Doctorate in Clinical Psychology | Lancaster University

Psychological Factors Influencing Women's Postpartum Mental Health

Submitted in partial fulfilment of the Doctorate in Clinical Psychology, Lancaster University.

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Abstract

This thesis focuses on women's mental health following childbirth. It contains two separate papers: a systematic literature review and an empirical paper.

Section one, the paper titled "Psychosocial Factors and Severe Postpartum Mental Health Difficulties: A Systematic Literature Review" aimed to establish the psychosocial factors which may influence whether a woman experiences severe postpartum mental health difficulties. The paper synthesised fourteen quantitative studies. The articles used a variety of methods, included small sample sizes, and focused predominantly on demographic factors. With the exception of previous mental health difficulties, the results were conflicting and contradictory; therefore, no overall conclusion could be made as to which of these factors increased a woman's risk of these experiences. The findings demonstrated that no psychosocial factors have been researched in relation to severe postpartum mental health difficulties. Future research is required to establish the interaction between various psychosocial factors in order to develop our understanding of how these factors make some women more vulnerable to these experiences than others.

Section two, the empirical paper titled, "Factors Predicting the Occurrence of Sub-Clinical Symptoms of Mania in New Mothers", aimed to explore the relationship between postpartum (hypo)mania and psychological factors including: cognitive appraisal styles, rumination strategies, Behavioural Activation System (BAS) sensitivity, sleep deprivation and birth experience. Younger age, lower income, feeding method, greater normalising appraisal styles, hypomania-relevant experiences, dampening and emotion-focused rumination strategies were associated with higher levels of (hypo)mania. However, whether these factors significantly predicted higher scores was dependent on whether the Highs scale (Glover et al, 1994) or the Altman Self-Rating Mania Scale (Altman et al, 1994) was used to measure (hypo)mania. The paper concluded that the experience of (hypo)mania in the post-

partum is likely to be the result of several, complex and interacting demographic and psychosocial factors. Future research is required to establish validated measures of (hypo)mania for the postpartum population.

Declaration

This thesis has been submitted in partial fulfilment of the Doctorate in Clinical Psychology at Lancaster University. The research reported is the author's own and has not been submitted for any other academic work.

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Thank you to Amy Tomlinson for putting up with all the tears, providing endless support, and well needed evening debriefs and beverages. Also, thank you to Caitlin Currie for proof reading all my work, and never giving up on trying to teach me when a full stop is a full stop and not a comma, or a semi-colon. Finally, thank you to my husband, James, and children, Aaron and Andi, for always being supportive and making me laugh when things got tough.

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SECTION ONE

Literature Review

Psychosocial Factors and Severe Postpartum Mental Health Difficulties: A Systematic Literature Review

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Abstract

Aim. To systematically review the psychosocial factors which may influence whether a woman experiences severe mental health difficulties, including psychotic symptoms and bipolar episodes, in the postpartum. **Method.** A systematic search of five databases: PsychInfo, Pubmed, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Academic Search Ultimate. Eleven thousand, three hundred and seventy-four articles were screened, of which 14 met the inclusion criteria. Articles were assessed for quality using the checklist for assessing the quality of quantitative studies (Alberta Heritage Foundation for Medical Research, 2004). **Results:** Overall there was limited evidence to reach any conclusion as to the contribution of sociodemographic, birth, interpersonal, social, personality factors and life events on a woman's experience of severe postpartum mental health difficulties. A woman's experience of mental health difficulties prior to, and during, pregnancy was the only factor to demonstrate a consistent association. **Conclusion:** The articles included in this review utilised a variety of different methods, included small sample sizes and focused predominantly on demographic factors and previous mental health difficulties. Apart from the latter, the results were conflicting and contradictory. The findings demonstrate that no psychosocial factors have been studied in relation to severe postpartum mental health difficulties. Future research should take a theory-driven approach, establishing the interaction between various factors, to develop our understanding of how these factors interact to make some mothers more vulnerable than others.

The transition to becoming a mother is characterised by considerable biological, physical, psychological, emotional, and social changes (Jones et al, 2014; Ria, Pathak & Sharma, 2015) requiring substantial personal and interpersonal adaptation (Ria et al, 2015). Consequently, women are placed at high risk of experiencing a range of mental health difficulties. Between 50 – 80% of women display the "baby blues" (O'Hara et al, 1991); 10 - 15% experience Postpartum Depression (PD; O'Hara & Swain, 1996); approximately 8.5% are affected by one or more anxiety disorders (Goodman, Watson & Stubbs, 2016), and 1-30% experience Post-Traumatic Stress Disorder following childbirth (Grekin & O'Hara, 2014**).** In rarer cases, around one to two cases per 1, 000 women in the general population (Kendell et al, 1987; Valdimarsdottier et al, 2009) experience Puerperal Psychosis (PP); characterised by mania, severe low mood with psychotic features, or mixed episodes of high and low mood (Jones & Smith, 2009).

Whilst all forms of mental health difficulties experienced in the postpartum period have the potential to become severe, in general, the 'softer' ends of the spectrum, such as the "baby blues" tend to be mild and transient (Henshaw et al, 2003). For this review, severe postpartum mental health difficulties refer to the spectrum of bipolar and psychotic disorders and includes women with both first onset and pre-existing diagnoses. The sudden onset, and rapid deterioration, associated with these difficulties make them one of the most acute and distressing difficulties seen in the postpartum period (Jones et al, 2014).

The consequences of severe postpartum mental health difficulties are wide ranging and include disruption of the attachment between child and mother; the infant's psychological and physical health; alongside, impacting the health and wellbeing of the mother and the wider family (Jones et al, 2014; O'Hara & McCabe, 2013; Ria et al, 2015). In a small number of women, it can lead to suicide (Cantwell et al; 2011; Austin, Kildea & Sullivan, 2011) and infanticide (Spinelli; 2009; Friedman, Cavney & Resnick, 2012).

To date, research considering severe postpartum mental health difficulties has focused predominantly on biological underpinnings including hormones (Bloch et al, 2000;2003) immunological factors (Bergunk et al, 2013; Weigelt et al, 2013) genetic components (Jones & Craddock, 2000; 2002;2007; Jones et al, 2007; Robertson et al, 2003; Middle et al, 2003; Feng et al, 2001) and structural brain differences (Lanczik et al, 1998; Fahim et al, 2007). Additionally, some researchers have investigated obstetric and medication related factors (Blackmore et al, 2006; Bergink et al, 2011; Munk-Olsen et al, 2014; Di Florio et al, 2014). However, there remains no one consistent, overarching explanation for their occurrence. Primiparity has been implicated consistently (Blackmore et al, 2006; Bergink, 2011; Di Florio et al, 2014); however, the reason for this association remains unknown. Therefore, it is likely that other factors, beyond the medical or biological, may influence whether a woman experiences severe postpartum mental health difficulties.

Research considering severe mental health difficulties (bipolar and psychotic disorders) outside of the postpartum population has made considerable advances with understanding the psychological and social variables that may increase an individual's vulnerability to these experiences. For example, childhood trauma and adverse experiences including sexual, physical, emotional and psychological abuse, neglect, peer victimisation, and parental loss, absence and separation have been found to increase an individual's risk of experiencing bipolar and psychotic symptoms (Bendall et al, 2008; Goldberg & Garno, 2005; Verese et al, 2012b). Recent traumatic and stressful life events have also been associated with psychosis and the development of an episode of low mood in those with Bipolar Disorder (BD; Alloy et al 2005; Johnson and Kizer, 2002; Beards et al, 2013). Positive life events, and events which disrupt sleep or circadian rhythm (Malkoff-Schwartz et al, 1998; 2000) or involve goal attainment (Johnson et al, 2000; Nusslock et al, 2007) have been found to predict the experience of mania.

Cognitive factors including beliefs, attitudes, appraisals or attributional styles have been investigated. For BD, a change in internal state is cognitively appraised by the individual as either positive or negative, and/or attributed to internal or external characteristics (Jones, 2001). These appraisal styles lead the individual to engage in behaviours which suppress or enhance their affective state. For example, through internal mental acts such as positively or negatively ruminating and having positive or unhelpful beliefs about the self (Mansell et al, 2007).

For psychosis, unhelpful metacognitive beliefs, beliefs about rejection and criticism, and emotional self-regulation strategies are thought to create biases in the information processing of threatening stimuli (Morrison et al, 2006; Wells & Matthews, 1994). For example, increased worry and rumination and attentional biases in the form of threat monitoring and attempts to control thoughts and internal events. This is maintained by positive beliefs about the usefulness of worry, rumination, and threat monitoring and unhelpful beliefs concerning the danger or uncontrollability of particular thoughts (Wells, 2009; Wells & Matthew, 1996).

Factors within an individual's social and interpersonal environment have been found to increase a person's risk of BD and psychotic experiences. For example, high expressed emotion (EE), characterised by hostility, criticism, and emotional overinvolvement (Brown, 1985) from family or peers can increase difficulties and negatively impact on the course of recovery (Wendell et al, 2000; Kim & Miklowitz, 2004; Rosenfarb et al, 2001). Furthermore, aspects of an individual's wider social and cultural environment such as living in more ethnically dense and deprived areas with greater inequality, social fragmentation, social isolation, perceived discrimination, and less community cohesion have been associated with BD and psychotic experiences (Kirbride et al, 2012)

Within the postpartum literature, several reviews have been conducted investigating the psychosocial factors involved in other forms of postpartum mental health difficulties, including Major Depressive Disorder (MDD), Anxiety, Obsessive-Compulsive Disorder, and Post-Traumatic Stress Disorder (Abramowitz et al 2003; Ross & McLean, 2006; Olde et al, 2006; Yim et al, 2015). To date, no review has examined the psychosocial factors involved with severe postpartum mental health difficulties.

This systematic review aimed to synthesise quantitative studies considering the psychosocial factors associated with experiencing severe postpartum mental health difficulties, including psychotic and bipolar disorders. The review intends to address the following questions:

(1) What psychosocial factors have been investigated in relation to severe postpartum mental health difficulties?

(2) What psychosocial factors are predictors of severe postpartum mental health difficulties?

Methods

Papers were included if they (1) used quantitative methods, (2) examined psychosocial factors associated with the onset of severe postpartum mental health difficulties and (3) focused on severe mental health difficulties, such as psychotic symptoms and bipolar episodes, occurring in the postpartum period. The postpartum period was defined as up to twelve months following childbirth, in-line with the National Institute for Health and Care Excellence (2014) guidance for antennal and postnatal mental health; (4) were published in English; and (5) published in a peer-reviewed journal.

Articles were excluded if they (1) focused on diagnosis of severe postpartum mental health difficulties not included within the definition for this review such as, Major Depressive Disorder (MDD), Anxiety, Obsessive-Compulsive Disorder, and Post-Traumatic Stress

Disorder. This was due to the content of previous systematic reviews (Abramowitz et al 2003; Ross, 2006; Olde et al, 2006; Yim et al, 2015). Furthermore, articles were excluded if they (2) used umbrella terms which could encompass several forms of diagnosis with no definition of the inclusion criteria, for example, postpartum emotional disorders or psychiatric disorders; (3) when the study included other postpartum mental health diagnoses and the results could not be separated from the diagnosis included within this review; (4) when the article included psychological distress occurring in pregnancy and the results could not be separated from those occurring in the postpartum; and (5) focused on medical factors, such as method of delivery, with no focus on the psychological impact of these factors.

Literature Search

The following databases were searched on the 15th April 2018: PsychINFO, PubMed Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Academic Search Complete. These databases were chosen to encompass the most relevant databases for psychology, medical and allied professionals. To capture as many relevant articles as possible no restrictions on date were imposed. However, PubMed was limited to 01/04/2017 – 15/04/2018 to capture any articles published in the past year which may not yet be available through Medline. The reference lists of all included articles were searched.

Following a database search, the author conducted a search via Google Scholar. The terms postpartum and psychosis, schizophrenia, and bipolar were combined with the following terms: psychosocial factors; life events; interpersonal difficulties; social, cultural, and environmental factors; adverse experiences; cognitive and appraisal styles; socio-demographic factors; and birth experience. The author searched through the first one hundred articles of each Google Scholar search. A forward citation search (searching for articles which cited, or were related to, the included articles) was conducted.

Search Terms

Search terms where identified by (1) diagnostic manuals, including the DSM-IV (American Psychiatric Association, 2013) and ICD-10 (World Health Organization, 1992); (2) the search terms used in previous reviews conducted on psychosocial factors and other forms of postpartum mental health difficulties (Jones et al, 2014; Robertson et al, 2004; Yim et al, 2015), or psychosis, schizophrenia and bipolar disorders outside of the postpartum population (Alloy et al, 2005; Jansen et al, 2015; Lim, Chong & Keefe, 2009; Read et al, 2005); (3) articles considering psychosocial factors and psychosis, bipolar disorders and schizophrenia were found on PubMed and related MeSH terms were noted; (4) a thesaurus; and (5) a google search of articles to ensure that no related terms, or alternative ways of describing a concept were missed.

The search terms covered variations and combinations of 'bipolar', 'schizophrenia', 'psychosis' and 'postpartum'. Terms were clustered around life events, interpersonal, social, cultural, and environmental factors, childhood adverse experiences, cognitive and appraisal styles, socio-demographic factors and birth experience. Free search terms are listed in Table 1.

(Insert Table 1: Free search terms)

Alongside the free search terms, MeSH subject headings for Medline, PubMed, and Thesaurus headings for PsychInfo, CINAHL and Academic Search Ultimate were used. Any relevant narrower subject terms identified within the MeSH and Thesaurus headings were included. Limiters were placed on databases, where available, including 'peer reviewed'; 'English' and 'Human Subjects'. The search strategies for each individual database are included in Appendices B-F.

Quality Appraisal

One researcher conducted this systematic review. To increase quality and rigour an Academic Liaison Advisor, from Lancaster University Academic Services Team, was consulted to advise on the search terms and inclusion/exclusion strategy. In an attempt to ensure consistency and reduce bias, clear inclusion and exclusion criteria were established prior to conducting the search and a log of rejected studies, and the reason for their exclusion, was kept throughout the selection process. The author followed the PRISMA-P checklist for preferred reporting of a systematic literature review (Shamseer et al, 2015).

To consider the quality of identified articles the checklist for assessing the quality of quantitative studies, developed by the Alberta Heritage Foundation for Medical Research (AHFMR, 2004), was used. The checklist was developed specifically to provide a standard criterion to appraise the quality of research papers adopting a wide variety of different study methods for the purpose of a systematic review. The checklist comprises 14 questions, with each scored on the degree to which the specific criteria are met ("yes" = 2, "partial" = 1, "no" = 0). Questions which are not applicable to a study are marked "N/A" and excluded from the calculation of the summary score. The summary score is calculated for each article by dividing the score obtained by relevant items by the total possible score. This provides a percentage which allows for a quality comparison for articles which may contain different methodologies. The AHFMR does not have a set threshold for low, moderate or high-quality studies, or a minimum quality threshold for study inclusion. For this review articles which scored below 75% were classified as low quality. This was due to these articles scoring predominantly "No = 0" or "Partial = 1" across all 14 items. Articles which scored over 75% have been considered high; given that scores across the 14 items comprised mainly of "Yes = 2". No articles were excluded on the basis of low quality scores.

Data Synthesis

Due to the heterogeneity of the articles included, it was not possible to synthesis the data in a manner as seen in a meta-analysis. Therefore, the approach to synthesis focused on compiling a summary table outlining the main properties and findings of each article. Following this, the author identified trends and patterns within the included articles. Psychosocial factors were grouped together to form overarching headings, and the findings of any articles investigating these factors were summarised by grouping together those studies with similar/contrasting results.

Results

The search identified the following number of articles from each database: PsychInfo, 2,992; Medline, 4303; CINAHL, 747; Academic Search Ultimate, 571; and, PubMed, 571. Of a total of 11,374 articles, 7,107 were duplicates. A total of 4,267 articles were reviewed against the eligibility and exclusion criteria with 3,958 excluded based on title and abstract. Of the 309 articles read in full, 14 met the inclusion criteria. No additional articles were identified through the reference lists, Google Scholar or the forward citation search. Figure 1 provides a flow chart outlining the process of the search.

(Insert Figure 1: Flow chart)

Characteristics of included studies

The 14 articles included were published between 1987 and 2017. Five studies were conducted in the UK (Brockington et al, 1990; Dowlatshahi & Paykel, 1990; Doyle et al, 2011; Marks et, 1992; Perry et al, 2016); five in Sweden (NcNeil, 1987; 1988a,b; Nager et al, 2005; 2006); one in Denmark (Meltzer-Brody, 2017); one in USA (Singer et al, 1995); one in India (Upadhyaya et al, 2014) and one in Canada (Vigod et al, 2016).

Four articles adopted a population-based design (Meltzer-Brody, 2017; Nager et al, 2005; 2006; Vigod et al, 2016); four used a prospective cohort study design (Brockington et

al, 1990; McNeil, 1987; 1988a,b); one used a retrospective cohort study design (Doyle et al, 2011); two used a retrospective case-control design (Dowlatshahi & Paykel, 1990; Upadhyaya et al, 2018; Singer et al 1995); and two used a prospective case-control design (Marks et al, 1992; Perry et al, 2016).

All of the articles included participants experiencing symptoms of severe postpartum mental health difficulties including: Puerperal Psychosis (Brockington et al, 1990; Dowlatshahi & Paykel; 1990; Nager et al; 2005;2006; Meltzer-Brody, 2017; Upadhyaya et al, 2014); Bipolar Affective Disorder (BPAD) relapse (Doyle et al, 2011); relapse of functional psychosis (PPPs; McNeil, 1987; 1988a,b); Affective Disorders Psychotic relapse (Marks et al, 1992); Schizophrenia relapse (Vigod et al, 2016); Bipolar Disorder (BD) relapse (Perry et al, 2016); and paranoid ideation and psychoticism (Singer et al, 1995).

When articles included participants experiencing psychological distress in pregnancy (Brockington et al, 1990), or with a diagnosis not included in this review (Brockington et al, 1990; Singer et al, 1995), only data relating to the postpartum period and severe mental health difficulties as defined by this review were included.

Five studies included participants who have a diagnosis of, or had previously experienced, psychological distress (Doyle et al, 2011; Marks et al, 1992; McNeil, 1987; 1988a,b). Three articles reported participants in the same population of participants (McNeil, 1987;1988a,b); however, each article considered different psychosocial factors, therefore all were included.

