

Running Head: PSYCHOLOGICAL HEALTH IN FEEDING MOTHERS.

Psychological Health, Maternal Attachment and Attachment Style
in Breast and Formula Feeding Mothers: A Preliminary Study.

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ABSTRACT

This study examined psychological health, maternal attachment, and attachment style in an Australian sample of breast and formula feeding mothers. Thirty-six breast feeding and twenty-four formula feeding women with a child between four and six months of age were recruited through community health centres and snowball sampling. Participation involved a thirty-minute interview and completion of relevant questionnaires. Contrary to expectations, no differences were found between breast and formula feeding mothers in terms of their psychological health and maternal attachment. Results suggest that secure attachment styles are related to greater psychological health and that they predict the likelihood of a mother changing feeding method. The results of this study challenge widely held assumptions concerning the importance of breast feeding for maternal wellbeing and attachment with infants, and support the literature suggesting attachment styles play an important role in affect regulation and the adjustment to new motherhood.

Key Words: Breast feeding, formula feeding, motherhood, attachment, psychological health, depression.

It is well established that breast feeding initiation and maintenance rates vary greatly internationally (WHO, 2003). While initiation rates are high in some developed countries (Denmark: 99.5%; Australia: 81.8%; Sweden: 85.3%) by comparison with other developed countries (USA: 59.7%; Scotland: 35.6%), breast feeding rates decline rather dramatically within the first few weeks postpartum (Donath & Amir, 2000). Only a small proportion of infants are fully or partially breast fed at three months of age and a smaller proportion receive some breast milk at twelve months of age (Donath & Amir, 2000; Forster, et al., 2004; WHO, 2003). Most mothers do not adhere to World Health Organisation (WHO, 1995) recommendations to fully breast feed infants for at least six to twelve months.

Concern regarding breast feeding rates led the WHO (1981) to develop policies and initiatives to encourage more women to breast feed and to breast feed for longer. Concern has also prompted considerable research into factors involved in the initiation, maintenance and early termination of breast feeding. A consistent finding to emerge is that women generally make feeding decisions either before falling pregnant or very early in their pregnancy (Bailey

& Sherriff, 1992; Dix, 1991; Earle, 2000). Studies have identified this decision as being influenced by the mother's beliefs and expectations concerning the relevant feeding method (Earle, 2000) and the support for that method by her partner and family (Dix, 1991; Freed et al., 1992; Shepherd et al., 2000). Other studies have identified that having more than one child (Losch et al., 1995) and lower socio-economic status (Hitchcock & Coy, 1988; Forster, et al., 2004; Liliburne et al., 1988; Scott & Bins, 1998) specifically influence the decision to formula feed.

Considerable research has also shown that weaning is influenced by a range of other factors. The most commonly reported reason for weaning relates to physical problems with lactation such as breast refusal, poor milk supply, and breast and nipple pain (Bailey & Sherriff, 1992; Bick et al., 1998; Stamp & Crowther, 1995). Other reasons have included aspects of the obstetric (e.g., caesarean birth, premature infants) or postnatal experience (e.g., inconsistent advice, and babies being 'rammed' on the breast) (Bick et al., 1998), low available support for breast feeding in the mother's social environment (Bailey & Sherriff, 1992), and a return to work (Gielen et al., 1991).

A notable gap in the research in this area is the exploration of the subjective maternal experience of breast feeding and weaning. Schmied et al. (2001) argue that the vast majority of feeding-related research has been focused on the physiological aspects of breast feeding, the immunological benefits of breast milk for the baby, and professional practices associated with problematic breast feeding. They note that the breast feeding mother herself is rarely discussed and, on those rare occasions when she is (e.g., Blum, 1993; Dignam, 1995), only the positive experiences of warmth and intimacy with the baby are emphasised. Possible negative maternal experiences of breast feeding and those experiences of formula feeding mothers have largely been ignored in research to date.

