possible correlations between the SFES to each other. Findings are presented below.

Setting:

Setting was less ideal over time, as seen in **Figure 8-1**. Nevertheless, the majority of mothers scored in the more ideal range than less ideal range in all follow-ups. Our findings suggest that the more the baby ate without distractions (better setting), the more they ate independently (r=0.22; P=0.005) and the more likely mothers waited until the baby finished chewing before offering more food (r=0.24; P=0.002.Table 7). In support, mothers who fed their infants in a more ideal setting were using fewer or no eating commands (r=0.16; P=0.04).

Positioning:

As time of follow up progressed, mothers positioning of their baby during a meal was less ideal (P=0.0001. **Figure 8-2**). The findings were also supported while applying the pairwise correlation test (rho=-0.32; P=0.0001.Table 7)

Mood and atmosphere:

The more mothers enjoyed the mealtime interaction the less likely they were to feed their baby while distracted by toys or TV, (r=0.23; P=0.04) and more likely to talk with their baby during the meal (r=0.16; P=0.04).

Child participation:

The older the babies the more they were encouraged to self-feed (r=0.17; p=0.03).

Pacing:

Our findings indicate that in all of the follow-ups mothers were aware of the baby's eating pace and waited until the baby finished to chew the food before offering him more food. Not surprisingly, the highest levels of more ideal scores were seen in the final follow-up in which more babies ate independently thus according to their own eating pace (r=0.18; P=0.02. **Figure 8-3**). Pacing was correlated as well with qualitative aspects of verbal communication indicating that mothers who waited until their babies finished to chew were not using eating commands (r=0.19; P=0.01.

Table 7: **Pairwise correlation test accounting for the SFES elements.**

Feeding while disengaging:

As infants aged increased mothers were more aware of their disengagement cues and scored higher scores (r=0.28; P=0.04).

Fruits and vegetables:

Younger babies ate a healthy meal which contains either breast-milk or high levels of fruit and vegetables. Older babies ate sugary food as part of their meal.

Table 7: Pairwise correlation test accounting for the SFES elements.

	Child Participation	Pacing	Feeding while Distracted	Feeding while Disengaging	Qualitative Verbal	Quantitative Verbal
Setting		**0.24	**0.73		*0.16	
Positioning	**-0.32			*-0.17		
Mood and Atmosphere			*0.23			*0.16
Pacing					*0.19	
Feeding while Disengaging		*0.28				
Quantitative Verbal	*0.19					

Spearman's Correlation test. *Correlation is significant at the 0.05 level (2-tailed).
****Correlation is significant at the 0.01 level (2-tailed).**

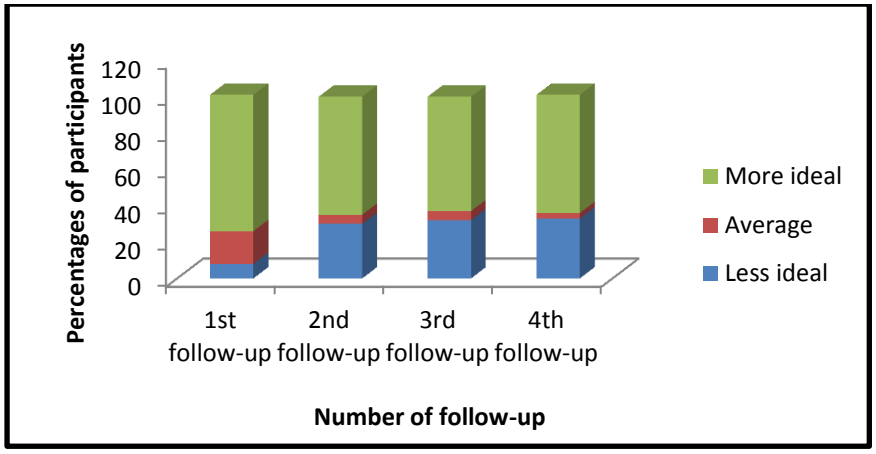


Figure 8-1; SFES: Setting scale distributed by participants' responses:

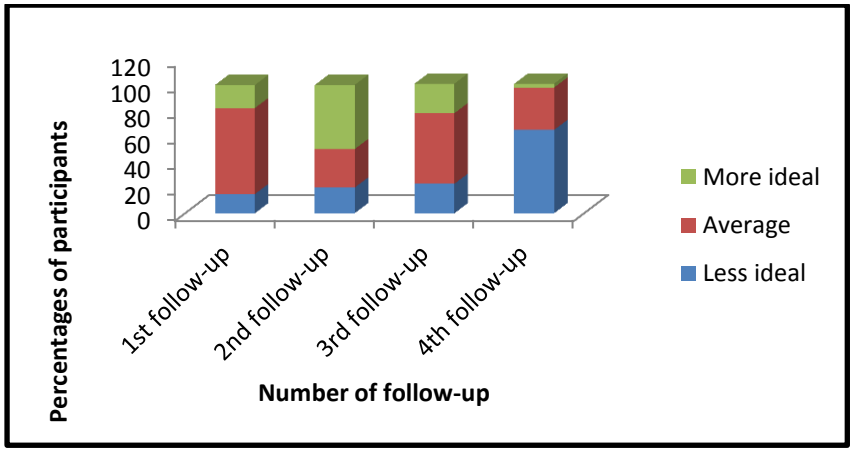


Figure 8-2; SFES: Positioning scale distributed by participants' responses:

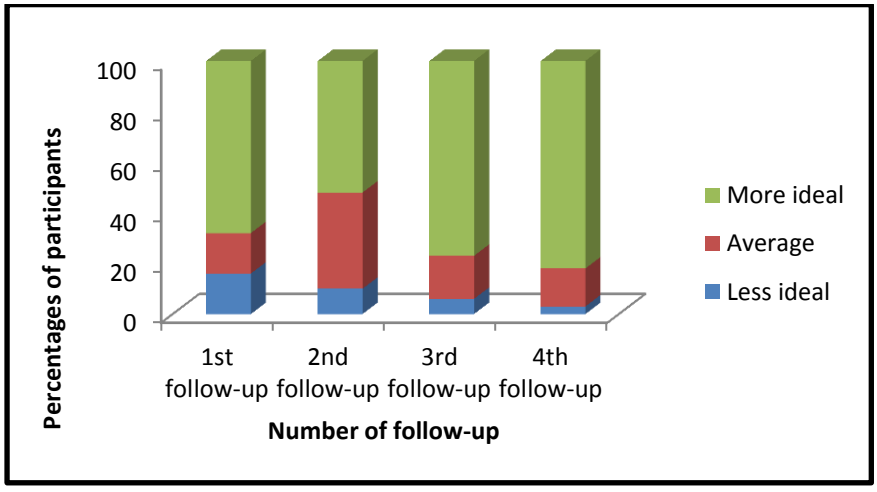


Figure 8-3; SFES: Pacing scale distributed by participants' responses:

The SFES correlations with the BEBQ, CEBQ and the IFQ.

Pairwise correlation test (Pearson correlation test) was applied between the SFES, the BEBQ, the IFQ and the CEBQ. The findings suggest on few correlations between the questionnaires and the SFES and can been seen in appendix C. that infants showed more willingness to eat (BEBQ; food responsive) if their mothers vocally interacted with them during the meal (r=0.23; P=0.004). Those infants also demonstrated higher levels of enjoyment of food (BEBQ; r=0.23; P=0.004).

Satiety responsive and pacing were negatively correlated (CEBQ; r=-0.32; P=0.01) indicating that infants who felt full and reduced their intake during the meal showed slower eating pace. In support, mothers of those infants used fewer feeding commands (r=-0.33; P=0.01).

Infants who showed higher levels of participation during the meal were likely to be calmed by food (IFQ) and eat more independently compared to infants whose mothers did not use food to calm their fussiness (IFQ; r=0.27; P=0.01). In support, those infants were more likely to be fed during a potent disengagement cue (r=0.25; P=0.02).

Our findings suggest as well that babies who enjoyed food more ate more rapidly (CEBQ; r=-0.30; P=0.01).

Table 8: The SFES, BEBQ, IFQ and the CEBQ: significant findings.

SFES	BEBQ				IFQ		CEBQ	
	Food responsive	**Enjoyment of food**	**Satiety responsive**	**Slowness in eating**	**Awareness of infants hunger and satiety cues**	**Food to calm fussiness**	**Enjoyment of food**	**Emotional under-eating**
Setting					*0.25			
Pacing			*-0.32	*-0.32			*-0.30	
Child participation						*0.27		
Feeding while distracted							*-0.31	
Feeding while disengaging						*0.25		
Qualitative aspects of verbal communication	**0.23	**0.23						*0.33
Quantitative aspects of verbal communication			*-0.33	*-0.42				

BEBQ (Baby Eating Behaviours Questionnaire; Llewellyn et al., 2001). IFQ (Infant Feeding Questionnaire; Baughcum et al., 2001). CEBQ (Child Eating Behaviours Questionnaire; Wardle et al., 2001