The articles considered several different psychosocial factors including life events (Brockington et al, 1990; Dowlatshahi & Paykel, 1990; Kumar, 1992; Marks et al, 1992; Perry et al, 2016), interpersonal difficulties (Marks et al, 1992; McNeil, 1988a), and adverse life experiences (Meltzer-Brody, 2017; Peery et al, 2016). The majority of studies considered various aspects of demographic factors and previous mental health difficulties.

Data collection methods ranged from questionnaires (Brockington et al, 1990; Perry et al, 2016; Upadhyaya et al, 2014); structured and semi-structured interviews (Dowlatshahi & Paykel, 1990; Marks et al, 1992; Singer et al, 1995); national and hospital databases (Doyle et al, 2011; McNeil, 1987; Meltzer-Brody, 2017; Nager et al, 2005; 2006; Vigod et al, 2016); and observations (McNeil, 1988b). Table 2 summarises the key characteristics and findings from all the included articles.

(Insert Table 2: Summary of study characteristics)

Quality of the articles

The quality of the articles included within this review ranged from 60% to 100%. The total score for each article is included within Table 2 and full details of the quality assessment are provided in Table 3.

From the quality assessment some overall strengths and weakness of the articles were identified. The majority of studies included in this review provided a clear overview of the purpose and objective of the study; the design of the study; justification and description of the measurements and analytic methods used; and a clear conclusion, supported by the results.

Several articles did not clearly define the inclusion or exclusion criteria of participants in their study (Marks et al, 1992; McNeil, 1987; McNeil, 1988a; b; Upadhyaya et al, 2014). Many articles did not provide sufficient demographic or baseline information on participants, or control participants (Brockington et al, 1990; McNeil, 1987; McNeil, 1988a;b; Marks et al, 1992). Whilst the quality assessment tool allowed for interpretation that a prospective power analysis had been completed, allowing for a partial or full score to be allocated; no study reported the results of a power analysis with many studies having extremely low sample sizes (Brockington et al, 1990; Dowlatshahi & Paykel, 1990; Doyle et al, 2011; Marks et al, 1992; McNeil, 1987; McNeil, 1987; McNeil, 1988a;b Meltzer-Brody, 2017). Many of the studies reported no, or only partial, estimates of variance, and did not report all the main results and

outcomes of the study (Brockington et al, 1990; Dowlatshahi & Paykel, 1990; Doyle et al, 2011; Marks et al, 1992; McNeil, 1987; McNeil, 1988a;b; Singer et al, 1995; Upadhyaya et al, 2014). As such, the majority of studies did not provide, or have sufficient, information available to calculate effect size. Several studies did not adequately control for confounding factors, for example, by not matching participants pairwise (Marks et al, 1992; Perry et al, 2016; Singer et al, 1995; Upadhyaya et al, 2014).

(Insert Table 3: Quality Assessment).

Psychosocial Factors

Fourteen articles were included in analysis and synthesised. A limited number of studies included in this review examined the same psychosocial factors. Very few studies investigated a specific psychosocial variable, with the majority considering various sociodemographic factors, and historical mental health difficulties. Additionally, some studies with high-quality (>75%) had very low sample sizes. Therefore, it is difficult to give appropriate weighing to individual studies and balance the comments based on the quality of the papers. As such, throughout the results section, the author has explicitly stated when the evidence is presented from a low-quality study (<75%), or when higher-quality studies have had particularly low sample sizes.

The following psychosocial factors were identified:

Demographic Factors

Age

Doyle et al (2011 – Bipolar Affective Disorder (BPAD) relapse) found that younger age was associated with the postpartum relapse in a small sample of women. Perry et al (2016 – BD relapse) found that women with a diagnosis of BD who experienced PP were significantly younger at age of first episode of BD prior to pregnancy, compared to those who did not experience PP. In a low quality study, Upadhyaya et al (2016 – PP) found that

younger age was associated with PP. McNeil (1987 - PPP's: relapse of functional psychosis) also found that younger age was significantly associated with the risk of PPP; however, only in women who experienced early onset (< 3 weeks).

Conversely, two studies (Nager et al, 2005; 2006 - PP) found that older age groups were at significantly higher risk of experiencing hospital admission due to postpartum psychosis. Furthermore, Vigid et al (2016 - Schizophrenia relapse) noted that of women with a history of schizophrenia or schizoaffective disorder, those over 35 were at a significantly higher risk of being admitted due to a postpartum relapse.

Education

Three studies reported on education and the association between severe postpartum mental health difficulties. Perry et al (2016 - BD relapse) found that women who had a history of Bipolar I Disorder who experienced a postpartum relapse were significantly more likely to have completed higher education compared to controls. Conversely, both Nager et al (2006- PP) and Upadhyaya et al (2014 -PP) found no significant association between educational level and PP.

Marital Status

Two studies found no significant association between marital status (Marks et al 1992- Affective Disorders Psychotic relapse; McNeil, 1987 - PPP's: relapse of functional psychosis) and the experience of PP in a small sample of women. In a low quality study, Upadgyaya et al, (2014 - PP) found that family type, 'joint' or 'nuclear', was also associated with the experience of PP. However, in a small sample of women, McNeil (1987) found that those who experienced late onset PPP (> 3 weeks) were more likely to be unmarried than non-PPP cases. Similarly, Nager et al (2005; 2006 - PP) found that first-time mothers, not living with the father of their child, were more likely to be admitted for PP. However, in a

low quality study, McNeil (1988a -PPPs: relapse of functional psychosis) found no association between living with, or not living with the father, and the risk of developing PPP.

Employment

Two low quality studies considered the relationships between level of employment and the experience of severe postpartum mental health difficulties. Marks et al (1992 - Affective Disorders Psychotic relapse) found no association between unemployment and risk of psychotic relapse in women with a history of affective disorders. Similarly, Upadhyaya et al (2014- PP) found no significant association between employment status and women experiencing PP.

Socioeconomic

Nager et al (2005 - PP) investigated the relationship between neighbourhood status and the risk of being admitted to hospital for PP in first time mothers. Women living in areas with the highest proportion of low income were significantly more likely to experience PP. Vigod et al (2016 - Schizophrenia relapse) found that women with lower incomes were significantly more likely to experience a relapse in the postpartum. In a low quality study, Upadhyaya et al (2014 - PP) found that lower income was significantly associated with PP.

In a small sample of women, McNeil (1987 – PPPs: relapse of functional psychosis) found no association between social class and the risk of experiencing PPP. In a low quality study, McNeil (1988a- PPPs) found that women who experienced PPP were significantly less likely to live in 'poor' housing. Furthermore, no difference between women who experienced PPP's and those who did not was found with regards to financial difficulties, housing problems or dissatisfaction with life materially. However, in both these studies it is unclear how these factors were defined. No detail was provided on how "satisfaction with life (materially) was defined, or the difference between "good and poor" housing situations. Additionally, poor

housing was based on self-reports of whether women perceived their housing to be 'poor or good'.

Birth factors

Attitudes and expectations

Two low quality studies considered parental attitudes and expectations. Upadhyaya et al (2014 - PP) found that whether the preference for the sex of the baby was fulfilled or not had no influence on whether women experienced PP. Whilst not a significant association, McNeil (1988a – PPPs: relapse of functional psychosis) found that women who experienced PPP reported more positive attitudes towards the pregnancy compared to those who did not develop PPP; those with late onset (> 3 weeks) tended to report more positive attitudes than those with early onset (< 3 weeks). Additionally, those who experienced early onset of PPP tended to have prepared more for the child when compared to those with late onset.

Unplanned pregnancy

In a small sample of women, Doyle et al (2012 – BPAD relapse) found that those with a history of Bipolar Affective Disorder (Bipolar Affective Disorder (BPAD) relapse) were at significantly greater risk of postpartum relapse if their pregnancy was unplanned when compared to those with a planned pregnancy. However, in a low quality study, Marks et al (1992- Affective Disorders Psychotic relapse) found no association between unplanned pregnancy and the risk of relapse in women with a history of affective disorders. Similarly, another low-quality study found no significant association between unplanned pregnancy and the risk of experiencing PPP, with women not reporting more negative attitudes to the pregnancy, or more frequently considering terminating the pregnancy, or adoption (McNeil, 1988a – PPP's: relapse of functional psychosis)

Birth experience

One low quality study observed mothers during the labour and delivery (McNeil, 1988b – PPP's: relapse of functional psychosis). Women who experienced late onset PPP had been rated by midwives as significantly more anxious compared to those who did not experience PPP. Whilst not significant, McNeil also noted that those with late onset PPP (> 3 weeks) tended to have less control over their own behaviour, and to have been more negative in their view of labour and delivery. Furthermore, there was a non-significant trend for those with early onset PPP (<3 weeks) having a tendency towards being less anxious than women who did not experience PPP.

Parent-infant interaction

One low quality study observed maternal behaviour towards the infant in the first two hours after delivery (McNeil, 1988b – PPP's: relapse of functional psychosis). There was no significant difference found between the maternal behaviour of women who developed PPP and those who did not. There was a non-significant trend with those who experienced PPP's being less likely to have talked to their child immediately after delivery. Furthermore, those who experienced early onset PPP (<3 weeks) tended to have not talked to their child, both immediately after delivery and later in the first two hours postpartum. The husbands of women who experienced PPP were also rated as having reacted more positively towards their child when compared to the husbands of women who did not develop PPP.

Life Events

Three low quality studies looked at the relationship between life events in the 12 months preceding delivery up to the onset of PP (Brockington et al, 1990; Dowlatshai & Paykel, 1990 – PP; Marks et al, 1992 – Affective Disorders Psychotic relapse). None of the studies found a significant association between life events and the risk of experiencing PP. There was no tendency for a peak of events close to onset (Marks et al, 1992)

Two studies looked at adverse life events in childhood and the experience of severe postpartum mental health difficulties. Perry et al (2016 – BD relapse) found that adverse childhood life events were significantly associated with postpartum relapse in women with a history of bipolar and schizoaffective disorders. In a small sample of women, Meltzer-Brody (2017 - PP) found a significant association between adverse life events in childhood and postpartum psychiatric episodes.

Interpersonal and Social Factors

Three low quality studies considered interpersonal and social factors. Marks et al (1992 - Affective Disorders Psychotic relapse) found that women with a history of affective disorders who experienced a psychotic relapse were less likely to categorise their marital relationship as good and a lack of a confidante was not associated with psychotic relapse. Conversely, McNeil (1988b – PPP's: relapse of functional psychosis) found no difference between those who experienced PPP when compared to those who did not with regards to marital difficulties. McNeil (1988a – PPP's) found no association between interpersonal problems, or whether a woman experienced problematic relations with their own mothers, fathers, or parent-in-laws and the risk of developing PPP.

Whilst the association was not significant, McNeil (1988b- PPP's) found that husbands of women who experienced late onset PPP, tended to have attended the labour and delivery less often. In a low quality study, Upadhyaya et al (2014 - PP), also noted that husbands of women who developed PP tended to be present at the labour less often. Additionally, McNeil (1988b – PPP's) noted that compared to husbands of women who did not develop PPP, husbands of women who experienced early onset PPP had been more anxious and were less effective in assisting the mother during the labour and delivery.

Professional support

Vigod et al (2014 – Schizophrenia relapse) found that women with a diagnosis of schizophrenia and schizoaffective disorder admitted due to postpartum relapse were less likely to have received an ultrasound by 20 weeks gestation. Additionally, those with a consistent mental health care provider prior to and during pregnancy were at a lower risk of being admitted, compared to those with no consistent provider.

Mental Health Difficulties

Prior to current pregnancy

Vigod et al (2016 - Schizophrenia relapse) found that women with a diagnosis of schizophrenia, or schizoaffective disorder, who were admitted in the postpartum period had more mental health outpatient use prior to pregnancy and were more likely to have had a psychiatric admission in the year prior to conception than those who were not admitted in the postpartum. In a low quality study, Dowlatshai and Paykel (1990 - PP) found that women with a history of psychiatric disorders were more likely to be admitted for PP.

In a small sample of women Doyle et al (2012 – Bipolar Affective Disorder (BPAD) relapse) found that women with a history of BPAD were at greater risk of experiencing a postpartum relapse if they had more than one previous episode of mania. One low quality study found that only women with a history of bipolar or schizoaffective disorder became psychotic after childbirth, compared to those with Major Depressive Disorder (Marks et al, 1992 – Affective Disorders Psychotic relapse) Additionally, women who experienced PP were more likely to have been admitted to hospital more recently than those who did not experience PP. There was no association between PP and the frequency of previous admissions, or whether a woman had experienced PP in the past.

Similarly, in a small sample of women, McNeil (1987 – PPP's: relapse of functional psychosis) found no association between previous PPP and risk of current postpartum

episode. Additionally, there was no association between distal psychiatric history, or years from previous psychiatric episode to delivery. However, the severity of the previous episode was significantly related to the risk of developing PPP.

During current pregnancy

In a small sample of women, Doyle et al (2012 – Bipolar Affective Disorder (BPAD) relapse) found that women with a history of BPAD were significantly more likely to experience a relapse in the postpartum if they experienced mental health difficulties during their pregnancy. Vigod et al (2016 – Schizophrenia relapse) found that women with a history of schizophrenia or schizoaffective disorder were significantly more likely to be admitted in the postpartum if they had a psychiatric admission during pregnancy. Women admitted for a greater number of days (>35) during pregnancy were at a significantly increased risk of postpartum admission. Additionally, women with more than one mental health visit during pregnancy were at higher risk of postpartum admission.

Singer et al (1995- postpartum paranoid ideation and psychoticism) found that women who consumed alcohol and cannabis during pregnancy were significantly more likely to experience paranoid 'symptoms' in the postpartum. Furthermore, the combined use of alcohol and cocaine during pregnancy, significantly predicted 'symptoms' of psychoticism in the postpartum.

Personality Factors

Two low quality studies investigated the relationship between neurotic 'symptoms' and severe postpartum mental health difficulties. Dowlatshai and Paykel (1990 - PP) found that a history of neurotic 'symptoms', outside of any historical mental health difficulties, was significantly associated with postpartum hospital admission. However, it was unclear how neurotic 'symptoms' were measured and defined. Marks et al (1992 – Affective Disorder Psychotic relapse) did not find any association between Eysenck Personality Questionnaire

(EPQ; Eysenck & Eysenck, 1975) neuroticism scores and the risk of 'psychotic relapse' in the postpartum in bipolar or schizoaffective disorder.

Discussion

This review aimed to synthesise research considering the psychosocial factors which may influence whether a woman experiences severe postpartum mental health problems in the postpartum period. Overall, there was little, or no, evidence to form a strong conclusion as to the contribution of sociodemographic, birth, interpersonal, social and personality factors and life events on women's experience of postpartum psychological distress. The findings were generally inconsistent, which suggest it is likely a complex interaction of several factors which may make a woman more vulnerable to experiencing postpartum psychological distress.

With regards to socioeconomic factors only one study included in this review considered neighbourhood status (Nager, 2005) and found an association between postpartum psychological distress and those living in neighbourhoods with the highest proportion of low incomes (Nager, 2005). This finding is consistent with literature considering the psychotic experiences outside of the postpartum period. Evidence suggests that individuals are at greater risk if they reside in more economically deprived areas (Crump et al, 2011; Fone et al, 2006) characterised by ethnic density with less social cohesion, increased social fragmentation and isolation, and inequality (Kirbride et al, 2012).

Recently, researchers have started to consider the factors which mediate the relationship between social deprivation and more specific experiences included within diagnostic categories. For example, Wickham et al (2015) found that participants' Index of Multiple Deprivation (IMD) significantly predicted both depression, and psychosis. IMD also predicted paranoid ideation; however, it did not predict auditory verbal hallucinations or hypomania. Lack of trust, social support and stress fully mediated the relationship between

IMD and depression; whereas, stress and lack of trust only partially mediated the relationship. These findings highlight the need for further research establishing what factors within a woman's wider social environment may increase her risk of experiencing postpartum psychological distress. Particularly, the research needs to focus on the mechanisms which may explain the relationship between environment and postpartum mental health difficulties.

In general, there was limited investigation into interpersonal and social factors within the articles included in this review. There was some consistency in relation to the absence of the father of the child during childbirth and an increased risk of experiencing postpartum psychological distress (McNeil, 1988b; Upadhyaya et al, 2014). Social support has been identified as a key protective factor from mental health difficulties both within the postpartum (Schwab-Reese et al, 2015) and non-postpartum populations (Harandi et al, 2017). It may be that the husband's presence during delivery is another facet of social support that needs to be considered. For example, whether these husbands are generally less likely to be present during pregnancy and postpartum, or whether it is specifically the lack of the husband's presence during the delivery that contributes to the increased risk of postpartum psychological distress.

Alternatively, it may be other underlying factors which are contributing to the increased risk of experiencing severe postpartum mental health difficulties as opposed to purely the father's absence. In both the McNeil (1988b) and Updahyaya et al (2014) studies, the participants were aged under 30 and 25 years of age, respectively. In the latter, participants also had low level of academic performance, income and were majority "homemakers". Evidence has demonstrated that pregnancy at a young age is associated with lower educational attainment and income, alongside having a greater risk of living in deprived areas, experiencing social exclusion and disadvantage (Burchardt et al., 2002; Fullerton et al., 1997; Hobcraft and Kiernan, 1999; Hobcraft, 2002; Swann et al., 2003). All

of these factors place additional burden and demand on new mothers increasing their risk of experiencing mental health difficulties.

Unplanned pregnancy in women with a history of bipolar disorder was found to increase the risk of experiencing postpartum psychological distress (Doyle et al, 2012). Women with BD are more likely to have an unplanned pregnancy (Marengo et al, 2015); this is due to multiple factors such as increased risk-taking behaviours, unsafe sexual behaviours, hypersexuality, and substance and alcohol misuse, which can be a consequence of experiencing mania (Marengo et al, 2015). Therefore, it is perhaps that these mothers were more likely to have experienced a recent episode of BD in general and are thus at greater risk of developing postpartum psychological distress. Alternatively, it may be that unplanned pregnancy places additional burden on women already more likely to experience physical health, relationship and employment difficulties, alongside having a reduced quality of life (Drancourt et al, 2013; Kvitland et al, 2016; McCraw et al, 2014). However, future research is required to establish whether unplanned pregnancy increases individuals' risk who have not experienced BD, and why this places women at risk of receiving a diagnosis.

It was consistently found that stressful or adverse life experiences were not associated with an increased risk of developing severe postpartum psychological distress. However, three of these studies only considered life events in the 12 months leading up to delivery, and until the onset of psychological distress (Brockington et al, 1990; Dowlatshai & Paykel, 1990; Marks et al, 1992). Therefore, these results do not reflect life events preceding this period which may influence how a person experiences childbirth.