Schmied and colleagues (e.g., Schmied & Barclay, 1999; Schmied et al., 2001) have subsequently conducted qualitative research on new motherhood and infant feeding. They have found that most women report a desire to breast feed and view it as important to their identity as a new mother. While some women describe breast feeding as a rewarding and pleasurable experience, others find it distressing and unpleasant. In these studies, most mothers expressed feelings of disappointment, guilt, failure and that

they were “a bad mother” when they weaned their baby from breast to bottle. They were ashamed of weaning and actively hid their change to formula from friends and professionals in their community.

In summary, recent qualitative studies have shown the psychological importance of breast feeding for women and the distress and disruption early weaning can cause. The present research seeks to extend this area of investigation and to explore the psychological health, maternal attachment and attachment styles of breast feeding and formula feeding (weaned) mothers.

Psychological Health

Breast feeding advocates claim breast feeding promotes general relaxation and positive emotional consequences for mothers (Mezzacappa, 1997) and satisfaction in giving the baby the best possible start (NMAA, 1991). Consistent with these claims, some studies have documented breast feeding mothers as reporting they are calmer, less anxious and less stressed than formula feeding mothers (Heck & de Castro, 1993; Mezzacappa et al., 2000; Virden, 1988; Wisenfeld et al., 1985). Other studies have, however, found higher rates of depression in breast feeding mothers than mothers

who have weaned their baby (e.g., Alder & Bancroft, 1988; Alder & Cox, 1983; Romito, 1988; Cooper et al., 1993).

On the other hand, a number of studies have shown that weaning is associated with increases in symptoms or occurrences of panic, anxiety, depression, psychoses, mania and obsessionality in mothers (Cowley & Byrne, 1989; Klein, Skrobala, & Garfinkel 1995; Susman & Katz, 1988). It has also been associated with lower mood, more stress and a greater number of psychological symptoms in mothers when compared with current breast feeding (Mezzacappa, 1997; Mezzacappa et al., 2000).

However, most studies examining the psychological health of feeding mothers have had significant methodological drawbacks. Firstly, many studies have failed to differentiate between current and past breast feeders, and those who formula fed from birth (see Mezzacappa, 1997). Secondly, the psychological health of mothers has been measured at very different time periods after birth, ranging from between 5 and 208 weeks (e.g., Mezzacappa et al., 2000), when women are confronted with very different tasks of motherhood. Thirdly, small sample sizes (e.g., 15 participants per group) (Martone & Nash, 1998) and often unequal group sizes (Mezzacappa et al.,

2000) have resulted in associations being identified, but no testing of differences between groups. Finally, studies have often used inappropriate assessment methods (e.g., the Beck Depression Inventory) which can misinterpret normal postnatal changes (e.g., sleep disturbance, tiredness) as depression and possibly misrepresent the actual amount of psychological distress in samples.

Overall, there is mixed evidence for the claim that breast feeding mothers have greater levels of psychological health than formula feeding mothers. A review of the literature suggests, that a more accurate exploration of these claims could be achieved by assessing mothers at a common time after the baby's birth, using more adequate definitions of feeding status, and a more appropriate definition and measurement of psychological health.

Maternal Attachment

Experimental animal and human studies have shown feeding as being neither necessary nor sufficient to create infant-mother attachment (Cassidy, 1999). Despite such evidence, breast feeding is assumed by many to create enhanced physical and emotional closeness between mother and child (Martone & Nash, 1988; NMAA,

1991; Tarkka et al., 1999). Health professionals also frequently assume that breast feeding mothers are more emotionally attached to their infants than formula-feeding mothers (Martone & Nash, 1988).

A review of the nursing and psychological literature reveals only one study investigating these assumptions. Martone and Nash (1988) compared mean scores of breast and formula feeding mothers on observations of factors such as proximity-maintaining behaviour and the mother's attention to the infant two days post birth, and found no significant differences between the groups. On this rather limited evidence it was concluded that breast feeding did not guarantee that a mother formed a stronger 'bond' with her infant.

Despite the widely held view that breast feeding mothers have greater levels of emotional attachment with their infants than formula feeding mothers, there is little empirical evidence to support such an assumption. This review suggests a more accurate exploration of this claim could be achieved by improving on the methodologies employed by previous research.

Attachment Style

Attachment styles play a role in regulation of affect, including negative emotion, and therefore the level of psychological distress experienced during stressful circumstances (see Mikulincer & Florian, 1998). An individual's psychological health is intimately linked to their attachment style (Bretherton & Munholland, 1999). Further understanding of the psychological health of feeding mothers may therefore be developed from an examination of attachment styles. To date, no research appears to have explored this issue.

In a review of the attachment style and affect regulation literature, Mikulincer and Florian (1998) conclude adult attachment styles influence how well individuals adapt to stress in their daily lives. Secure attachment functions as an inner resource or buffer against psychological problems by allowing the individual to positively appraise stressful events and turn to others for support and comfort (Kobak & Sceery, 1988; Shaver & Hazan, 1993). By contrast, insecure attachment styles, either avoidant, ambivalent, or dismissing styles, are potential risk factors, which lead to poor coping and maladjustment (Bartholomew & Horowitz, 1991; Kobak & Sceery, 1988; Mikulincer & Orbach, 1995; Shaver & Hazan, 1993).

Mikulincer and Florian (1998) have examined the possible impact of maternal attachment style on several aspects of motherhood. Mothers with avoidant and anxious-ambivalent attachment styles showed higher anxious arousal during pregnancy than mothers with secure attachment style. Anxious-ambivalent and avoidant mothers subsequently reported higher levels of psychological distress than securely attached women in coping with the birth of a new child. Secure women were found to appraise the task of being a new mother in less threatening terms than avoidant and anxious-ambivalent women.

These studies suggest secure attachment serves as a reliable protective inner resource that helps mothers in adjusting to their parental role demands, while insecure attachment may hinder such adjustment. Security in attachment may also help mothers adjust to stresses associated with breast feeding and persist with breast feeding. For mothers with insecure attachment, feeding difficulties may raise anxiety and divert attention away from problem solving thoughts. They may then wean their child and experience the deleterious effects of perceived personal failure more harshly.

In summary, no research to date has explored the attachment styles of breast and formula feeding mothers. A review of attachment literature more generally suggests that attachment styles influence how well individuals adapt to stress in their daily lives. Attachment styles may influence how well mothers cope with breast feeding and weaning. This study will therefore consider these issues in preliminary research on attachment styles in feeding mothers.

The Present Study

Research to date has failed to adequately explore the subjective experience of breast feeding and formula feeding (following weaning) for mothers. This study seeks to extend this area of research and explore the psychological health, maternal attachment, and attachment styles of breast feeding and formula feeding mothers.

According to commonly held assumptions about the psychological and emotional value of breast feeding for mothers, a number of predictions can be made concerning the impact of weaning. Firstly, breast feeding mothers will report greater psychological wellbeing and less psychological distress than formula

feeding mothers. Secondly, breast feeding mothers will report greater perceptions of attachment with their baby than formula feeding mothers. Thirdly, breast feeding mothers will have more secure attachment styles than formula feeding mothers. Finally, based on evidence from the extant literature on attachment and psychological health, mothers with secure attachment styles will have greater levels of psychological health and less psychological distress than mothers with insecure attachment styles.

METHOD

Participants

Sixty females with a biological child between four and six months of age served as participants in this study. Thirty-six mothers were classified as breast feeding fully or partially (mean age = 31) and twenty-four were classified as fully formula feeding following weaning (mean age = 29) according to their self reported feeding status. The sample consisted of predominately middle-class participants (88%) of anglo-european descent (86%). Chi-square tests indicated no significant differences between the feeding method groups for socioeconomic status, ethnic origin, or educational status.