Of the two studies which considered adverse life events in childhood, one of these required specific definitions of events which could be identified through population-based registers (Meltzer-Brody, 2017). For example, family disruption was defined as a child not living in a household with both parents. Arguably, this method may have resulted in many

individuals who have experienced adversity in childhood not being identified. Additionally, some individuals may have been included who did not experience these events as negative or adverse. Neither of these two studies included childhood abuse (Meltzer-Brody, 2017; Perry et al, 2016). This is particularly important, given the consistent findings of a strong association between childhood trauma, childhood maltreatment and peer victimisation with psychosis and schizophrenia outwith the postpartum population (Varese et al, 2012a; 2012b), alongside evidence that childbirth can re-traumatise women who have experienced childhood sexual abuse (Daphna-Tekoaha et al, 2015).

No study considered positive life events. In BD, life events involving goal attainment and striving (Johnson, 2011; Johnson et al, 2010) predict (hypo)mania levels. For some women, being pregnant and becoming a mother may be extremely positive experiences and many parents hold expectations with regards to these experiences which may be likened to goals. Therefore, it may be that these factors may make some women more vulnerable to experiencing severe postpartum psychological distress than others.

Similarly, no study investigated the role of appraisal styles. In a recent study considering Psychotic Like Experiences (PLEs), sub-clinical experiences of hallucinations and delusions (Cicero et al, 2013), found that trauma appraisals of childbirth may be more important than post-traumatic stress symptoms in increasing a women's risk of these experiences in the postpartum. This finding is consistent with evidence suggesting that appraisal styles and cognitive styles may increase an individual's risk of experiencing psychosis or BD. For example, those with a vulnerability to (hypo)mania have been found to demonstrate greater positive self-appraisal (Jones, Mansell & Waller, 2006), ruminate on their own positive qualities, previous positive experiences, and positive circumstances (Segerstrom et al, 2003), alongside making positive overgeneralisations (Alloy et al, 2009; Jones et al, 2006). Negative meta-cognitive beliefs, beliefs about rejection and criticism from

others, alongside cognitive-attentional styles characterised by heightened, self-focused attention, threat monitoring, and perseverative conceptual processing have been found in individuals with psychosis (Morrison et al, 2006.).

Furthermore, other pressures beyond specific life events may play a crucial role in increasing a woman's risk of experiencing severe postpartum mental health difficulties. For example, Holt et al (2017) found that difficulties adjusting to motherhood, and a disrupted self-concept clarity, that is the extent an individual's beliefs about themselves are well-defined, coherent, stable and cognitively accessible (Campbell et al, 1996), contributed to the experience of PLE's in the postpartum period (Holt et al, 2017). Within the PD literature there is evidence that stress, including parental, occupation, financial and perceived stress; interpersonal, social and cultural factors; expectations of both the mother and wider family members; changing roles and responsibilities; alongside adult and childhood attachment styles increase a mother's risk of experiencing postpartum mental health difficulties (see Yim et al, 2015 for review). As such, researchers investigating severe postpartum mental health difficulties may need to move beyond individual life events and consider broader factors associated with the transition to motherhood.

The only consistent factor associated with a women's risk of experiencing postpartum psychological distress was having had mental health difficulties prior to, and during pregnancy (Dowlatshai & Paykel, 1990; Vigod et al, 2016; Doyle et al, 2012; Marks et al, 1992; Singer et al, 1995). The risk appeared to be increased if women experienced these difficulties more recently or were admitted during pregnancy (Doyle et al, 2012; Vigod et al, 201; Marks et al, 1992). The severity of previous mental health difficulties also appeared to increase a woman's risk (McNeil, 1987; Vigod et al, 2016). However, the majority of articles did not screen for, or included, women with a history of bipolar, psychotic and schizophrenia spectrum disorders; therefore, these results may not be applicable to women with no previous

history of these mental health difficulties. Additionally, it does not inform us whether experiencing other mental health difficulties prior to childbirth, such as anxiety or low mood, place women at greater risk.

Strength of articles

Seven of the articles included in the review were quality rated at 75% or above; suggesting they are of acceptable quality, although it is important to note that many had low sample sizes.

Six articles were prospective (Brockington et al, 1990; McNeil, 1987; 1988a, b; Marks et al, 1992; Perry et al, 2016). Prospective studies are argued to have less bias and confounding than retrospective designs, for example, by reducing recall bias, alongside having more accurate data collection methods which ensures that all pertinent risk factors are recorded, increasing the validity of reported associations (Euser et al, 2009; Sedwick, 2013).

Five articles utilised case-controls (Dowlatshahi & Paykel, 1990; Upadhyaya et al, 2014; Singer et al 1995; Marks et al, 1992; Perry et al, 2016). Matching participants with control cases, minimising the difference between participants and controls ensures that the groups have similar distributions across variables (Vandenbroicke et al, 2007).

Limitation of articles

The majority of the articles were published over ten years ago, and various attitudes and aspects of care may have changed over time. Furthermore, cultural attitudes to becoming a mother, experiencing psychological distress, the health care provision, and the social context around aspects such as ‘neighbourhood status’ may differ in in different countries. Therefore, this raises questions regarding levels of generalisability.

Of the articles which utilised controls, not all matched participants pairwise or controlled for confounding variables. Furthermore, not all the articles included sufficient detail on the participants included within the study. In particular, ethnic origin of participants

was not reported. Of those articles which did, participants were predominantly white. Therefore, the results may not apply to individuals from different ethnic or cultural backgrounds. This is important given that the literature suggests that ethnic and cultural identity impacts upon the presentation of these experiences (Versola-Russo, 2006). Furthermore, research has demonstrated that within the UK, those from black Caribbean and black African origin are at highest risk of receiving a diagnosis of psychosis/schizophrenia spectrum (Kilbride et al, 2012).

Several of the articles utilised data collection methods from national databases and hospital records. This relies heavily on the accuracy and completeness of recording. Arguably, this method, alongside articles considering hospital admissions, may not reflect milder forms of severe postpartum mental health difficulties, or those successfully managed in the community.

The majority of articles included small sample sizes and no study reported to have conducted power calculations. This was particularly evident when articles included several postpartum diagnoses for comparison. In these cases, the number of participants meeting the inclusion criteria for this review was minimal. Given the small sample sizes the findings should be treated with caution.

Limitations of review

The paper selection and quality assessment has been conducted by one researcher; therefore, increasing the chance of selection bias and human error. Given the different ways that postpartum psychological distress is termed and defined there is a possibility that despite extensive searches relevant papers may have been missed. No additional articles were identified via searching reference lists or Google Scholar, making it unlikely that relevant articles were missed. However, during the search a considerable number of papers referred to psychiatric disorders or emotional disorders, with no definition of what these included; as

such, there is a strong possibility that some of these articles may have been appropriate to include.

The studies included reported varying study methods, sample sizes, psychosocial factors and populations. For example, some articles focused on those with historical diagnosis and some focused on factors associated with hospital admission. Therefore, attempts to synthesis the data into a coherent manner was not readily achievable.

Implications and Future Research

This review highlights that there is limited evidence of the psychosocial factors involved in severe postpartum psychological distress. The need for more research to be conducted in this area is essential to develop our understanding of how to identify and support those women at greatest risk during and after pregnancy. This research needs to take a consistent approach to the populations included, the variables measured, and the definitions of psychological distress being considered. Additionally, researchers should use theory-driven models, considering how different psychosocial factors interact, in order to increase our understanding of how particular factors make some individuals more vulnerable to these experiences than others.

Conclusion

This review synthesised the quantitative literature considering psychosocial factors which may place a woman at greater risk of experiencing severe postpartum psychological difficulties. The majority of articles included in this review contained small sample sizes, recruited individuals with a pre-existing diagnosis and focused primarily on demographic factors. With the exception of having experienced severe mental health difficulties prior to, or during pregnancy, the results were inconclusive and contradictory. The findings highlight that no psychosocial factors have been studied in relation to severe postpartum mental health difficulties. Therefore, it is essential that research taking a consistent and theory-driven

approach is conducted in this area in order to establish the factors may make some women more vulnerable to these experiences than others.

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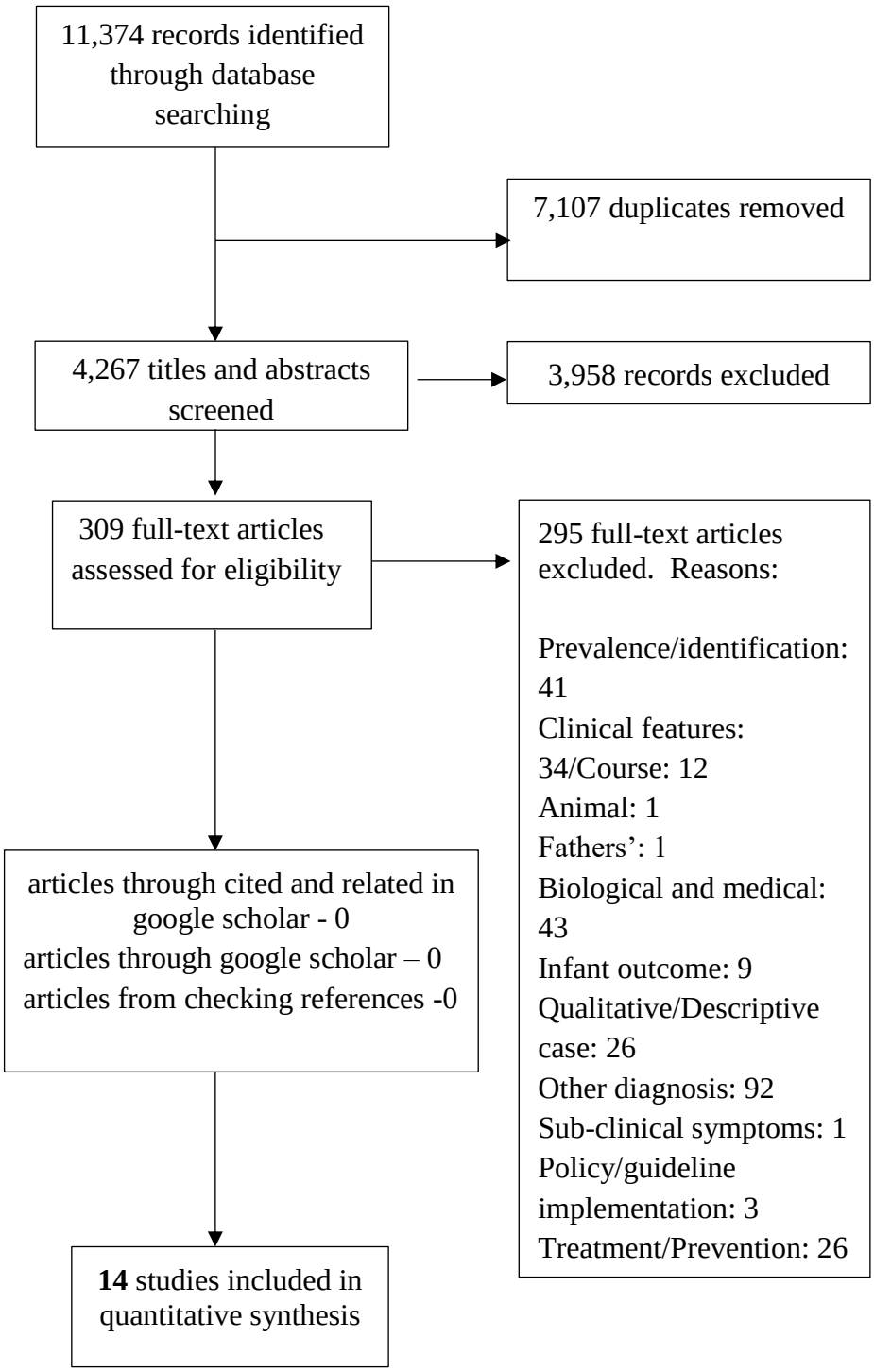

Figure 1: Overview of the literature search process

Table 1: Free search terms

Psychological Distress:
Psychosis OR psychotic OR Bipolar OR mania OR hypomania OR hypomanic OR manic OR Schiz* OR cyclothymi* OR mood disorder* OR Affective disorder* OR affective OR mental illness* OR mental disorder*
Postpartum Period:
Postnatal OR Postnatal period OR postpartum OR postpartum period OR peripartum OR peripartum onset OR perinatal OR perinatal period OR puerperium OR puerperal
Psychosocial factors:
"Psychological" OR "psychosocial" OR "sociocultural" OR "social" OR "stress*" OR "burden*" OR "distress*" OR "demand*" OR "event*" OR "experience*" OR "lifestyle*" OR "transition*" OR "change" OR "situation*" OR "environment*" OR "Support*" OR "Peer*" OR "Friend*" OR "Significant other*" OR "Spouse*" OR "Partner*" OR "Couple*" OR "famil*" OR "Marital" OR "Interpersonal" OR "Communication*" "Conflict*" OR "Dynamic*" OR "coping" OR "expressed emotion*" OR "argument*" OR "disput*" OR "hostil*" OR "critic*" OR "violen*" OR "crisis" OR "crises" OR "maladjust*" OR "adjustment*" OR "isolat*" OR "lonel*" OR "quality of life" OR "satisfaction" OR "well being" "or "wellbeing" OR "locus of control" OR "identify change*" OR "self image" OR "social identit*" OR "cultural identit* "identity formation" OR "identity development" OR "self concept*" OR
"Childhood" OR "early life" OR "advers*" OR "abus*" OR "neglect*"OR "trauma*" OR "maltreat*" OR "parental absence*" OR "absent parent*" OR "divorc*" OR "separat*" OR "abandon*" OR "incarcerat*" OR "imprison*" OR "bereavement" OR "grief" OR "loss*" OR "death" OR "bullied" OR "bullying" OR "attachment*" OR "Child rearing" OR "parenting style*" OR
"childbirth" OR "Birth" OR "labor" OR "labour" OR "pregnanc**"** OR "parturition" OR "expectation*" "Socioeconomic*" OR "Sociodemographic*" OR "social class*" OR "social status*" OR "social position*" OR "Occupation*" OR "Education*" OR "Employ*" OR Unemploy* OR "poverty" OR "income" OR "disadvant*" OR "homeless*" OR "deprivation" OR "deprived OR "Community Cohesion" OR "Social Fragment*" OR "Discrimin*" OR "Stigma*" OR "Inequalit*" OR "marginali*" OR "temperament*"
OR "Cognitive Process*" OR "Cognitive bias*" OR "cognitive style*" OR "schema*" "personality trait*" OR "attentional bias*" OR "attentional style*" OR "attributional style*" OR "Attributional bias*" OR "appraisal*" OR "attitude*" OR "irrational thought*" OR "irrational belief*" OR "dysfunctional thought*" OR "dysfunctional belief*" OR "dysfunctional assumption*" OR "maladaptive" OR "factor*" OR "mechanism*" OR "predict*" OR "influenc*" OR "risk*" OR "mediat*" OR "predispos*" OR `Susceptib*

Table 2: Summary of Study Characteristics

Authors	**Aim**	**Design/participants**	**Psychosocial variables measured**	**Findings**	**Quality Rating**
Brockington et al (1990) UK	To investigate the social and psychological stress of childbirth with regards to Postpartum Psychosis (PP)	Participants were recruited from a Mother and Baby Unit. Postpartum onset: Not stated *N: 9 (*pre-natal depression) 25 (PD) 33 (PP) Total: 67 Age: Not stated Ethnicity: Not stated Analysis: Chi-square	Life events: Life Events and Difficulties Schedule (LEDS).	Life events with regards to PP: Event or difficulty: *N*: 5 (15%) Both event and difficult: *N*: 3(9%) Difference between diagnostic groups for an event *or* difficulty (X^2 = 22.5, 2 df, P<0.001) due to excess of severe stress in pre-natal depression and lack of stress in PP. Difference between diagnostic groups for an event and difficulty (X^2 = 13.3, P<0.01) due to excess of events and difficulties in pre-natal depression and lack of stress in PP.	60%
Dowlatshahi & Paykel (1990) UK	To investigate life events and social stress in mothers admitted to hospital with severe puerperal illness.	Retrospective study Mothers with an illness sufficiently severe to require admission to hospital. Postpartum onset: within one month of delivery *N* = 33 (PP) 33 (controls)	Interview for Recent Life Events (Paykel, 1983). History schedule: demographic data, family and patient history of illness, personal history, pregnancy and labour, baby, social support, role problems, marital history, marital	**Factors significantly associated with PP:** Previous psychiatric illness (X^2 = 7.19, P<0.01) Previous history of neurotic symptoms (outside of psychiatric episodes) (X^2 = 4.69, P <0.05). **Non-significant factors** All events (NS) Major objective negative impact (NS) Undesirable (NS) Desirable (NS) Exits (NS)	72%

		Mean Age: 28.2 (PP) 27.8 (Controls) Ethnicity: White -26 Afro-Caribbean: 5 Asian - 2 Analysis: Chi-Square	relationships during pregnancy, relationship with children, social and leisure activities.	Entrances (NS) Uncontrolled (NS) Controlled (NS)	
Doyle et al (2011) UK	Describe the pregnancy management of women with Bipolar Affective Disorder (BPAD) and identify risk factors for postpartum relapse.	A retrospective, case-note based review of all patients with BPAD referred to Perinatal Mental Health Services in two UK NHS Foundation Trusts between the years 2000 to 2009. Postpartum onset definition: Not stated *N*: Population 1 - 78 with relapse within 6 weeks postpartum referred to service during preconception, pregnancy, or postpartum.	Hospital records: demographic, clinical, pregnancy management, and pharmacological variables.	**Significant factors associated with relapse:** Age: <31/>32 ($P< 0.036$) Unplanned pregnancy ($P<0.04$) Previous episode of mania <2/>3 ($X^2 = 7.13$, $P<0.01$). **Non-significant factors:** Pregnancy variables <20/>21 weeks gestation ($P>0.414$) Age onset: depression: <20/>21 years ($P>0.796$) No episode's depression: <2/>3 ($P>0.328$) Years since last depression <1/>2 ($P>0.119$) Age onset: mania: <20/>21 ($P>0.4$) Years since last mania: <1/>2 ($P>0.669$). Ethnicity: Caucasian/other ($P>0.744$) Relationships status: in/not in a relationship ($P>0.775$). Qualifications : Qualifications/no qualifications ($P>0.658$) Employment: Full time/unemployed ($P>0.842$) Previous full-term deliveries: Yes/No ($P>0.78$) Well at referral: Yes/No ($P>0.052$) Previous postnatal episode: Yes/No ($P>0.077$) Previous suicide attempt: Yes/No ($P>0.722$) Family history of BPAD: Yes/No ($P>0.114$)	85%