Participants were recruited through Baby Health Clinics and Immunisation Clinics at various Community Health Centres and through snowball sampling of participants' friends and relatives. Participation was completely voluntary and no remuneration was offered.

Measures

Data were collected via two methods: a thirty-minute semi-structured interview and a questionnaire booklet. The interview was derived from nursing research on factors influencing the uptake and cessation of breast feeding and women's experiences of feeding. It included basic demographic questions and background details of the pregnancy and birth. The questionnaire booklet consisted of various questionnaires measuring psychological health, maternal attachment, and attachment style.

Psychological health was assessed through measures of psychological wellbeing and distress. Wellbeing was operationalised through measures of general life satisfaction, happiness, and positive affect, while distress was operationalised via measures of anxiety, depression and negative affect.

Life Satisfaction was measured with the Satisfaction With Life Scale (SWLS) (Diener et al., 1985). This five-item measure asks for a subjective judgement of 'global life satisfaction' (e.g., "In most ways my life is close to my ideal") on a seven-point scale ranging from one (strongly disagree) to seven (strongly agree). A total Life Satisfaction score is created by summing responses on items and can range from five to thirty-five. Diener et al. (1985) report good internal consistency (coefficient $\alpha = .87$) and test-retest reliability ($r = .82$) for the scale. In the current study, the SWLS had comparable reliability (coefficient $\alpha = .80$).

Happiness was assessed through a version of the Happiness Thermometer (Fordyce, 1988). This single item measure asks for a subjective judgement of happiness over the past week on an ten-point thermometer ranging from one (extremely unhappy: utterly depressed, completely down) through to ten (extremely happy: feeling ecstatic, joyous, fantastic). Previous research has shown good stability over time (test-retest $r = .81$ for a one month period) for this measure and a high degree of construct validity (Larsen et al., 1985).

Positive Affect and Negative Affect were measured with the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988).

This scale consists of twenty adjectives describing the way people feel. Ten items represent Positive Affect (PA) (e.g., interested, excited, strong) and ten items represent Negative Affect (NA) (e.g., distressed, upset, guilty). Respondents rate the extent to which they have felt each feeling or emotion within the past week on a five-point scale from one (very slightly or not at all) through to five (extremely). Totals are created by summing scores on defined items and range from ten to fifty. Watson et al. (1988) have reported sound internal reliability for both scales (PA: coefficient $\alpha = .86$; NA: coefficient $\alpha = .84$). In the current study, reliabilities for these scales were comparable to previous research (PA: coefficient $\alpha = .91$; NA: coefficient $\alpha = .81$).

Anxiety was assessed with the state anxiety scale of the State-Trait Anxiety Inventory – Form X (Spielberger, 1983). This twenty item scale asks respondents to indicate how they feel “right now” (e.g., calm, tense) on a four-point scale ranging from one (not at all) to four (very much so). Summing responses creates a total score that can range from twenty to eighty. The STAI has been reported as being internally consistent in previous research (coefficient $\alpha = .87$) (Spielberger, 1983) and in the current study (coefficient $\alpha = .91$).

Depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987). This scale was selected to minimise the likelihood of normal postnatal physiological changes being misinterpreted as signs of depression in postpartum women. This ten-item measure asks women to indicate the response that most closely represents how they have felt in the past week. Responses to statements (e.g., “I have been able to laugh and see the funny side of things”) are scored on a four-point scale from zero to three. A total depression score is created by summing responses on items (seven of which are reverse scored) and can range from zero to thirty. Cox et al. (1987) report good internal consistency (coefficient Alpha = .87) for the scale. The EPDS had comparable reliability (coefficient Alpha = .88) in the present study.

Maternal Attachment was measured using the Maternal Attachment Inventory (MAI) (Muller, 1994). This twenty-six item scale asks respondents to indicate how they generally feel in relation to thoughts (e.g., “My thoughts are full of my baby”), feelings (e.g., “I feel love for my baby”) and situations (e.g., “I watch my baby sleep”) new mothers may experience. Responses are scored on a 4-point scale ranging from one (almost never) to four (‘almost always’). Summing

responses to items creates a total score ranging from twenty six to one hundred and four. Muller (1994) has reported the MAI as having an adequate level of internal consistency (coefficient $\alpha = .76$). The MAI had a greater level of internal consistency for this sample (coefficient $\alpha = .90$). Examination of item inter-correlations indicated that perfect correlations were evident for some items and this may have inflated the overall reliability coefficient of the MAI. Results from the MAI are therefore to be interpreted with some caution.

Attachment Style was measured using the Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991). This self-report instrument is designed to assess adult attachment within Bartholomew's (1990) four-category framework. This short instrument outlines multi-sentence descriptions of each of four theoretical types (Secure, Preoccupied, Dismissing, and Fearful) where respondents are asked to choose the description that best characterises how they feel in close relationships. Respondents are then asked to rate each description according to how well it describes them on a seven point scale ranging from one (not at all like me) to seven (very much like me). In general, the reliability estimates of the RQ classifications are acceptable (Crowell et al., 1999).

Procedure

A researcher and Child and Family Health Nurse approached mothers with babies at Baby Health Clinics and Immunisation Clinics. Potential participants were provided with written information on the study, a consent form for participation and a reply paid envelope. Potential participants could either return the consent form by mail to the researcher or make an appointment with the researcher if interested in participating.

Mothers were contacted by telephone to schedule an appointment for the structured interview when the mother's baby was between four and six months of age. At the conclusion of the interview, mothers were provided with the questionnaire booklet to complete and return by mail. Mothers were also asked to participate in identifying other new mothers who could be potential participants.

RESULTS

SPSS for Windows (Version 10) was used for all analyses. Five cases with extremely low scores on Happiness, Life Satisfaction, Positive Affect, Maternal Attachment, and high scores on Negative

Affect, State Anxiety and Depression were identified as univariate outliers. Following Tabachnick and Fidell (1996), all outlying values on respective scales were subsequently changed to one unit larger (or smaller) than the next most extreme score in the distribution. No cases were subsequently identified as univariate or multivariate outliers.

As can be seen in Table 1, breast and bottle feeding mothers did not differ in terms of age, baby age or number of children. Table 2 shows that breast and bottle feeding mothers did not differ on most pregnancy, birth and feeding related characteristics. A significant difference was found on whether breast and bottle feeding mothers had planned to feed their current way ($p < .001$). This result indicates the vast majority of women had planned to breast feed their baby and that the majority of formula feeding mothers were not feeding as planned. A significant difference was also found for breast and formula feeding mothers on how they were fed as a child ($p < .05$). Mothers in both groups were more likely to be feeding their baby as they were fed as a child.

Group Differences

Two separate Multivariate Analyses of Variance (MANOVAs) were conducted to assess differences between breast and formula feeding mothers on the measures of psychological health and attachment. In the first MANOVA feeding method differences were examined jointly for the psychological health variables. There was no significant multivariate effect of feeding method across the psychological health variables, $F(6,53) = 0.48$, $p = .818$; Wilks' Lamda = .95. In the second MANOVA feeding method differences were examined jointly for the attachment variables. There was a significant multivariate effect, $F(5, 54) = 2.41$, $p < .05$, Wilks' Lamda = .810, partial eta squared = .18. Follow-up univariate tests showed that the only significant difference occurred for Secure Attachment Style, $F(1,58) = 4.08$, $p < .05$.

As can be seen in Table 3, breast and bottle feeding mothers did not differ on measures of psychological wellbeing, distress, or maternal attachment. No evidence was found to support assumptions that breast feeding mothers have greater psychological health or have greater perceptions of attachment with their baby than mothers who are formula feeding their infant after weaning. There was evidence,

however, that breast feeding mothers reported significantly higher levels of secure attachment than formula feeding mothers although there were no significant differences between the groups with regards to insecure attachment styles.