		Population 2 - 43 women from population 1 referred to service in pregnancy only. Age: 19-44 (mean 32) Ethnicity: Caucasian (44) African-Caribbean (7) Asian (17) Other (1) Not recorded (9) Analysis: Chi-Square, Fishers exact test, Independent *t*-tests Mann-Whitney U tests.		Medication in pregnancy ($P>0.808$) Mood stabiliser in pregnancy ($P>0.187$) Antipsychotic in pregnancy ($P>0.927$) Antidepressant in pregnancy ($P>0.827$).	
Marks et al (1992) UK	Investigate the contribution of psychosocial factors to the onset or recurrence of non-psychotic and psychotic illness in women with a history of affective disorders.	Women with a history of affective disorders, referred during pregnancies. Postpartum onset: relapse within 6 month following delivery. *N* : 21 (not ill) 10 (non-psychotic) 12 (psychotic) Total = 43 45 controls Age: 23-40 Ethnicity: Not Stated	Life events using methodology and schedule of Payket et al (1980). Social Problems Questionnaire (SPO) (Corney & Clare, 1995). MAMA questionnaire (Kumer et al, 1984). Eysenck personality Questionnaire (EPQ) (Eysenck & Eysenk, 2974)	**Significant factors associated with psychotic relapse:** Last admission ($P< 0.01$) More recent admission ($t =2.10$, df = 28, $P<0.05$) Past episode of bipolar or schizoaffective disorder (- 0.00) Poor martial relationship (- 0.21) **Non-significant factors:** Age (ns) Parity (ns) Social class (ns) Marital status (ns) Duration of marriage (ns) Lack of a confidant (ns) Unplanned pregnancy (ns) Early separation from mother/father (ns)	63%

		Analysis: Descriptive; multivariate		Unemployment (ns) Neuroticism(ns) Social difficulties (ns) Severe life event (- 0.57)	
McNeil (1987) Sweden	To investigate the relationship between demographic factors and psychiatric history characteristics in women with Postpartum Psychiatric episodes (PPPs).	Prospective study. Women with a history of hospitalisation for nonorganic psychosis were followed prospective from pregnancy. PP onset/definition: within the first 6 months postpartum. Early onset (<3 weeks) and late onset (>3 weeks). Postpartum onset: within the first 6 months postpartum. Early onset (<3 weeks) and late onset (>3 weeks). *N:* 88 (25 developed PPP) Age at delivery: >19 Ethnicity: Not Stated Analysis: Chi-square and binomial test, t-tests	Population databases and hospital records: Social class Parity Age at delivery Premorbid mental adjustment Age at onset of previous psychiatry illness Length of time since pervious illness Total length of all psychiatric hospitalisations, Greatest severity of mental disturbance PP following any previous reproduction length of time since most recent PPP	**Significant factors associated with PPP compared to Non-PPP.** Total length prior to hospitalisations: < 1 month, 1-3, 4-6, 7-1 yr, > 1 yr. (X^2 = 9.09, 1 df, P< 0.05) Severity up to current pregnancy: level 5, 6, 7 (X^2 = 3.15, 1 df, P<0.05). Severity during 6 months prior to this pregnancy: Not disturbed, mild disturbance, clear disturbance (X^2 = 11.20, 1 df, P<0.0005). **Non-significant factors for PPP:** Premorbid mental adjustment (n.s) Age at illness onset (n.s) Years from onset until delivery (n.s) Social class (n.s) Parity (n.s) Age at delivery (n.s) Marital status (n.s) ***Significant factors for early onset cases to non-PPP cases:*** Parity: 1, 2, 3+: Bionomial (P = 0.004) Age at delivery: 19-24, 25-29, 30-34, 35+ (X^2= 4,94, 1 df, P<0.025). Total length prior to hospitalisations: < 1 month, 1-3, 4-6, 7-1 yr, > 1 yr. (X^2 = 3.09, 1 df, P<0.05) Severity during 6 months prior to this pregnancy: Not disturbed, mild disturbance, clear disturbance (X^2 = 6.76, 1 df, P<0.005) ***Significant factors for late onset cases to non-PPP cases:***	75%

				Marital status: Married, unmarried, divorced/widowed (Binomial, $P = 0.049$). Total length prior to hospitalisations: < 1 month, 1-3, 4-6, 7-1 yr, > 1 yr (Binomial, $P = 0.004$) Severity during 6 months prior to this pregnancy: Not disturbed, mild disturbance, clear disturbance (Binomial, $P = 0.001$)	
McNeil (1988a) Sweden	To study the life situations and experience of pregnancy in relation to postpartum psychiatric episodes (PPP).	Prospective study. Women with a history of hospitalisation for nonorganic psychosis were followed prospective from pregnancy. PP onset/definition: within the first 6 months postpartum. Early onset (<3 weeks) and late onset (>3 weeks). *N:* 88 (25 developed PPP) Age: Not stated Ethnicity: Not Stated Analysis: Not stated	Interviews: Family and life situational characteristics, interpersonal problems and relative's attitudes towards the pregnancy, maternal attitude toward the pregnancy and having a baby, symptoms and experienced physical health during pregnancy Follow up interviews (8^{th} -9^{th} month of pregnancy: current status of the husbands and women's attitude towards the pregnancy, experienced somatic health, extend of preparation for the child, engagement in pregnancy and a clinical evaluation of the	**Significant factors associated with PPP compared to Non-PPP.** Housing: Good v Poor (X^2= 5.56, P<0.02) Attitude at interview: Positive v Negative-ambivalent (X^2 = 4.19, P<0.05) Preparation for child: Some-much v little-none (X^2 = 7.31, P<0.01) Clinical evaluation attitude in total: Positive v Negative-ambivalent (X2 = 4.60, P< 0.05) Total pregnancy symptoms/complaints: non-some v many: (X^2 = 5.31, P<0.05) **Non-significant factors for PPP** Relationship to husband (n.s) Relationship to own mother (n.s) Husbands attitude towards pregnancy (n.s) Own mothers' attitude towards pregnancy (n.s) In-laws attitude towards pregnancy (n.s) Late pregnancy somatic health (n.s) Late pregnancy preparation for child (n.s) ***Significant factors for late onset cases to non-PPP cases:*** Clinical evaluation attitude in total: Positive v Negative-ambivalent (P < 0.04) Preparation for child: Some-much v little-none (P< 0.05)	60%

			women's attitudes towards pregnancy	***Significant factors for early onset cases compared to non-PPP cases:*** Preparation for child: Some-much v little-none (P< X2 = 6.24, P<0.02). Housing: Good v Poor (X^2 = 6.42, P<0.02) In-laws attitude towards pregnancy: Positive v Negative ambivalent: (X^2 = 5.38, P<0.05).	
McNeil (1988b) Sweden	To study the psychosocial aspects of labour and delivery in relation to the development of Postpartum psychotic episodes (PPPs).	Prospective study. Women with a history of hospitalisation for nonorganic psychosis were followed prospective from pregnancy. Postpartum onset: within the first 6 months postpartum. Early onset (<3 weeks) and late onset (>3 weeks). *N:* 88 (25 developed PPP) 104 (controls/Non-PPP) Age: Not stated Ethnicity: Not Stated Analysis: Not stated	Observational data was obtained and organised into four content areas: (1) Maternal anxiety and experience of labour and delivery (2) Mothers relationship to others during labour and delivery and (4) Husbands attendance and behaviour (4) Parental behaviour towards the newborn	All factors found non-significant for PPP v non-PPP, early onset v non-PPP. **Significant factors associated with late onset PPP compared to non-PPP:** Maternal anxiety: calm/typical v more anxious (P<0.048).	65%
Meltzer-Brody (2017)	To explore whether Adverse Life Experiences	An epidemiological population-based cohort study of	Early adverse life events:	**Findings for psychosis:** Any adverse event: N = 17 (54.84%).	95%

Denmark	in girls, under 16, increases the risk of later postpartum psychiatric episodes.	Danish registers women to identify women aged over 15, born in Denmark between January 1990 and December 1998 Postpartum onset: psychiatric diagnosis 182 days/6 months postpartum. *N*: Total: 129, 439 of which: Any psychiatric diagnosis: 651 PD: 264 Acute stress: 234 PP: 31 Age: > 15 Ethnicity: Not Stated Analysis: Cox regression. (proportional hazard; 95% CI)	Family disruption Parental somatic illness Parental labour market exclusion Parental criminality Parental death Placement in out-of-home care Parental psychopathology Parental substance misuse	Family disruption. HR = .99 (41 – 2.37) Parental somatic illness HR = 1.00 (35 – 2.86) Parental labour market exclusion : HR = 1.56 (.52 – 4.63) Parental criminality: HR = .37 (.05 – 2.85) Parental death: N/A Placement in out-of-home care: HR = 1.48 (31 – 7.12) Parental psychopathology: HR = .91 (.2 – 4.) Parental substance misuse: N/A Number: 0: HR= 1.00 (ref) 1: HR = .84 (CI = .35 -2.95) 2: HR = 1.49 (CI = .53 – 4.17) 3 or more: HR = .72 (CI = .16-3.32) • For PP too few cases exposed cases in four of the adversity categories to reliably estimate hazard ratios.	
Nager et al (2005) Sweden	To examine the association between first hospital admission in first-time mothers due to PP and the	All first-time mothers in Sweden during a 12-year period (January 1986 to December 1997).	Age Educational level Marital status Year of delivery	Variable, P value, (rate ratios first time mothers/general female population) Age: 20-24, *P*<0.00001 (rate ratio 2.78) 25-29, *P*<0.00001 (rate ratio 2.46) 30-34, *P*<0.00001 (rate ratio 2.03)	100%

	explanatory variables age, education level, marital status and year of delivery in first time mothers.	PP onset/definition: hospital admission 3 months following delivery *N:* General female population: 502, 767 PP: 339 Age: 20-44 years Ethnicity: Not stated Analysis: Cox regression to estimate hazard ratios for PP: Age adjusted models for each of the explanatory variables and a full model including all explanatory variables.		35-39, *P*<0.00001 (rate ratio 2.29) 40-44, *P*<0.0002 (rate ratio 5.35) Education: >12 years *P*<0.00001 (rate ratio 2.66) 10-12 years *P*<0.00001 (rate ratio 2.00) < 9 years *P*>0.60 (rate ratio 1.26) Full model: Age group 40-44 the (HR =6.56 (95% CI= 3.10-13.8) Not living with father of the child (HR = 1.60; CI 1.09 – 2.34)	
Nager et al (2006) Sweden	To examine the association between the neighbourhood socioeconomic environment and postpartum psychosis in first time mothers, after adjustment for individual sociodemographic characteristics.	All first-time mothers in Sweden during a 12-year period (January 1986 to September 1998). Postpartum onset: hospital admission 3 months following delivery. *N*: Total: 485, 199 PP: 356	Age Educational level Marital status Year of delivery Neighbourhood income: tirtile 1 (lowest proportion of low income); tertile 2, teritle 3 (highest proportion of low income).	***Neighbourhood Income*** Model 1: Tertile 1: HR = 1.00 Tertile 2: HR = 1.00 (CI = 0.76-1.13, *P* = 0.97) Tertile 3: HR = 1.43 (CI = 1.12 -1.84, *P* = 0.004) Model 2: Tertile 1: HR = 1.00 Tertile 2: HR = 1.02 (CI = 0.78 – 1.34,*P* = 0.88) Tertile 3: HR = 1.49 (CI 1.15 – 19.1, *P* = 0.002) ***Age:*** Model 1: 20-44: HR 1.00 25-29 HR = 1.68 (CI = 1.27-2.22, *P* = 0.0001)	100%

		Age: 20 -44 Ethnicity: Not Stated Analysis: Cox regression to estimate hazard ratios for first hospital admission due to PP. Model 1: adjusted for age Model 2: adjusted for all explanatory variables.		30-34: HR = 1.28 (CI = 1.33-2.48, *P* = 0.0001) 35-39: HR = 2.18 (CI = 1.41-3.38, *P* = 0.0001) 40-44: HR = 6.54 (CI = 3.37-12.67, *P* = 0.0001) Model 2: 20-44: HR = 1.00 25-29: HR = 1.78 (CI = 1.34 – 2.37, *P* = 0.0001) 30-34: 1.97 (CI = 1.41 – 2.37, *P* = 0.0001) 35-39: 2.38 (CI = 1.52 – 3.74, *P* = 0.0001) 40-44: 7.36 (CI = 3.73 – 14.53, *P* = 0.0001) ***Educational level:*** Model 1: >12: HR = 1.00 10-12: HR = 1.09 (CI = 0.85 – 1.39, *P* = 0.50) <9: HR = 1.02 (CI = 0.70 – 1.48, *P* = 0.92) Model 2: >12: HR = 1.00 10-12: HR = 1.05 (CI = 0.82 – 1.34, *P* = 0.70) <9: HR = 0.90 (CI = 0.6 – 1.32, *P* = 0.60) ***Marital status*** Model 1: Living with father of child: HR = 1.00 Not living with father of child: HR = 1.50 (CI = 1.02 – 2.20, *P* = 0.039 Model 2: Living with father of child: HR = 1.00 Not living with father of child: HR = 0.99 (CI = 0.99 – 2.15, *P* = 0.056	
Perry et al (2016) UK	Investigate if childhood life events are associated with PP in a large	Participants recruited from the UK NHS community mental health teams or lithium clinics and non-systematically via	Childhood events before age 16: BDRN Childhood life Events Questionnaire (CLEQ; Upthegrove et al, 2015).	**Significant factors for risk of PP:** Age: (*P*<0.001) Education: No higher education v higher education (*P*< 0.003). Number of episodes of depression per illness year (*P*<0.001)	82%

	sample of Bipolar Disorder I.	Bipolar Disorder research Network. *N* = 208 women with PP 224 women with no perinatal mood episode (no PME) Mean age: PP = 47 (21-79) No PME = 53 (24-73) Ethnicity: White Analysis: Chi-square tests; logistic regression models adjusted for demographic and lifetime clinical variables that differed between groups; Mann-Whitney *U* test.	Brief Life Events Questionnaire (BLEQ; Brugha et al, 1985).	Method of recruitment: Systematic (NHS) v non-systematic (*P< 0.003).* **Non-significant factors**: Number of episodes of mania per illness year (*P*>0.452) Age at 1st pregnancy (*P>0*.019) Number of deliveries (*P*>0.561) Number of ACLEs (*P>0.876)* Death of a parent (*P>0.444)* Death of a sibling (*P>0.682)* Death of a close friend (*P>.0.919)* Divorce/separation of parents (*P*>0.330) Serious illness (*P*>.0.416) Any abuse (*P*>0.105) Emotional abuse (*P*>0.907) Physical abuse (*P*>0.396) Sexual abuse (*P*>0.076)	
Signer et al (1995) USA	To investigate the postpartum psychological symptoms of poor, primarily African American, women who used cocaine during pregnancy.	Participants were recruited from a high-risk infant follow-up clinical. Postpartum onset definition: Not stated. Questionnaires administers as soon as possible following childbirth. *N:* 99 cocaine using 44 non-cocaine using	Beck Depression Inventory (Beck, Steer & Garben, 1988) The Brief Symptom Inventory (DeRogatis, 1992). The Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) The Post-Partum Maternal Questionnaire (Streissguth, 1986 a, b).	**Findings for postpartum paranoid ideation and psychoticism:** Elevated BSI score (>98th pearceite) on the paranoid ideation scale (20% vs 9%, zc = 1.74, P < .05). Paranoid ideation: Alcohol accounted for 8% of variance: (R^2, 0.8, F 7.3, P <0.09) Marijuana accounted for 4% of variance: (R^2, .12, F, 5.8, *P*<0.04) Psychoticism : Cocaine + Alcohol: (R^2, .03, F, 3.0, *P*<.09).	86%

		Total: 143 Mean age: 27 (cocaine using) 23.3 (non-cocaine) Ethnicity: 98% African American Analysis: t-tests or X2 analyses and MANOVAs, correlational and stepwise regression.	Demographic characteristics Medical characteristics		
Upadhyaya et al (2014) India	To understand the risk factors involved in postpartum psychosis (PP).	Cross sectional, case control study. Women who presented to a psychiatric department with PP compared to women who did not develop PP. Postpartum onset: within 42 days postpartum. *N* = 100 with PP 100 controls Mean age: 22.3 26.3 (controls) Ethnicity: Not Stated	Sociodemographic factors, past history of medical or psychiatric illness, pregnancy and childbirth complications; presence of husband.	**Significant risk factors:** Age: <25 and >25 ($P < 0.001$) Per capita income/month: <5000/ >5000 INR ($P< 0.018$) Husbands presence ($P<0.006$). Parity status: Primiparae v Multiparae ($P<0.02$) Any maternal complication during perinatal period ($P<0.01$) Complications in newborn ($P<0.009$). **Non-significant factors:** Education: up to secondary v above secondary ($P<0.08$) Occupation: working v homemaker ($P=0.15$) Family type: Joint v Nuclear ($P=0.07$) Psychiatric illness: Present v absent ($P=0.36$) Family history of postpartum illness: Present v absent ($P=0.44$) Number of antenatal check-ups: <3/>3 ($P=0.10$) Mother particular for sex of baby ($P=0.30$) Sex of baby according to wish ($P=0.27$) Type of delivery: natural v Caesarean/instrumental ($P=0.06$).	63%