A final MANOVA was conducted to investigate the hypothesis that mothers with more secure attachment styles have greater levels of psychological health and less psychological distress than mothers with insecure attachment styles. Participants were classified as reporting either a predominantly secure or insecure attachment style and differences examined with respect to the psychological health variables. There was a significant multivariate effect, $F(6,53) = 2.27$, $p < .05$, Wilks' Lamda = .798, partial eta squared = .21.

Examination of the follow up univariate tests revealed that there were significant differences on Positive Affect, $F(1, 58) = 5.42$, $p < .05$; State Anxiety, $F(1, 58) = 6.55$, $p < .05$; Depression, $F(1, 58) = 5.84$, $p < .05$; and Negative Affect, $F(1, 58) = 8.77$, $p < .01$. As can be seen from Table 4, mothers with a secure attachment style reported significantly greater levels of Positive Affect than mothers with an insecure attachment style. Mothers classified with a secure

attachment style also reported significantly less Anxiety, Depression, and Negative Affect.

Prediction of Group Membership

To evaluate if a combination of variables could predict breast feeding status, a discriminant function analysis was undertaken. Due to sample size restrictions, the predictor variables included in the analysis were reduced to Depression, Maternal Attachment and the four dimensional attachment styles (Secure, Fearful, Preoccupied, and Dismissing) with Method of Feeding as the dependent variable. One discriminate function was calculated, $\chi^2 (6) = 15.43$, Wilks = .76, $p < .05$, and it accounted for 100% of the variability between groups.

To account for unequal group sizes, sample proportions as prior probabilities for groups were used. As shown in Table 5, the classification procedure showed 29 (80.6%) breast feeding women and 14 (58.3%) formula feeding mothers were classified correctly as either breast or formula feeding. While Depression, Maternal Attachment and the attachment styles allowed the majority of breast feeding mothers to be correctly classified, the combination of these variables classified formula feeding mothers at a rate barely better

than chance. These variables were therefore better predictors of group membership for breast feeding mothers.

In line with recommendations made by Tabachnick and Fidell (1996), only correlations between predictors and the discriminate function in excess of .33 (10% of variance) are interpreted. The correlation matrix revealed the best predictors for distinguishing between breast and formula feeding mothers as being Secure Attachment ($r = .40$) and Dismissing-Avoidant Attachment ($r = -.35$).

DISCUSSION

This study pursued recent suggestions that more infant feeding-related research should examine the maternal experience of breast feeding and formula feeding a baby (Schmied & Barclay, 1999; Schmied et al., 2001). In particular we examined the psychological health, maternal attachment and attachment styles of breast feeding and formula feeding (weaned) mothers in order to explore assumptions regarding the effects of feeding on mothers and other possible influences on the psychological health and adjustment of feeding mothers.

Breast feeding advocates claim that breast feeding promotes general relaxation and positive emotional consequences for mothers (Mezzacappa, 1997; NMAA, 1991). The present study found no evidence in support of these claims as breast and formula feeding mothers did not differ on any of the measures of psychological wellbeing or psychological distress. These findings are further supported by the fact the present study corrected many methodological flaws of previous studies. While this study does not dispute the immunological and other health benefits of breast milk for infants (see Burr et al., 1993; Howie et al., 1990; Huffman & Combest, 1990), it does provide evidence to suggest that the presumed maternal psychological benefits of breast over formula feeding may not be as great as assumed.

While animal and human studies have shown feeding as being neither necessary nor sufficient to create infant-mother attachment (Cassidy, 1999), breast feeding is still assumed to create enhanced mother-child closeness (Martone & Nash, 1988; NMAA, 1991; Tarkka et al., 1999) and greater maternal attachment (Martone & Nash, 1998; Mikiel-Kostyra, Mazur, & Boltruszko, 2002). However, this study found no evidence in support of these claims. Breast feeding

mothers did not report having a greater affectionate attachment towards their baby than mothers who were formula feeding their infant. However, the measurement of maternal attachment in the present study was not ideal. Exploration of the scale properties of the MAI (Muller, 1994) revealed perfect correlations for some items. These properties suggest that the MAI may have psychometric limitations as a measure of maternal affectionate attachment and that other instruments or methodologies may be more appropriate. Interview based measures of parental attachment developed in the psychological domain (see Cramer et al., 1990; Lopez, 2003; Zeanah et al., 1994) could be used in a larger study. The use of such measures may allow for a more accurate exploration of the notion that breast feeding mothers are more attached to their infants.

The research presented here does provide some evidence to support the hypothesis that breast feeding mothers have a more secure attachment style than formula feeding mothers. In the simple group difference analysis breast feeding mothers reported a higher level of secure attachment than formula feeding mothers. In the discriminant function analysis depression, maternal attachment and the four attachment styles differentiated membership of the breast

and formula feeding groups and two attachment styles were the best predictors of the respective groups. A secure attachment style best predicted breast feeding group membership, while a dismissing-avoidant style best predicted formula feeding group membership.

These results support recent findings to suggest secure attachment may serve as a reliable protective inner resource that helps mothers in adjusting to their parental role demands, while insecure attachment may hinder such adjustment (Mikulincer & Florian, 1998). This study specifically suggests that a secure attachment style helps mothers adjust to possible stresses associated with breast feeding and to persist with breast feeding, while insecurity in attachment may hinder such adjustment and be implicated in weaning. These are important notions requiring further study.

Overall, the hypothesis that mothers with secure attachment styles would have better psychological health than mothers with insecure attachment styles was confirmed. These results support literature suggesting that secure attachment functions a protective factor or 'buffer' against psychological problems (Kobak & Sceery, 1988; Mikulincer & Orbach, 1995; Shaver & Hazan, 1993; Wilkinson

& Parry, 2004). The results with regards to psychological well-being were generally less supportive with only Positive Affect being significantly higher for the 'secure' mothers.

It is important to note that this study originally aimed to recruit mothers who formula fed their babies from birth, but only one mother agreed to participate. The recruitment of these mothers would be affected by their relatively low prevalence (only 18% of all mothers) (Donath & Amir, 2000) in the population and, according to anecdotal evidence, their reluctance to attend baby health clinics for fear of criticism. A targeted sampling strategy may allow these mothers to be accessed in further investigations.

The small sample sizes in this preliminary study warrant some comment as they limit the power of the study to detect subtle effects. The sample sizes employed here are adequate to detect effects of a moderate size ($\delta = .5$), and indeed effects were demonstrated with regard to the attachment variables. However, effects with regard to psychological health and breast feeding may be more subtle and smaller than the literature has previously suggested. In order to detect smaller effects it is recommended that future studies recruit significantly larger sample sizes. Larger sample sizes would also

enable a sampling and analytic strategy that allowed for the statistical analysis and adjustment of other potentially confounding variables such as socio-economic status and ethnic background.

The results of this study may not generalise to mothers who are very depressed. This study had five cases with low scores on Happiness, Life Satisfaction, Positive Affect, and Maternal Attachment, and high scores on Negative Affect, State Anxiety and Depression. These mothers would certainly be lower on psychological wellbeing and higher on distress, but they may also report differing maternal affectionate attachment ratings and attachment styles than others in the study. These mothers might be a part of a subgroup of mothers possibly suffering postnatal depression, most of whom did not wish to participate in the study. Feeding and attachment patterns would be worthy of study in such a subgroup.

Conclusion

This study investigated psychological health and maternal attachment in feeding mothers and found no evidence to suggest superior psychological benefits of breast feeding for mothers. It also showed that a secure attachment style is related to greater

psychological health and predicts breast feeding status in breast feeding women. In challenging existing assumptions and extending feeding related research into new areas, this study has contributed to the developing study of the maternal experience of breast feeding. Further research is required into this area and could be enhanced by using larger sample sizes, an advanced sampling method, and recruiting mothers who have exclusively formula feed their infants from birth. Until more research is undertaken on the maternal experience of feeding a baby, widely held assumptions may continue to place excessive and unnecessary pressure on new mothers.