		Analysis: Chi-square and Fishers exact test.			
Vigod et al (2016) Canada	Identify the factors associated with psychiatric admission within the first year postpartum, in women with a diagnosis of schizophrenia or schizoaffective disorder.	Population-based study All women with a diagnosis of schizophrenia, or schizoaffective disorder, 5 years prior to conception who gave birth between January 2003 and March 2011. Postpartum onset: Psychiatric admission within 1 year of delivery N = 275 admitted; 1158 not admitted Age = 14 to 50 Ethnicity: Not Stated Analysis: Chi-Square; *t*-test, Multivariable Poisson Regression.	1. Demographic: Age, Parity, Income Status, Income quantile of neighbourhood status, Geographical status (urban vs rural). 2. Maternal medical comorbidity in the 2 years prior to conception: Johns Hopkins Collapsed Aggregated Diagnosis Groups (CADGs) and ADGS 3. Pregnancy and Newborn outcomes: maternal obstetrical conditions, pre-term birth, foetal growth abnormalities, antenatal care services, consistent antenatal care provider. 4. Maternal psychiatric history prior to pregnancy:	**Factors significantly associated with risk of admission:** Age ($P < 0.02$) Neighbourhood Income ($P<0.01$) Ultrasound prior to 20 weeks gestation ($P< 0.01$) Comorbid mood disorder anxiety alcohol or substance use ($P<0.01$). Consistent mental health care provider, prior to and during pregnancy: adjusted risk ratio of 0.69 (95% CI 0.54-0.89). Any mental health outpatient visit, psychiatric emergency department visit, psychiatric admission ($P< 0.01$). During pregnancy: any mental health outpatient visit, psychiatric emergency department visit, psychiatric admission ($P<0.01$). Admission during pregnancy >35 days: ($P<0.001$) adjusted ratio risk 4.45 (95% CI 3.65-2.36) **Non-significant factors:** Primiparous (~ 1.0) Urban residence ($P>0.30$) CAD Category 5 ($P>0.28$) 3 or more on major ADGs from John Hopkins systems ($P>0.39$) Diabetes mellitus ($P>0.51$) Chronic Hypertension ($P>0.41$) Prenatal care provider ($P>0.33$) Median antenatal care visits ($P>0.16$) Gestational diabetes mellitus or hypertension ($P>0.38$) Infant both preterm <37 weeks ($P>0.35$) Infant <3rd percentile for GA ($P>.0.13$) Infant >97th percentile for GA ($P>0.15$) Infant death <28 days ($P> 0.24$)	100%

			Comorbid diagnosis, use of mental health services in the year prior to conception and during pregnancy, number of days in hospital, consistent care provider prior to and during pregnancy		

Table 3: Quality Assessment

	1. Question/objective sufficiently described?	2. Study design evidence and appropriate?	3. Method of subject/comparison group selection *or* source of information/input variables described and appropriate?	4. Subject (and comparison group, if applicable) characteristic sufficiently described?	5. If interventional and random allocation was possible, was it described?	6. If interventional and blinding of investigators was possible, was it reported?	7. If Interventional and blinding of subjects was possible, was it reported?	8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means	9. Sample size appropriate?	10. Analytic methods described/justified and appropriate?	11. Some estimate of variance is reported for the main results?	12. Controlled for confounding?	13. Results reported in sufficient details?	14. Conclusions supported by the results?	TOTAL Score:
Brockington et al (1990)	1	1	2	1	N/A	N/A	N/A	2	1	2	0	N/A	1	1	60%
Dowlatshahi & Paykel (1990)	1	2	2	2	N/A	N/A	N/A	2	1	2	0	2	1	1	72%
Doyle et al (2011)	2	2	2	2	N/A	N/A	N/A	2	1	2	0	N/A	2	2	85%
Marks et al (1992)	2	2	1	0	N/A	N/A	N/A	2	1	1	0	1	2	2	63%
McNeil (1987)	2	2	1	1	N/A	N/A	N/A	2	1	2	0	N/A	2	2	75%
McNeil (1988a)	2	1	1	1	N/A	N/A	N/A	1	1	1	0	N/A	2	2	60%
McNeil (1988b)	2	1	1	1	N/A	N/A	N/A	2	1	1	0	N/A	2	2	65%

Meltzer-Brody (2017)	2	2	2	2	N/A	N/A	N/A	2	1	2	2	N/A	2	2	95%
Nager et al (2005)	2	2	2	2	N/A	N/A	N/A	2	2	2	2	N/A	2	2	100%
Nager et al (2006)	2	2	2	2	N/A	N/A	N/A	2	2	2	2	N/A	2	2	100%
Perry et al (2016)	2	2	2	2	N/A	N/A	N/A	2	1	2	1	1	2	1	86%
Singer et al (1995)	2	1	2	2	N/A	N/A	N/A	2	1	2	2	1	2	2	86%
Upadhyaya et al (2014)	1	2	1	2	N/A	N/A	N/A	2	1	0	0	1	2	2	63%
Vigod et al (2016)	2	2	2	2	N/A	N/A	N/A	2	2	2	2	N/A	2	2	100%

Scoring codes: 0 = no; 1 = partially; 2 = yes

Appendix A

Archives of Women's Mental Health: Authors Guidelines

Essential information is provided below. Full guidelines are available at https://www.springer.com/medicine/psychiatry/journal/737

Types of papers

Original Contributions / Research Articles should be arranged into sections conforming to standard scientific reporting style, i.e. under the following headings:

Title Page

The title page should include:

- The name(s) of the author(s)
- A concise and informative title
- The affiliation(s) and address(es) of the author(s)
- The e-mail address, and telephone number(s) of the corresponding author
- If available, the 16-digit ORCID of the author(s)

Abstract:

Should not exceed 150–250 words and be structured as follows: Purpose, Methods, Results, Conclusions

Keywords:

Not more than five, separated by semicolons

Introduction:

A brief outline of the background literature leading to the objective(s) of the study.

Materials and Methods:

Describe the basic study design. State the setting (e.g., primary care, referral center). Explain selection of study subjects and state the system of diagnostic criteria used. Describe any interventions and include their duration and method of administration. Indicate the main outcome measure(s). Specify the dates in which data were collected (month/year to month/year).

Results:

Include the key findings. Give specific data and their statistical significance, if possible. Subset Ns should accompany percentages if the total N is ‹100.

Discussion and Conclusions:

Discuss your findings critically in comparison to existing literature and considering your methodological and other limitations.

Conclusions should highlight the potential meaning for the field given the limitations.

Text Formatting:

Manuscripts should be submitted in Word.

- Use a normal, plain font (e.g., 10-point Times Roman) for text.
- Use italics for emphasis.
- Use the automatic page numbering function to number the pages.
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the table function, not spreadsheets, to make tables.
- Use the equation editor or MathType for equations.
- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Headings:

Please use no more than three levels of displayed headings.

Abbreviations:

Abbreviations should be defined at first mention and used consistently thereafter

Footnotes:

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

Acknowledgments:

Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be written in full.

Important note:

Authors are requested to use **automatic continuous line numbering** throughout the manuscript and in double space.

References:

Citation:

Cite references in the text by name and year in parentheses. Some examples:

- Negotiation research spans many disciplines (Thompson 1990).
- This result was later contradicted by Becker and Seligman (1996).
- This effect has been widely studied (Abbott 1991; Barakat et al. 1995a, b; Kelso and Smith 1998; Medvec et al. 1999, 2000).

Reference list:

The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list.

Reference list entries should be alphabetized by the last names of the first author of each work. Order multi-author publications of the same first author alphabetically with respect to second, third, etc. author. Publications of exactly the same author(s) must be ordered chronologically.

Journal article:

Gamelin FX, Baquet G, Berthoin S, Thevenet D, Nourry C, Nottin S, Bosquet L (2009) Effect of high intensity intermittent training on heart rate variability in prepubescent children. Eur J Appl Physiol 105:731-738. https://doi.org/10.1007/s00421-008-0955-8

Ideally, the names of all authors should be provided, but the usage of “et al” in long author lists will also be accepted:

Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. N Engl J Med 965:325–329

Article by DOI:

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med. https://doi.org/10.1007/s001090000086

Book:

- South J, Blass B (2001) The future of modern genomics. Blackwell, London
- Book chapter:

- Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York, pp 230-257
- Online document:
- Cartwright J (2007) Big stars have weather too. IOP Publishing PhysicsWeb. http://physicsweb.org/articles/news/11/6/16/1. Accessed 26 June 2007
- Dissertation:
- Trent JW (1975) Experimental acute renal failure. Dissertation, University of California

Always use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations, see

Tables:

All tables are to be numbered using Arabic numerals. Tables should always be cited in text in consecutive numerical order. For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption. Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Appendix B

PsychInfo Search

Psychological Distress:

DE "Psychosis" OR DE "Bipolar Disorder" OR DE "Mania" OR DE "Hypomania" OR DE “Cyclothymic Personality” OR DE "Schizophrenia" OR DE "Mental Disorders" OR DE "Affective Disorders" OR "Psychotic" OR "Bipolar*" OR "Hypomanic" OR "Manic" OR "Schiz*" OR "Cyclothymi*" OR "Mood Disorder*" OR "Affective" OR "Mental Illness*"

Postpartum Period:

DE "Postnatal Period" OR DE "Perinatal Period" OR "Postnatal" OR "Postpartum" OR "Peripartum" OR "perinatal" OR "Puerperium" OR "Puerperal"

Psychosocial factors:

DE "Psychosocial Factors" OR DE "Sociocultural Factors" OR DE "Life Changes" OR DE "Lifestyle" OR DE "Lifestyle Changes" OR DE "Experiences (Events)" OR DE "Social Environments" OR DE "Home Environment" OR DE "Marital Relations" OR DE "Marital Conflict" OR DE "Marital Satisfaction" OR DE "Family Crises" OR DE "Family Relations" OR DE "Family Conflict" OR DE "Coping Behavior" OR DE "Parent Child Relations" OR DE "Relationship Quality" OR DE "Relationship Satisfaction" OR DE "Interpersonal Communication" OR DE "Interpersonal Interaction" OR DE "Peers" OR DE "Expressed Emotion" OR DE "Social Influences" OR DE “Social Interaction” OR DE "Interpersonal Influences" OR DE “Interpersonal Relationships” OR DE "Intimate Partner Violence" OR DE "Partner Abuse" OR DE "Crises" OR DE "Emotional Adjustment" OR DE "Social Adjustment" OR DE "Life Satisfaction" OR DE "Internal External Locus of Control" OR DE "Identity Crisis" OR DE "Self-Perception" OR DE "Social Identity" OR DE "Self-Concept" OR DE "Early Memories" OR DE "Early Experience" OR DE "Parent Child Relations" OR DE "Attachment Behavior" OR DE “Birth” OR DE "Labor (Childbirth)" OR DE "Cognitive Bias" OR DE "Cognitive Appraisal" OR DE "Socioeconomic Status" OR DE "Family Socioeconomic Level" OR DE "Income Level" OR DE "Social Class" OR DE "Occupational Status" OR DE "Employment Status" OR DE "Homeless" OR DE "Social Deprivation" OR DE "Social Identity" OR DE "Risk Factors" OR DE "Predisposition" OR DE "Distress" OR DE "Stress" OR DE "Life Experiences" OR DE "Environment" OR DE "Family" OR DE "Significant Others" OR DE "Couples" OR DE "Spouses" OR DE "Arguments" OR DE "Hostility" OR DE "Criticism" OR DE "Violence" OR DE "Domestic Violence" OR DE "Exposure to Violence" OR DE "Conflict" OR DE "Social Isolation" OR DE "Loneliness" OR DE "Quality of Life" OR DE "Satisfaction" OR DE "Well Being" OR DE "Belonging" OR DE "Identity Formation" OR DE "First Experiences" OR DE "Parental Attitudes" OR DE "Parental Expectations" OR DE "Childrearing Practices" OR DE "Child Abuse" OR "Child Neglect" OR DE "Trauma" OR DE "Incarceration" OR DE "Parental Absence" OR DE "Divorce" OR DE "Bereavement" OR DE "Grief" OR DE "Abandonment" OR DE "Bullying" OR DE "Parental Involvement" OR DE "Pregnancy" OR DE "Personality" OR DE "Cognitive Processes" OR "Cognitive Style" OR DE "Schema" OR DE "Personality Traits" OR DE "Attentional Bias" OR DE "Irrational Beliefs" OR DE "Parenting Style" OR DE "Parent Child Communication" OR DE "Disadvantaged" OR DE "Poverty" OR DE "Poverty Areas" OR DE "Unemployment" OR DE "Educational Attainment Level" OR DE "Discrimination" OR DE "Social Discrimination" OR DE "Stigma" OR DE "Susceptibility (Disorders)" OR DE "Social Acceptance" OR DE "Adjustment" OR "Psychological" OR "Psychosocial" OR "Sociocultural" OR "Social" OR "Stress*" OR "Burden*" OR "Distress*" OR "Demand*" OR "Event*" OR "Experience*" OR "Lifestyle*" OR "Transition*" OR "Change*" OR "Situation*" OR "Environment*" OR "Support*" OR "Friend*" OR "Peer*" OR "Significant Other*" OR "Partner*" OR "Spouse*" OR "Interpersonal" OR "Communication*" OR "Dynamic*" OR "Expressed Emotion*" OR "Argument*" OR "Disput*" OR "Hostil*" OR "Critic*" OR "Violen*" OR "Crisis" OR "Crises" OR "Maladjust*" OR "Adjustment*" OR "Conflict*" OR "Isolat*" OR "Lonel*" OR "Quality of Life" OR "Satisfaction" OR "Well Being" OR "Wellbeing" OR "Coping" OR "Locus of Control" OR "Self Image" OR "Identity Formation" OR "Identity Development" OR "Self Concept*" OR "Childhood" OR "Early life" Or “Advers*” OR "Abus*" OR "Neglect*" OR "maltreat*" OR "Absent Parent*" OR "Divorc*" OR "Abandon*" OR "Incarcerat*" OR "Imprison*" OR "Bereavement" OR "Grief" OR "Loss" OR "Death" OR "Bullied" OR "Bullying" OR "Attachment*" OR "Childbirth" OR "Labor" OR "Labour" OR "Pregnanc*" OR "parturition" OR "Socioeconomic*" OR "poverty" OR "Sociodemographic*" OR "Income" OR “Occupation*” OR “Education*” OR “Education*” OR "Employ*" OR "Unemploy*" OR "Disadvant*" OR "Homeless*" OR "Deprivation" OR "Deprived" OR "Temperament*" OR "Cognitive Style*" OR "Schema*" OR "Personality Trait*" OR "Attentional Bias*" OR "Attentional Style*" OR "Attributional style*" OR "Appraisal*" OR "Irrational Thought*" OR "Dysfunctional Thought*" OR "Dysfunctional Belief*" OR "Irrational Belief*" OR "Dysfunctional Assumption*" OR "Factor*" OR "Mechanism*" OR "Predict*" OR "Influenc*" OR "Mediat*" OR "Couple*" OR "Famil*" OR "Marital" OR "Cultural Identit*" Or "Trauma*" OR "Separat*" OR "Expectation*" OR "Child rearing" OR "Community Cohesion" OR "Discrimin*" OR "Stigma*" OR "Inequalit*" OR "Marginali*" OR "Cognitive Process*" OR "Cognitive Bias*" OR "Attributional bias*" OR “maladaptive” OR "Attitude*" OR "Predispos*" OR "Susceptib*" OR “Birth” OR "Risk*"

Appendix C

PubMed Search

Psychological Distress:

"Bipolar Disorder"[Mesh] OR "Psychotic Disorders"[Mesh] OR "Affective Disorders, Psychotic"[Mesh] OR "Schizophrenia"[Mesh] OR "Cyclothymic Disorder"[Mesh] OR "Mood Disorders"[Mesh] OR "Mental Disorders"[Mesh] OR "Psychosis"[All Fields] OR "Psychotic"[All Fields] OR "Bipolar"[All Fields] OR "Mania"[All Fields] OR "Manic"[All Fields] OR "Hypomanic"[All Fields] OR "Hypomania"[All Fields] OR "Schiz*"[All Fields] OR "Mood disorder*"[All Fields] OR "Affective Disorder*"[All Fields] OR "Affective"[All Fields] OR "Mental Illness*"[All Fields] OR "Mental disorder*"[All Fields]

Postpartum Period:

"Postpartum Period"[Mesh] OR "Peripartum Period"[Mesh] OR "Postnatal"[All Fields] OR "Postpartum"[All Fields] OR "Peripartum"[All Fields] OR "Perinatal"[All Fields] OR "Puerperium "[All Fields] OR "Puerperal"[All Fields]

Psychosocial factors:

"Stress, Psychological"[Mesh] OR "Life Change Events"[Mesh] OR "Life Style"[Mesh] OR "Social Environment"[Mesh] OR "Social Support"[Mesh] OR "psychosocial support systems"[Mesh] OR "Family"[Mesh] OR "Personal Satisfaction"[Mesh] OR "Interpersonal Relations"[Mesh] OR "Peer Group"[Mesh] OR "Friends"[Mesh] OR "Expressed Emotion"[Mesh] OR "Hostility"[Mesh] OR "Violence"[Mesh] OR "Child Abuse"[Mesh] OR "Intimate Partner Violence"[Mesh] OR "Social Adjustment"[Mesh] OR "Social Isolation"[Mesh] OR "Social Marginalization"[Mesh] OR "Social Stigma"[Mesh] OR "Quality of Life"[Mesh] OR "Internal-External Control"[Mesh] OR "Identity Crisis"[Mesh] OR "Self Concept"[Mesh] OR "Social Identification"[Mesh] OR "Child Rearing"[Mesh] OR "Psychological Trauma"[Mesh] OR "Parental Death"[Mesh] OR "Bereavement"[Mesh] OR "Child, Abandoned"[Mesh] OR "Parturition"[Mesh] OR "Pregnancy"[Mesh] OR "Personality"[Mesh] OR "Attentional Bias"[Mesh] OR "Poverty"[Mesh] OR "Socioeconomic Factors"[Mesh] OR "Social Conditions"[Mesh] OR "Homeless Persons"[Mesh] OR "Social Discrimination"[Mesh] OR "Social Distance"[Mesh] OR "Risk Factors"[Mesh] OR "Bullying"[Mesh] OR "Emotional Adjustment"[Mesh] OR "Adult Survivors of Child Adverse Events"[Mesh] OR "Temperament"[Mesh] OR "Conflict (Psychology)"[Mesh] OR "Maternal Deprivation"[Mesh] OR "Psychological"[All Fields] OR "Psychosocial"[All Fields] OR "Sociocultural"[All Fields] OR "Social"[All Fields] OR "Stress*"[All Fields] OR "Burden*"[All Fields] OR "Distress*"[All Fields] OR "Demand*"[All Fields] OR "Event*"[All Fields] OR "Experience*"[All Fields] OR "Lifestyle*"[All Fields] OR "transition*"[All Fields] OR "Change*"[All Fields] OR "Environment*"[All Fields] OR "Support*"[All Fields] OR "peer*"[All Fields] OR "Friend*"[All Fields] OR "Significant other*"[All Fields] OR "Spouse*"[All Fields] OR "Partner*"[All Fields] OR "Couple*"[All Fields] OR "Famil*"[All Fields] OR "Marital"[All Fields] OR "Interpersonal"[All Fields] OR "Communication*"[All Fields] OR "Conflict*"[All Fields] OR "Dynamic*"[All Fields] OR "Coping"[All Fields] OR "Expressed Emotion*"[All Fields] OR "Argument*"[All Fields] OR "Disput*"[All Fields] OR "Hostil*"[All Fields] OR "critic*"[All Fields] OR "Violen*"[All Fields] OR "Crisis"[All Fields] OR "crises"[All Fields] OR "Adjustment*"[All Fields] OR "Isolat*"[All Fields] OR "Quality of Life"[All Fields] OR "Satisfaction"[All Fields] OR "Well being"[All Fields] OR "wellbeing"[All Fields] OR "Locus of control"[All Fields] OR "self image"[All Fields] OR "Identity formation"[All Fields] OR "Identity Development"[All Fields] OR "self concept"[All Fields] OR "Childhood"[All Fields] OR "Early life"[All Fields] OR "Advers*"[All Fields] OR "Abus*"[All Fields] OR "Neglect*"[All Fields] OR "Trauma*"[All Fields] OR "Maltreat*"[All Fields] OR "Parental absence*"[All Fields] OR "Separat*"[All Fields] OR "Abandon*"[All Fields] OR "Imprison*"[All Fields] OR "Bereavement"[All Fields] OR "Grief"[All Fields] OR "loss*"[All Fields] OR "Death"[All Fields] OR "Bullied"[All Fields] OR "Bullying"[All Fields] OR "attachment*"[All Fields] OR "Child rearing"[All Fields] OR "Parenting Style*"[All Fields] OR "Childbirth"[All Fields] OR "Birth"[All Fields] OR "Labor"[All Fields] OR "Labour"[All Fields] OR "Pregnanc*"[All Fields] OR "Parturition"[All Fields] OR "Expectation*"[All Fields] OR "Socioeconomic*"[All Fields] OR "Sociodemographic*"[All Fields] OR "Occupation*"[All Fields] OR "Education*"[All Fields] OR "Employ*"[All Fields] OR "Poverty"[All Fields] OR "Income"[All Fields] OR "Homeless*"[All Fields] OR "Deprivation"[All Fields] OR "Deprived"[All Fields] OR "Community Cohesion"[All Fields] OR "Stigma*"[All Fields] OR "Temperament*"[All Fields] OR "Cognitive Process*"[All Fields] OR "Cognitive Bias*"[All Fields] OR "Cognitive Style*"[All Fields] OR "Schema*"[All Fields] OR "personality trait*"[All Fields] OR "Attentional bias*"[All Fields] OR "Attentional Style*"[All Fields] OR "Appraisal*"[All Fields] OR "Attitude*"[All Fields] OR "Irrational Belief*"[All Fields] OR (Dysfunctional[All Fields] AND (assumption[All Fields] OR assumption'[All Fields] OR assumption's[All Fields] OR assumptional[All Fields] OR assumptionless[All Fields] OR assumptions[All Fields] OR assumptions'[All Fields] OR assumptionss[All Fields] OR assumptionsunder[All Fields] OR assumptionused[All Fields])) OR "Factor*"[All Fields] OR "Mechanism*"[All Fields] OR "Predict*"[All Fields] OR "Influenc*"[All Fields] OR "Risk*"[All Fields] OR "Mediat*"[All Fields] OR ("culture"[MeSH Terms] OR "culture"[All Fields] OR "cultural"[All Fields]) OR (Irrational[All Fields] AND ("thinking"[MeSH Terms] OR "thinking"[All Fields] OR "thought"[All Fields])) OR "Dysfunctional Belief*"[All Fields]

Appendix D

Medline Search

Psychological Distress:

MH "Psychotic Disorders/PX" OR MH "Bipolar Disorder/PX" OR MH "Mental Disorders/PX" OR MH "Affective Disorders, Psychotic/PX" OR MH "Mood Disorders/PX" OR MH "Schizophrenia" OR MH "Cyclothymic Disorder/PX" OR "Psychosis" OR "Psychotic" OR "Bipolar" OR "Mania" OR "Manic" OR "Hypomania" OR "Hypomanic" OR "Schiz*" OR "Cyclothymi*" OR "Mood Disorder*" OR "Affective Disorder*" OR "Affective" OR "Mental Illness*" OR "Mental Disorder*"

Postpartum Period:

MH "Postpartum Period/PX" OR MH "Peripartum Period/PX" OR "Postnatal" OR "Postpartum" OR "Peripartum" OR "Perinatal Period" OR "Puerperium " OR "Puerperal"

Psychosocial factors:

MH "Stress, Psychological/PX" OR MH "Life Change Events" OR MH "Life Style" OR MH "Social Environment" OR MH "Social Support" OR MH "Psychosocial Support Systems" OR MH "Family/PX" OR MH "Family Conflict/PX" OR MH "Family Relations/PX" OR MH "Spouses/PX" OR MH "Marriage/PX" OR MH "Interpersonal Relations" OR MH "Peer Group" OR MH "Friends/PX" OR MH "Expressed Emotion" OR MH "Hostility" OR MH "Violence/PX" OR MH "Domestic Violence/PX" OR MH "Spouse Abuse/PX" OR MH "Intimate Partner Violence/PX" OR MH "Exposure to Violence/PX" OR MH "Personal Satisfaction" OR MH "Social Adjustment" OR MH "Emotional Adjustment" OR MH "Quality of Life/PX" OR MH "Loneliness/PX" OR MH "Social Isolation/PX" OR MH "Social Marginalization/PX" OR MH "Social Stigma" OR MH "Social Distance" OR MH "Social Discrimination/PX" OR MH "Poverty/PX" OR MH "Socioeconomic Factors" OR "Social Class" OR MH "Social Conditions" OR MH "Educational Status" OR MH "Poverty Areas" OR MH "Unemployment/PX" OR MH "Homeless Persons/PX" OR MH "Bullying" OR MH "Internal-External Control" OR MH "Identity Crisis" OR MH "Self Concept" OR MH "Social Identification" OR MH "Parent-Child Relations" OR MH "Child Abuse/PX" OR MH "Psychological Trauma/PX" OR MH "Child Rearing/PX" OR MH "Divorce/PX" OR MH "Parental Death" OR MH "Bereavement" OR MH "Grief" OR MH "Child, Abandoned/PX" OR MH "Adult Survivors of Child Adverse Events/PX" OR MH "Conflict (Psychology)" OR MH "Parenting" OR MH "Paternal Deprivation" OR MH "Maternal Deprivation" OR MH "Parturition/PX" OR MH "Pregnancy" OR MH "Personality" OR MH "Attentional Bias" OR MH "Temperament" OR MH "Risk Factors" OR "Psychological" OR "Psychosocial" OR "Sociocultural" OR "Social" OR "Stress*" OR "Distress*" OR "Burden*" OR "Demand*" OR "Event*" OR "Experience*" OR "Lifestyle" OR "Transition*" OR "Change*" OR "Situation*" OR "Environment*" OR "Support*" OR "Peer*" OR "Friend*" OR "Significant other*" OR "Spouse*" OR "Partner*" OR "Couple*" OR "Famil*" OR "Marital" OR "Interpersonal" OR "Communication*" OR "Conflict*" OR "Dynamic*" OR "Expressed Emotion*" OR "Argument*" OR "Dispute*" OR "Hostil*" OR "Critic*" OR "Violen*" OR "Crisis" OR "Crises" OR "Maladjust*" OR "Adjustment*" OR "Isolat*" OR "Lonel*" OR "Quality of Life" OR "Satisfaction" OR "Well being"OR "wellbeing" OR "Locus of control" OR "Self Image" OR "Cultural Identit*" OR "identity formation" OR "identity development" OR "Self concept*" OR "Childhood" OR "Early Life" OR "Advers*" OR "Abus*" OR "Neglect*" OR "Trauma*" OR "Maltreat*" OR "parental Absence*" OR "Absent Parent*" OR "Divorc*" OR "Seperat*" OR "Abandon*" OR "Incarcerat*" OR "Bereavement" OR "grief" OR "Loss" OR "Death" OR "Bullied" OR "Bullying" OR "Coping" OR "Attachment*" OR "Child Rearing" OR "Parenting style*" OR "Parental style*" OR “childbirth” OR “Birth” OR "Labor" OR "Labour" OR "Pregnanc*" OR "Parturition" OR "Expectation*" OR "Socioeconomic*" OR "Social Class*" OR "Occupation*" OR "Employment*" OR "Unemploy*" OR "Education*" OR "Poverty" OR "Sociodemographics*" OR "Income" OR "Disadvant*" OR "Homeless*" OR "Deprivation" OR "Deprived" OR "Community Cohesion" OR "Discrimin*" OR "Stigma*" OR "Inequalit*" OR "Marginali*" OR "Temperament*" OR "Cognitive bias*" OR "Cognitive style*" OR "Cognitive Process*" OR "Schema*" OR "Personality Trait*" OR "Attentional Bias*" OR "Attentional Style*" OR "Attributional Bias*" OR "Appraisal*" OR "Attitude*" OR "irrational Thought*" OR "Irrational Belief*" OR "Dysfunctional Thought*" OR "Dysfunctional belief*" OR "Dysfunctional Assumption*" OR "Maladaptive" OR "Factor*" OR "Mechanism*" OR "Predict*" OR "Influenc*" OR "Mediat*" OR “predispos*” OR “susceptib*” OR "Risk*"

Appendix E

CINAHL Search

Psychological Distress:

MH "Psychotic Disorders/PF" OR MH "Bipolar Disorder/PF" OR MH "Schizophrenia/PF" OR MH "Affective Disorders/PF" OR MH "Mental Disorders/PF" OR "Psychosis" OR "Psychotic" OR "Schiz*" OR "Bipolar" OR "Mania" OR "Manic" OR "Hypomania" OR "Hypomanic" OR "cyclothymi*" OR "Mood Disorder*" OR "Affective Disorder*" OR "Affective" OR "Mental Illness*" OR "Mental Disorder*"

Postpartum Period:

MH "Postnatal Period/PF" OR MH "Puerperium/PF" OR "Postnatal" OR "Postpartum" OR "Peripartum" OR "perinatal" OR "Puerperium" OR "Puerperal"

Psychosocial factors:

MH "Stress/PF" OR MH "Life Change Events" OR MH "Life Style" OR MH "Life Style Changes/PF" OR MH "Life Experiences" OR MH "Social Environment/PF" OR MH "Home Environment/PF" OR MH "Significant Other/PF" OR MH "Spouses/PF" OR MH "Interpersonal Relations" OR MH "Criticism" OR MH "Family/PF" OR MH "Family Conflict" OR MH "Marriage/PF" OR MH "Family Relations" OR MH "Family Functioning/PF" OR MH "Dysfunctional Family/PF" OR MH "Family Coping/PF" OR MH "Friendship" OR MH "Peer Group" OR MH "Support, Psychosocial" OR MH "Stigma" OR MH "Social Isolation/PF" OR MH "Loneliness/PF" OR MH "Social Alienation/PF" OR MH "Violence/PF" OR MH "Exposure to Violence/PF" OR MH "Domestic Violence/PF" OR MH "Intimate Partner Violence/PF" OR MH "Child Abuse/PF" OR MH "Bullying/PF" OR MH "Social Adjustment" OR MH "Conflict (Psychology)" OR MH "Quality of Life/PF" OR MH "Personal Satisfaction" OR MH "Marital Satisfaction" OR MH "Psychological Well-Being" OR MH "Locus of Control" OR MH "Social Identity" OR MH "Self Concept" OR MH "Parent-Child Relations" OR MH "Child Abuse Survivors/PF" OR MH "Divorce/PF" OR MH "Parental Death" OR MH "Bereavement" OR MH "Grief" OR MH "Child, Abandoned/PF" OR MH "Attachment Behavior" OR MH "Parental Attitudes" OR MH "Child Rearing" OR MH "Social Class/PF" OR MH "Socioeconomic Factors/PF" OR MH "Poverty/PF" OR MH "Poverty Areas/PF" OR MH "Educational Status/PF" OR MH "Employment Status/PF" OR MH "Income/PF" OR MH "Unemployment/PF" OR MH "Homeless Persons/PF" OR MH "Discrimination/PF" OR MH "Childbirth/PF" OR MH "Labor/PF" OR MH "Pregnancy/PF" OR MH "Attentional Bias" OR MH "Risk Factors/PF" OR MH "Identity Crisis" OR MH "Social Inclusion" OR MH "Adaptation, Psychological" OR MH "Paternal Behavior" OR MH "Paternal Attitudes" OR "Psychological" OR "Psychosocial" OR "Sociocultural" OR "Social" OR "Burden*" OR "Distress*" OR "Demand*" OR "Event*" OR "Experience*" OR "Lifestyle*" OR "Transition*" OR "Change*" OR "Situation*" OR "Environment*" OR "Support*" OR "Peer*" OR "Friend*" OR "Significant other*" OR "Spouse*" OR "Partner*" OR "Couple*" OR "Famil*" OR "Marital" OR "Interpersonal" OR "Communication*" OR "Conflict*" OR "Coping" OR "Dynamic*"OR "Expressed Emotion*" OR "Argument*" OR "Disput*" OR "Hostil*" OR "Critic*" OR "Crisis" OR "Crises" OR "Violence*" OR "Maladjust*" OR "Adjustment*" OR "isolat*" OR "Lonel*" OR "Quality of Life" OR "Satisfaction" OR "Well being" OR "Wellbeing" OR "Locus of control" OR "Self image" OR "Cultural Identit*" OR "Identity Formation" OR "Identity Development" OR "Self concept" OR "Childhood" OR "Early Life" OR "Advers*" OR "Abus*" OR "Neglect*" OR "trauma*" OR "Maltreat*" OR "parental absence*" OR "Absent parent*" OR "Divorc*" OR "Seperat*" OR "Abandon*" OR "Incarcerat*" OR "Imprison*" OR "Bereavement" OR "Grief" OR "Loss" OR "Death" OR "Bullied" OR "Bullying" OR "Attachment*" OR "Child rearing" OR "parenting style*" OR "Childbirth" OR "Birth" OR "labor" OR "Pregnanc*" OR "Parturition" OR "Expectation*" OR "Socioeconomic*" OR "Occupation*" OR "Education*" OR "Employ*" OR "Unemploy*" OR "Poverty" OR "Sociodemographic*" OR "Income" OR "Disadvant*" OR "Homeless*" OR "Deprivation" OR "Deprived" OR "Stigma*" OR "Inequalit*” OR "Marginali*" OR "Temperament*" OR "Cognitive Process*" OR "Cognitive Bias*" OR "Cognitive Style*" OR "Schema*" OR "personality trait*" OR "Attentional Bias*" OR "Appraisal*" OR "Attitude*" OR "Attentional Style*" OR "Attributional Style*" OR "irrational thought*" OR "Irrational belief*" OR "Dysfunctional thought*" OR "Dysfunctional belief*" OR "maladaptive" OR "factor*" OR "Mechanism*" OR "predict*" OR "Influenc*" OR "Mediat*" OR "Predispos*" OR "susceptib*" OR "Risk*"

Appendix F

Academic Search Complete

Psychological Distress:

DE "PSYCHOSES" OR DE "BIPOLAR disorder" OR "MANIA" OR "HYPOMANIA" OR DE "CYCLOTHYMIA" OR DE "AFFECTIVE disorders" OR DE "SCHIZOPHRENIA" OR DE "MENTAL illness" OR "Psychosis" OR "psychotic" OR "Bipolar" OR "Hypomanic" OR "Manic" OR "Schiz*" OR "Cyclothymi*" OR "Mood Disorder*" OR "Affective Disorder*" OR "Affective" OR "Mental Illness*" OR "Mental Disorder*"

Postpartum Period:

DE "PUERPERIUM" OR "Postnatal" OR "Postpartum" OR "Peripartum" OR "Perinatal" OR "Puerperium" OR "Puerperal"

Psychosocial factors:

DE "PSYCHOLOGICAL factors" OR DE "PSYCHOSOCIAL factors" OR DE "SOCIAL factors" OR DE "SOCIOCULTURAL factors" OR DE "SOCIAL acceptance" OR DE "SOCIAL support" OR DE "WELL-being" OR DE "QUALITY of life" OR DE "DISTRESS (Psychology)" OR DE "LIFE change events" OR DE "LIFESTYLES" OR DE "CHANGE" OR DE "FRIENDSHIP" OR DE "SPOUSES" OR DE "INTERPERSONAL relations" OR DE "FAMILIES" OR DE "FAMILY communication" OR DE "FAMILY relations" OR DE "FAMILY conflict" OR DE "MARITAL relations" OR DE "INTERPERSONAL conflict" OR DE "MARITAL conflict" OR DE "MARITAL satisfaction" OR DE "HOME environment" OR DE "INTERPERSONAL confrontation" OR DE "INTERPERSONAL communication" OR DE "BELONGING (Social psychology)" OR DE "HOSTILITY (Psychology)" OR DE "VIOLENCE" OR DE "INTIMATE partner violence" OR DE "FAMILY violence" OR DE “MARITAL violence” OR DE "ADJUSTMENT (Psychology)" OR DE "SOCIAL isolation" OR DE "LOCUS of control" OR DE "SELF-perception" OR DE "GROUP identity" OR DE "EARLY memories" OR DE "CHILD abuse" OR DE "ADULT child abuse victims" OR DE "PARENT & child" OR DE "HISTORICAL trauma" OR DE "EMOTIONAL trauma" OR DE "IMPRISONMENT" OR DE "PARENT imprisonment" OR DE "DIVORCE" OR DE "DIVORCED parents" OR DE "BEREAVEMENT" OR DE "LOSS (Psychology)" OR DE "GRIEF" OR DE "BULLYING" OR DE "ATTACHMENT behavior" OR DE "PARENT attitudes" OR DE "CHILD rearing" OR DE "SOCIOECONOMIC factors" OR DE "POVERTY" OR DE "SOCIAL status" OR DE "OCCUPATIONAL prestige" OR DE "DISADVANTAGED environment" OR DE "UNEMPLOYMENT" OR DE "EDUCATIONAL attainment" OR DE "HOMELESS persons" OR DE "STRESS (Psychology)" OR DE "SOCIAL disorganization" OR DE "DISCRIMINATION" OR DE "STIGMA (Social psychology)" OR DE "EQUALITY" OR DE "CHILDBIRTH" OR DE "LABOR (Obstetrics)" OR DE "TEMPERAMENT" OR DE "COGNITIVE styles" OR DE "SCHEMAS (Psychology)" OR DE "PERSONALITY" OR DE "ATTENTIONAL bias" OR DE "COGNITIVE bias" OR DE "CULTURAL identity" OR DE "PARENT-child communication" OR DE "ABSENTEE parents" OR DE "SOCIAL context" OR DE "FAMILY crises" OR DE "PEERS" OR DE "SOCIAL influence" OR DE "SOCIAL interaction" OR DE "LONELINESS" OR DE "SOCIAL marginality" OR DE "IDENTITY crises (Psychology)" OR DE "ABANDONMENT (Psychology)" OR DE "SPOUSAL abuse” OR DE "PARENTS -- Death" OR DE “SOCIAL distance” OR DE “PARENTAL deprivation” OR DE "POVERTY areas" OR DE "SOCIODEMOGRAPHIC factors" OR "Psychological" OR "Psychosocial" OR "Sociocultural" OR "Social" OR "Stress*" OR "burden*" OR "Distress*" OR "Demand*" OR "Event*" OR "Experience*" OR "Lifestyle*" OR "Transition*" OR "Change*" OR "Situation*" OR "environment*" OR "Support*" OR "Peer*" OR "Friend*" OR "Significant other*" OR "Spouse*" OR "Partner*" OR "Couple*" OR "Famil*" OR "Marital" OR "Interpersonal" OR "Communication*" OR "Conflict*" OR "Dynamic*" OR "Expressed emotion*" OR "Dispute*" OR "Argument*" OR "Hostil*" OR "Critic*" OR "Violen*" OR "Crisis" OR "Crises" OR "Maladjust*" OR "Isolat*" OR "Lonel*" OR "Quality of Life" OR "Satisfaction" OR "Well being" OR "Wellbeing" OR "Locus of control" OR "self image" OR "Cultural ident*" OR "Identity formation" OR "Identity development" OR "Self concept*" OR "Childhood" OR "early life" OE "Advers*" OR "Abus*" OR "Neglect*" OR "Trauma*" OR "Parental Absence*" OR "Absent parent*" OR "Divorc*" OR "Separat*" OR "Abandon*" OR "Incarcerat*" OR "Imprison*" OR "bereavement" OR "Grief" OR "Loss*" OR "Death" OR "Bullied" OR "Bullying" OR "Attachment*" OR "Child rearing" OR "Parenting style*" OR "Childbirth" OR "Birth" OR "Labor" OR "Labour" OR "Pregnanc*" OR "Parturition" OR "Expectation*" OR "Socioeconomic*" OR "Sociodemographic*" OR "Occupation*" OR "Education*" OR "Employ*" OR "Unemploy*" OR "Poverty" OR "Income" OR "Disadvant*" OR "Homeless*" OR "Deprivation" OR "Deprived" OR "Community Cohesion" OR "Discrimin*" OR "Stigma*" OR "Inequalit*" OR "Marginali*" OR "temperament*" OR "Cognitive Process*" OR "Cognitive Bias*" OR "Cognitive style*" OR "Schema*" OR "Personality trait*" OR "Attentional bias*" OR "Attributional style*" OR "Attributional Bias*" OR "Appraisal*" OR "irrational thought*" OR "irrational belief*" OR "Dysfunctional thought*" OR "dysfunctional belief*" OR "dysfunctional assumption*" OR "maladaptive" OR "factor*" OR "Predict*" OR "mechanism*" OR "influenc*" OR "risk*" OR "mediat*" OR "predispos*" OR “susceptib*”

Doctorate in Clinical Psychology | Lancaster University

SECTION TWO

EMPIRICAL PAPER

Factors Predicting the Occurrence of Sub-Clinical Symptoms of Mania in New Mothers

Catrina Stansfield

Doctorate in Clinical Psychology

Division of Health Research, Lancaster University

Word Count: 8, 841

(Excluding tables, figures, reference lists and appendices)

Prepared for submission to *Archives of Women's Mental Health*

Abstract

Purpose: Between 9 - 41% of new mothers experience (hypo)mania following childbirth. To date, no research has investigated the potential factors that may increase a woman's vulnerability to these experiences. Therefore, the aim of this study was to determine the factors predicting the occurrence of sub-clinical symptoms of mania in new mothers.

Methods: One hundred and forty-five first-time mothers took part in an online survey. Demographic and obstetric information was collected alongside measures for symptoms of (hypo)mania, cognitive appraisal styles, rumination strategies, Behavioural Approach System (BAS) sensitivity, sleep quality and birth experience. **Results:** Ten participants (6.9%) met the threshold for (hypo)mania as defined by the Highs scale (Glover et al, 1994) and 40 (27.6%) met the threshold as defined by the Altman Self-rating Mania Scale (ARMS; Altman et al, 1997). Feeding method, greater normalising appraisal styles, hypomania-relevant experiences, dampening, and emotion-focused rumination strategies significantly contributed to higher scores on the Highs scale. Lower income level and greater hypomania-relevant experiences contributed to increasing scores on the ARMS. **Conclusion: (**Hypo)manic experiences in the post-partum is likely the result of several complex and interacting factors. Future research is required to establish the role of negative and positive appraisal styles and how these interact with different cognitive and behavioural strategies. The findings suggest that validated measures of (hypo)mania for this population are required. Consequently, the results should be interpreted with caution.

Keywords: Sub-clinical; Mania; Hypomania; Postpartum; Predictors.

Bipolar Disorder (BD) is understood as periods of fluctuating mood, energy, and behaviour interspersed with periods of improved function or full recovery (Grande et al, 2016; Mason et al, 2012). Whilst depression is common, the defining characteristic of BD is the experience of mania or hypomania; which includes elevated mood, grandiose or irritable affect associated with increased motor drive and decreased sleep which can culminate in psychosis (American Psychiatric Association, 2013).

Recognising BD is a widely acknowledged challenge. Individuals can wait five to ten years between their first episode and receiving a diagnosis (Berk et al, 2007) and nearly two-thirds report having received a misdiagnosis at least once (Lish et al, 1994). If BD goes unrecognised the consequences are significant resulting in poorer clinical outcomes, increased hospitalisation and suicidal behaviour, financial and relationship difficulties, increased substance misuse, homelessness, poorer physical health, and reduced quality of life and life expectancy (Drancourt et al, 2013; Kvitland et al, 2016; Lagerberg et al, 2010; Mainia et al, 2013; McCraw et al, 2014). Furthermore, receiving inappropriate medication due to misdiagnosis can promote rapid cycling between mania and depression (Undurraga et al, 2012).

One factor associated with the under-recognition of BD is the recent shift in how we perceive these experiences. Rather than being viewed as discrete entities distinguished for *normal* experience; ‘symptoms’ of BD are now recognised to exist on a continuum (Akiskal, 1999; Angst, 2007; Eckbald & Chapman, 1986; Kwapil et al, 2000), ranging from complete absence through the presence of episodic experiences to mania or recurrent depression at the opposite end. For example, (hypo)mania can be considered an element of *normal* mood fluctuation experienced after an event which stimulates feelings of happiness. Brand et al (2007) found that individuals who had recently fallen in love had scores of hypomania which

were similar to individuals with BD-Type II. These milder presentations have been argued to present the biggest challenge to clinical practice (Malhi, 2016).

Hypomania often goes unrecognised (Grande et al, 2016) in part due to debate surrounding its definition and the length of time required for the experience to be considered an 'episode' (Angst et al, 2013). Unlike mania, the characteristics of hypomania do not always interfere with functioning; conversely, they can be associated with better social and occupational function (Regeer et al, 2015). Consequently, service users, their families, and professionals do not always perceive the impact as negative; therefore, it can go unnoticed (Hirschfeld, 2001; Severus & Bauer, 2013**).**

Whilst hypomanic experiences may not be perceived as detrimental, they can progress into more severe manic or depressive episodes (Fiedorowicz et al, 2011; Uchida et al, 2014; Biederman et al, 2014). Therefore, developing our understanding of the mechanism involved and those factors which may influence progression to severe (hypo)mania is important. Research has predominantly focused on investigating possible biological underpinnings of BD (Baldessarini et al, 2012; Craddock & Sklar, 2013; Fusar-Poli et al, 2012); however, the findings have been inconsistent. Recently, researchers have considered psychosocial factors, which may impact the onset and course of BD and influence whether individuals experience low or elevated mood.

Specifically, for (hypo)mania, life events relating to goal attainment and striving (Johnson et al, 2008) or which disrupt social/circadian rhythms (Levenson, Nusslock & Frank, 2013) have been found to predict these experiences. Whilst there is some evidence to suggest that both positive and negative life events may also predict (hypo)mania (Alloy et al, 2005; Johnson & Roberts, 1995) the findings are inconsistent. Consequently, it has been argued that it is how an individual appraises the event which increases the likelihood an individual will experience hypo(mania). Following an initial success, individuals who

demonstrate a vulnerability to hypo(mania) have been found to demonstrate elevated confidence and make overly positive self-appraisals (Eisner et al, 2008; Jones, Mansell & Waller, 2006). They maintain this positive emotion by 'positively ruminating'; that is, having additional thoughts about their own positive qualities, previous positive experiences, and positive circumstances (Segerstrom et al, 2003; Johnson & Jones, 2009).

Increases in both positive affect and positive self-appraisals are interpreted as a sign that they can achieve more, referred to as 'positive overgeneralization' (Alloy et al, 2009; Jones et al, 2006). This, in turn, leads to increases in energy which promotes a behavioural response of increased motivation towards pursuing goal driven behaviour (Alloy et al, 2008; Jones et al, 2007; Jones & Day, 2008). Thus, those with Behavioural Approach System (BAS) sensitivity, theorised to regulate the approach behaviour and motivation towards goals and rewards, have been found at high risk of experiencing (hypo)mania (Alloy et al, 2006; 2008; Meyer, Johnson & Carver, 1999; Meyer et al, 1999).

Importantly, all of the factors which may place an individual at greater risk of experiencing (hypo)mania can be successfully targeted with psychological therapies. Cognitive-Behavioural Therapy (CBT) targets unhelpful thinking styles and behavioural responses to promote the development of alternative, and more helpful, thoughts and behaviours. Additionally, it utilises strategies such as daily activity monitoring and scheduling to prevent social/circadian rhythm disruption; alongside supporting individuals to recognise the onset of these experiences to avoid relapse. The National Institute for Health and Care Excellence (NICE; 2014, 2018) recommends CBT as a treatment of choice for BD, Psychosis and Schizophrenia and a recent meta-analysis found CBT to be an effective intervention for reducing (hypo)mania severity and improving psychosocial functioning (Chiang et al, 2014).

Relevance to New Mothers

The transition to motherhood is characterised by high risk, with women becoming vulnerable to a range of psychological difficulties (Rai, Pathak, & Sharma, 2015). Those with a history of BD are placed at greater risk having at least a one-in-five chance of having a severe recurrence (Di Florio et al., 2013; Munk-Olsen et al., 2009). Furthermore, there is a one in two chance of experiencing any mood episode following childbirth, including Postpartum Psychosis (PP) and Postpartum Depression (PD; Jones & Craddock, 2001; Munk-Olsen et al., 2007). It has recently been acknowledged that PP may be a variant of BD which is triggered by childbirth (Jones & Craddock, 2001; 2002; Lydsodottie et al, 2014; Munk-Olsen et al, 2012; Wisner et al, 2013). Women who receive psychiatric contact within the first month following childbirth are three times more likely to receive a diagnosis of BD within 15 years than those who receive initial psychiatric contact at other times in their lives (Munk-Olsen, 2012).

In the postpartum literature, there has been a focus on the depressive and psychotic spectrums (Weinberg et al, 2001; Mannion & Slade, 2014). However, the 'soft' bipolar spectrum, that is, variants of a sub-clinical form of a 'traditional' diagnostic category of BD, (Akiskal, 1983) have received little attention. Retrospective studies of women who experienced an episode of PP (Heron et al, 2007; 2008) have found that women report experiencing (hypo)mania in the first week(s) of motherhood and this may be a prodrome of PP. Additionally, research considering early signs of PD (Glover et al, 1994; Lane et al 1997) have documented that (hypo)mania is experienced by approximately 11% of new mothers and place women at risk of developing PP or PD. Only one study has considered risk factors in the development of (hypo)mania (Lane et al 1997). These were primarily demographic and obstetrical and indicated that no school qualifications, single status, public

status, bottle-feeding, and unplanned pregnancy were associated with higher scores of hypomania.

Of the small number of studies which have investigated women experiencing (hypo)mania in the postpartum, they have either included, or not screened for, individuals with BD. Given that those with a history of BD are at high risk of experiencing a relapse in the postpartum (Di Florio et al, 2013; Munk-Olsen et al, 2009), arguably, there is a risk that these studies are not investigating the relationship between childbirth and (hypo)mania, but are instead capturing risk factors or experiences that may be relating to the woman's vulnerability to experience (hypo)mania more generally.

Therefore, the principle aim of this study was to determine the factors predicting the occurrence of sub-clinical symptoms of mania in first-time mothers. The relationship between cognitive appraisal styles, rumination strategies, BAS sensitivity, sleep deprivation, birth experience and (hypo)mania were considered. Whilst this is an exploratory study, the findings from previous research considering (hypo)mania in other populations allow for some tentative predictions to be made. It is hypothesised that:

(1) Greater positive self-dispositional appraisal styles and hypomania-relevant experiences would significantly predict increases in (hypo)mania; however, greater normalising external appraisal would not.
(2) Both positive rumination and dampening rumination strategies would significantly predict increases in (hypo)mania.
(3) Greater BAS sensitivity and lower BIS sensitivity would significantly predict increases in (hypo)mania.
(4) Poorer sleep quality would significantly predict increases in (hypo)mania.

Methods

Participants

Women proficient in English who gave birth to their first child two to nine months prior to recruitment were included. New mothers were included due to primiparity being cited as a consistent risk factor in relation to postpartum PP and BD (Di Florio, 2013; Munk-Olsen, 2014). The time frame was chosen due to research suggesting that postpartum onset of symptoms of BD is likely to occur within the first month following childbirth (Kumar et al, 1995) and in accordance with the defined onset within the DSM-5 (APA, 2013). This period was extended to 2 months based on evidence that psychological distress can occur beyond the first month (Born et al, 2004).

To ensure results were not confounded by participants with known mental health difficulties, participants with a pre-existing diagnosis of BD or receiving input from perinatal, or other, mental health services were excluded.

Procedure

The research was approved by Lancaster University FHM Research Ethics Committee (FHMREC). Recruitment took place online via (1) Facebook whereby new mothers/parent groups and relevant organisations, such as the National Childbirth Trust, were contacted by the researcher. When consent was gained, the research was shared on their Facebook homepage. (2) Netmums (https://www.netmums.com/) which offers social networking for mothers, education on pregnancy and parenting, alongside information on support groups, classes, and activities. An advertisement was placed on the 'Survey Request' section of their website. This is an online thread where posts can be requested for individuals to complete research surveys.

Participants were asked to complete an online survey administered via RedCap (https://www.project-redcap.org/). Participants were offered the chance to enter a prize draw to win one £100, or one of two £50, Amazon vouchers, if they completed the survey.

The recruitment window took place between 27th of April to the 23rd of July 2018. Four hundred and sixty-five participants commenced the survey; 48 participants were excluded (5 treated for BD; 25 under the care of mental health services; 8 having both; 10 infant ages did not meet the inclusion criteria). Three were excluded for not including their infant's age. Two hundred and sixty-nine did not complete the data set. A total of 145 completed the survey (31.39% response rate). See Figure 1 for participants recruitment flowchart.

(Insert Figure 1: Participants Recruitment Flowchart)

Measures

Demographic and obstetric information on participants' age, ethnicity, marital status, employment status, educational level, household income, birth method and number of babies delivered was recorded (See Appendix B).

The Highs Scale (Glover, Liddle, Taylor, Adams & Sandler, 1994). The scale was developed specifically to measure symptoms of (hypo)mania in the post-partum. The scale comprises 7 items including: feelings of elation, talkativeness, thoughts racing, being an important person, requiring less sleep, and problems with concentration. Each item is scored on a 3-point Likert scale (Yes, a lot; Yes, a little; and No). It has been rated against a clinician-rated diagnosis of mild mania on the Comprehensive Psychopathological Rating Scale (CPRS; Asberg et al, 1978) with a small group of 16 women. The correlation between the Highs score and mania sub score on the CPRS was r =.62. As no further validation has been carried out on this scale, a second scale measuring (hypo)mania symptoms which is well validated; however, not within the postpartum population, was administered:

The Altman Self-Rating Mania Scale (ASRM; Altman, Hedkeker, Peterson & Davis, 1997). The scale measures current symptoms of (hypo)mania. Five items comprise the scale: cheerfulness, self-confidence, needing less sleep, talkativeness, and activity levels compared to usual. Each item has five response options with descriptions increasing in severity. This scale has been a validated measure for use inside and outside of hospital settings (Altman et al, 1997; Altman et al, 2001), and has good internal consistency (α =.65 to .79).

Hypomania Interpretations Questionnaire (HIQ ; Jones, Mansell & Waller, 2006).

A range of literature has documented an association between life events relating to goal attainment and striving or resulting in the disruption of social/circadian rhythm and the experience of (hypo)mania (Johnson et al, 2008; Levenson et al, 2013). More recently, theoretical models have proposed that it is the way an individual interprets or appraises these events and/or changes in internal states which may increase the risk of these experiences. Consistently, within BD and non-clinical populations, research has demonstrated that positive self-appraisals are the key mechanism through which (hypo)mania develops into clinically significant mania (Jones et al, 2006; Jones & Day, 2008, Kelly et al, 2012).

The HIQ is designed to assess the tendency to make overly positive self-appraisals. The scale comprises 10 items, each relating to a hypomania-relevant situation, followed by two explanations. One explanation being a 'positive self-dispositional appraisal' and the other a 'normalising appraisal'. Items are rated on a four-point Likert scale (A = Not at all and D = A great deal). The internal consistency has been reported as acceptable; HIQ-H (α =.82); HOQ-NE (α=.71) and HIQ-NI (α =.68). Test-retest reliability has been found acceptable (HIQ-H: *r* =0.56; HIQ-NE*: r* =0.59).

Responses to Positive Affect Questionnaire (RPA; Fieldman, Joorman & Johnson, 2008). The manner in which an individual responds to the experience of elevated mood is believed to be associated with an increased vulnerability to subsequent (hypo)mania

(Johnson, 2005). It has been argued that in response to a positive appraisal of a hypomania relevant experience or change in internal state, individuals engage in behaviours which maintain and/or escalate their affective experience (Mansell et al, 2007). These behavioural strategies can be either explicit external actions or internal mental acts, such as rumination.

Individuals with BD and hypomanic personality traits, considered to be a known vulnerability for (hypo)mania (Kwapil et al, 2000), ruminate on both positive and negative emotional 'states' (Gruber et al, 2011; Johnson et al, 2008; Thomas et al, 2007). However, there is strong evidence from non-clinical populations that it is the engagement in positive rumination strategies that is uniquely associated with the experience of (hypo)mania (Dempsey, Gooding & Jones et al, 2011).