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Table 1

Demographics of Breast Feeding and Formula Feeding Mothers.

Demographic	Breast Feeding (n = 36)	Formula Feeding (n = 24)	t (df)	p
Age Mother (years)				
M	30.78	29.25	1.34 (58)	.184
SD	4.18	4.51		
Range	21 to 39	21 to 39		
Age Baby (weeks)				
M	19.42	19.29	0.14 (58)	.899
SD	3.43	3.34		
Range	15 to 27	16 to 24		
Number of Children				
M	1.67	1.46	0.87 (58)	.388
SD	1.01	0.72		
Range	1 to 5	1 to 4		

Table 2

Pregnancy, Birth, and Feeding-Related Characteristics of the Sample

Characteristic	Breast Feeding (<u>n</u> = 36)	Formula Feeding (<u>n</u> = 24)	χ^2 (df)	p
Currently employed	25.00%	29.17%	0.13 (1)	.721
Planned child	80.56%	79.17%	0.02 (1)	.895
Primiparous	58.33%	62.50%	0.25 (1)	.734
Pregnancy description:				
Easy	69.44%	70.83%		
Nether easy or difficult	19.45%	16.67%		
Difficult	11.11%	12.50%	0.09 (2)	.957
Feeding method as planned	94.44%	4.16%*	48.29 (1)	.000
Time of Weaning				
Within first week	N/A	33.33%		
Within first month	N/A	29.17%		
Within 2-3months	N/A	29.17%		
Within first 4-5 months	N/A	8.33%		
Mother fed as child:				
Breast	55.56%	29.10%*		
Bottle	44.44%	70.90%*	4.08 (1)	.044
Self-rated impact of feeding method on infant bond:				
Positive impact	44.44%	33.33%		
Negative impact	0%	14.29%	1.25 (1)	.651

Table 3
Means and Standard Deviations for Breast Feeding and Formula Feeding Mothers on
Psychological Variables

Variable	Breast Feeding		Formula Feeding	
	M	SD	M	SD
Psychological Well-being				
Happiness	7.28	1.81	7.96	1.83
Life Satisfaction	26.58	5.53	28.17	3.96
Positive Affect	34.03	8.15	35.25	6.63
Psychological Distress				
State Anxiety	33.42	10.42	31.58	10.09
Depression	6.92	3.23	5.92	2.76
Negative Affect	15.14	4.19	14.54	4.42
Maternal Attachment	95.36	4.59	96.21	4.02
Attachment Style				
Secure	5.19	1.88	4.33*	1.90
Fearful	2.97	1.86	2.83	1.63
Preoccupied	2.50	1.92	3.13	1.92
Dismissing	3.69	2.01	4.46	1.74

* $p < .05$

Table 4

Means and Standard Deviations of Psychological Health Variables by Secure Versus Insecure Attachment Style

	Secure Attachment (n = 32)		Insecure Attachment (n = 28)	
	M	SD	M	SD
Psychological Well-being				
Happiness	8.11	1.29	6.96	2.09
Life Satisfaction	29.07	3.67	26.24	5.56
Positive Affect	37.25	6.95	32.20*	8.07
Psychological Distress				
State Anxiety	29.11	8.33	35.48*	12.06
Depression	5.21	2.28	7.48*	3.32
Negative Affect	12.89	3.14	16.44**	4.77

* $p < .05$, ** $p < .01$

Table 5

Numbers and Percentages of Women Correctly Classified by Depression, Maternal Attachment, and Attachment Style.

Method of Feeding	Predicted Group Membership - Breast Feeding	Predicted Group Membership - Formula Feeding
Breast Feeding	29 (80.6%)	7 (19.4%)
Formula Feeding	10 (41.7%)	14 (58.3%)