The RPA is a 17-item self-report measure designed to assess the tendency to ruminate on affective states. Items are divided into three factors measuring positive rumination of (1) mood and bodily experiences (Emotion-focused), (2) self and goal attainment (Self-focused) and (3) thought processes that attempt to reduce the intensity of positive emotions and experiences (Dampening). Items are rated on a four-point Likert scale (1= almost never; 4 = always). The scale has demonstrated acceptable structural validity and internal consistency: dampening (a = .79); self-focus positive rumination (a = .71); emotion-focus positive rumination (a = .69).

The Behavioural Inhibition/Behavioural Activation Scale (BIS/BAS; Carver & White, 1994). The Behavioural Approach System (BAS) is theorised to regulate approach behaviour towards goals and rewards (Gray, 1991). Individuals with BAS sensitivity are argued to be at greater risk of experiencing (hypo)mania (Alloy et al, 2006; 2008; Salavert et al, 2007). It is proposed that greater BAS sensitivity promotes higher levels of BAS 'outputs'—that is motor activity, energy, confidence, interest and pleasure in rewards—when BAS 'inputs', stimuli

which acts as a cue for goal-directed behaviours, such as life events are encountered resulting in (hypo)mania (Depue & Iacono, 1989).

Whilst there are similarities and overlap between BAS 'output's and 'symptoms' of mania', evidence from prospective studies suggests that elevated BAS sensitivity is not an artefact of 'symptom' level. For example, longitudinal research of individuals with a diagnosis of BD has found that BAS scores remained constant while mania fluctuated, and scores remained elevated compared to controls when individuals had 'recovered' (Meyer et al, 2001). Furthermore, several studies have found that BAS sensitivity levels are elevated before the onset of (hypo)mania (Applegate et al, 2009; Alloy et al, 2011; Carver & Johnson, 2009; Johnson & Carver, 2006; Jones et al, 2007; Jones & Day, 2008).

The BIS/BAS scale assesses sensitivity to incentive/reward and threat stimuli. It is the most widely used, and validated measure, of BAS sensitivity within research considering BD and (hypo)mania. The scale comprises of 24 items measuring four domains: (1) BIS sensitivity, which captures greater sensitivity to punishment (2) BAS Reward Responsiveness, which captures the tendency to respond to rewarding outcomes with energy and enthusiasm (3) BAS Drive, which captures motivation to pursue goals and (4) BAS Fun Seeking, which captures the tendency to pursue positive experiences without regard to potential threat or cost. Items are rated on a 4-point Likert scale (1 = Strongly agree; 4 = Strongly disagree). The scale has demonstrated adequate levels of internal consistency: BIS (a =.74), BAS Reward Sensitivity (a =.73), BAS Drive (a =.76) and, BAS Fun Seeking (a =.66).

Pittsburgh Sleep Quality Index (PSQI; Buysse et al. 1989).

Evidence suggest that alongside being a core 'symptom', and early warning sign, of mania, sleep loss can trigger elevated mood (Jackson et al, 2003). This is supported in research considering those with a diagnosis of BD, non-clinical populations and

experimentally-induced sleep deprivation studies (Wehr et al, 1987; Kahn et al, 2013; Van Someren et al, 2015; Bauer et al, 2006; Leibenluft et al, 1996).

The PSQI is specifically designed to assess an individual's sleep disruption and quality. Participants answer 18 questions related to their usual sleep habits. Items are rated on a 4-point Likert scale (0 = not at all; 3 = three or more times a week). The scale has been widely used within the postpartum population (Dorheim et al, 2009) and has demonstrated good internal consistency ($\alpha = 0.83$).

Birth experience: The Wijma Delivery Experience Questionnaire (WDEQ; Version B; Wijma et al. 1998). No previous research has been conducted considering the relationship between birth experience and (hypo)mania. However, a range of literature has documented the association between negative birth experience and other forms of mental health difficulties in the postpartum; for example, PD (Bell & Andersson, 2016) and postpartum PTSD (Ayers et al, 2016). The aim of this study is to investigate the relationship between childbirth and (hypo)mania, therefore considering a woman's experience of childbirth in relation to (hypo)mania, is deemed important.

The WDEQ targets appraisals of birth experience by asking questions relating to the labour and delivery. Higher scores indicate higher anxiety and fear experienced during childbirth. The scale comprises of 33 questions rated on a 6-point Likert scale (0 = extremely fantastic and 5 = not at all safe). It has demonstrated excellent internal consistency ($a = .94$).

Data Analysis

The data was analysed using the Statistical Package for Social Sciences (SPSS) version 24.

Sample Size and Power

A priori power analysis was conducted using G*Power. The power value was set at .8 (Cohen, 1988) which gives an 80% probability of detecting associations. α was set at 0.05. A

medium effect size of f^2 0.15 was set, as recommended by Cohen (1988, p. 413) for multiple regression and correlation analysis. Six predictors were anticipated for the analysis; these were accounted for in the power analysis. A minimum of 92 participants were required for the study.

Missing data

An analysis of patterns of missing data was conducted using Little's (1988) Missing Completely at Random (MCAR) test. As the null hypothesis of data being missing at random could be assumed, pairwise deletion was used for bivariate correlational analysis. As pairwise deletion can potentially produce biases in the parameters of a regression model (Kim & Curry, 1977) listwise deletion was used for the regression analysis.

Statistical Analysis

Cronbach's alpha was used to estimate the internal consistency of the items on each scale. An alpha level between .65 and .80 is widely accepted to be adequate (Vaske, Beaman & Sponarski, 2017).

As analysis revealed that the parametric assumptions for some psychological variables (HIQ-H, RPA-SF, RPA-Dampening, BIS, BAS Reward) may not have been met, bivariate correlational analysis was conducted using a non-parametric test, Spearman's rank order correlation. Pearson's *r* correlation was considered; however, evidence suggests that when one or more variables are particularly non-normally distributed it increases Type 1 error rates (Hayes, 1996). Increases in sample sizes can also exacerbate Type 1 error rates (Duncan & Layard, 1973). Spearman's rank order correlation has been found more powerful for mixed-normal and non-normal distributions and demonstrates substantially lower Type 1 error rates when compared with Pearson's *r* (Gauthier, 2001; Zimmerman & Zumo, 1993).

An additional variable was created for correlational analysis, separating those who met the threshold for (hypo)mania and those who did not (0 = below threshold; 1 = above

threshold). A two-sample non-parametric Mann-Whitney U test was conducted to compare the difference in psychological predictor variables between the groups.

All demographic, obstetric and psychological factors were inputted into the correlational analysis. Psychological variables significantly correlated with either scale were included in multiple regression analyses as one block.

Sociodemographic factors and psychological variables which correlated with the scales were included in a hierarchical regression. Age and income were used as constants (Block one) for the analysis. This is due to evidence demonstrating that first-onset episode of BD is associated with younger age (Kroon et al, 2013), alongside the association between lower income status and mental health difficulties (Santiago et al, 2011; Hudson, 2010). As feeding method was a categorical variable, two dummy coded variables were created (1 = breastfed, 0 = not breastfed; 1 = both breastfed and bottle-fed, 0 = did not use both methods). These were inputted into their own block (Block two) for the Highs scale.

As the data was skewed, bias-corrected bootstrapping was used as recommended by Hayes and Scharkow (2013). Bootstrapping produces robust confidence intervals and standard errors. According to Zhu (1997), it is an acceptable alternative to traditional transformation methods. One thousand resamples were used (Wasserman & Franklin, 1992).

Results

Participants demographic and obstetric characteristics are presented in Table 1. The majority of participants were married or in a civil partnership (72.4%); cohabitating with a partner (94.5%); white (93.8%); were in paid, full-time employment prior to pregnancy (83.4%); had a qualification of graduate level or above (78.6%) and had a household income over £32,000 per year (70.7%).

(Insert Table 1: Participant Characteristics)

Missing Data

Sixteen participants (11.03%) had missing data across 5 variables (21.74%): age, cohabitation, income, HIQ-Experience, and PSQI. Little's (1988) Missing Completely at Random (MCAR) test was non-significant (χ^2 = 45.547, df = 39, p = .218) indicating that data was missing at random.

Internal Consistency

Cronbach's alpha indicated that the Highs scale may not have acceptable internal consistency, α = *.542*. The alpha coefficient for the ARMS indicated that the scale may not have good internal consistency, α = .535. All subscales on the HIQ were acceptable, suggesting good internal consistency: HIQ-NE, α = .768; HIQ-H, α = .816; and HIQ-Experience, α = .811. All subscales on the RPA were acceptable, indicating good internal consistency: RPA-EF, α = .639; RPA-Dampening, α = .812; and RPA-SF, α = .814. All subscales on the BIS/BAS were acceptable, suggesting good internal consistency: BIS, α = .771; BAS Reward Responsiveness, α = .771; BAS Drive, α = .886; and BAS Fun, α = .785. The alpha coefficient for the WDEQ was α = .940, indicating the scale had good internal consistency. The alpha coefficient for the PSQI scale indicated that the scale may not have acceptable levels of internal consistency, α = .612. See Appendix C for full description of Cronbach's Alpha analysis.

Descriptive Statistics

Descriptive data are presented in Table 2. The average score for the Highs scale was below the threshold for (hypo)mania (≥ 8.) at 4.03 (*SD* = 2.432). The average score for the ARMS was below the threshold for (hypo)mania (> 6) at 4.24 (*SD* = 2.909).

(Insert Table 2: Descriptive Statistics).

Only 10/145 (6.9%) participants met threshold scores (≥ 8.) for clinical (hypo)mania on the Highs scale. The number of participants who were above the threshold score (≥ 6) for

the ARMS was 40/145 (27.6%). All 10 participants who met the threshold score for (hypo)mania for the Highs scale also met the threshold for the ARMS.

Inter-correlational statistics

The Highs scale was significantly positively correlated with HIQ-NE, HIQ-H and HIQ-Experience. Therefore, increases in positive self-dispositional appraisals (HIQ-H), normalising appraisals (HIQ-NE), and hypomania-relevant experiences in the preceding three months (HIQ-Experiences) were correlated with increases in the Highs scale. Feeding method was also significantly positively correlated with the Highs scale. The Highs scale was significantly correlated with the RPA-EF and RPA-Dampening. Thus, increasing positive rumination, focused on mood and somatic experiences (RPA-EF), alongside thoughts which would dampen positive mood (RPA-Dampening) were all correlated with greater (hypo)mania risk for this scale. Both BIS and BAS Reward Responsiveness were significantly positively correlated with the Highs scale. Therefore, greater sensitivity to anticipation of punishment (BIS) and greater positive responses to the occurrence of an anticipated reward (BAS Reward Responsiveness) was correlated with greater (hypo)mania risk on the Highs scale. Age was significantly negatively correlated with the Highs scale. Thus, younger age was correlated with increasing scores on the Highs scale.

The ARMS was significantly positively correlated with HIQ-H and HIQ- Experience Thus, greater positive self-dispositional appraisals (HIQ-H) and more hypomania-relevant experiences (HIQ-Experience) in the preceding three months was correlated with greater (hypo)mania risk for this scale. The ARMS was significantly positively correlated with RPA-EF, RPA Dampening and RPA- SF Therefore, greater positive rumination focused on: mood and somatic experiences (RPA-EF); aspects of the self and pursuit of personally relevant goals (RPA-SF), and thoughts which would dampen positive mood (RPA-Dampening) were all correlated with greater scores of (hypo)mania on the ARMS. The

ARMS was significantly correlated with BAS Reward Responsiveness. Therefore, greater positive responses to the occurrence of anticipated rewards were correlated with greater risk of (hypo)mania risk for this scale. The ARMS was significantly negatively correlated with age, income, WDEQ and PSQI. Thus, younger age, lower income, less fear and anxiety during childbirth (WDEQ) and better sleep quality (PSQI) were all correlated with greater (hypo)mania risk on the ARMS.

(Insert Table 3: Inter-correlations with demographic and obstetrical variables).

(Insert Table 4: Inter-correlations with psychological variables).

Mann-Whitney U Tests

A Mann-Whitney U test indicated that the distribution of HIQ-Experience ($U = 333$, $p < .01$); RPA-EF ($U = 364$, $p < .05$), and RPA Dampening ($U = 394$, $p < .05$) was not the same across those who met the threshold for the Highs scale and those who did not. Those who met the threshold for (hypo)mania had higher scores on these measures than those who did not. No difference was found between the groups and the distribution of HIQ-NE ($U = 484$, $p > .05$); HIQ-H ($U = 653$, $p > .05$); RPA-SF ($U = 636$, $p > .05$); BIS ($U = 594$, $p > .05$); BAS Drive ($U = 541$, $p > .05$); BAS fun ($U = 485$, $p > .05$); PSQI ($U = 470$, $p > .05$); and WDEQ ($U = 473$, $p > .05$).

(Insert Table 5: The Highs Scale Mann-Whitney U Test Results)

A Mann-Whitney test indicated that the distribution of HIQ-Experience ($U = 1002$, $p < .000$); RPA-EF ($U = 1374$, $p < .01$); RPA-SF ($U = 1497$, $p < .05$) and BAS Reward Responsiveness ($U = 1382$, $p < .01$) was not the same across those who met the threshold for the ARMS and those who did not. Those who met the threshold for (hypo)mania had higher scores on these measures than those who did not. No difference was found between the groups and the distribution of HIQ-NE ($U = 1917$, $p < .000$); HIQ-H ($U = 1784$, $p < .000$);

HIQ-Dampening (U = 1662, p < .000); BIS (U = 1897, p >05); BAS Drive (U = 2083, p >05); BAS Fun (U = 1973, p >05); PSQI (U = 1473, p >05); and WDEQ (U = 1668, p >05).

(Insert Table 6: ARMS Mann-Whitney U Test Results)

Multiple and Hierarchical Regression

Assumptions

For both the Highs and the ARMS models, scatterplots showed that the relationship between the Independent and Dependent variables was linear. Analysis of histograms, P-Plots, and Q-Q Plots suggested that demographic variables (employment, income, education) and psychological variables (HIQ-H, RPA-SF, RPA-Dampening, BIS, BAS Reward) may not be normally distributed. Analysis of collinearity statistics showed the assumption of no multicollinearity in the data had been met; with all being < 0.8. VIF scores were below 10, and the tolerance scores above 0.2. The Durban-Watson Statistic demonstrated that the values of the residuals are independent, as the obtained value was close to 2 (The Highs scale multiple regression, Durban-Watson = 1,996; The Highs scale hierarchical regression, Durban Watson = 2.095; The ARMS multiple regression, Durban-Watson = 2.044; the ARMS hierarchical regression, Durban Watson = 2.087). The plot for standardised residuals vs standardised predicted values showed no obvious signs of funneling suggesting the assumptions of homoscedasticity has been met. The P-Plot's suggested that the assumption of the residuals may have been violated for the Highs model, but not for the ARMS model. Cook's Distance values were all under 1, suggesting individual cases were not unduly influencing the model.

The Highs

Multiple regression was used to test if HIQ-NE, HIQ-H, HIQ-Experience, RPA-EF, RPA-Dampening, BIS and BAS Reward Responsiveness predicted higher scores on the Highs scale. The results revealed that the psychological variables contributed significantly to

increasing scores of (hypo)mania (R^2, 0.402 = F(7, 136), 13.044, p <.001) and accounted for 63.4% of the variance.

(Insert Table 7: The Highs Scale Multiple Regression Results).

The unstandardized β values were examined to indicate each variable's individual contribution to the model. A significant predictor of increases on the Highs scale was HIQ-Experience (β = - 0.407, p <.001). This suggests that when controlling for other variables in the final model, when there is an increase in the Highs score by the value of 1, there is an expected increase in hypomania-relevant experiences of 0.407. The RPA-EF was a significant predictor (β = 0.220, p <.05), indicating that when there is an increase in the Highs score by the value of 1, there is an expected increase in positive rumination focused on mood and somatic experience by 0.220. RPA-Dampening was also a significant predictor (β = 0.191, p <.05) suggesting that when there is an increase in the Highs score to the value of 1, there is an expected increase in thoughts which would dampen positive mood by 0.191.

Hierarchical regression analysis was used to test if age (block one); feeding method (block two); HIQ-NE, HIQ-H, HIQ-Experience, RPA-EF, RPA Dampening, BIS and BAS Reward (block three) predicted increased scores on the Highs scale. The results revealed block one, age, contributed significantly to the model (R^2, 0.096 = F(1, 139), 14.819, p <.001) and accounted for 9.6% of the variance. After introducing feeding method (block two) the variance of the total model increased to 15.1 % (R^2, 0.132 = F(2, 137), 4.382, p <.014). Thus, there was a 5.4% (ΔR^2 = 0.054) increase in predictive capacity explained by adding feeding method. After introducing the psychological variables (block three), the total model increased to 67.4% (R^2, 0.454 = F (7, 130), 10.336, p <.001). There was a 30.4% (ΔR^2 = 0.304) increase in predictive capacity.

(Insert Table 8: The Highs Scale Hierarchical Regression Results).

The unstandardized β values were examined to indicate each variable's individual contribution to the final model. A significant predictor of an increase in Highs score was age (β = - 0.139, p = <.05). This suggests that when controlling for other variables in the final model, when there is an increase in the Highs score by the value of 1, there is an expected decrease in age of 0.139 years. Breastfeeding was a significant predictor (β = -0.230, p <.05) suggesting that when there is an increase in the Highs score by the value of 1, there is an expected decrease in breastfeeding by 0.230. HIQ-NE was a significant predictor (β = 0.149, p <.05) indicating that when there is an increase in the scale by a value of 1 there is an expected increase in normalising external explanations of 0.149. HIQ-Experience was also a significant predictor (β = 0.372, p <.001). Therefore, when there is an increase in the Highs score by the value of 1 there is an expected increase of hypomania-relevant experiences in the preceding three months of 0.372. RPA-EF was a significant predictor (β = 0.162, p <.05) indicating that when there is an increase in the scale by the value of 1 there is an expected increase in positive rumination focused on mood and somatic experience by 0.162. RPA-Dampening was also a significant predictor (β = 0.146, p <.05); therefore, when there is an increase in the Highs scale to the value of 1, there is an expected increase in thoughts which would dampen positive mood by 0.146.

The ARMS

Multiple regression analysis was used to test if HIQ-H, HIQ-Experience, RPA-EF, RPA-Dampening, RPA-SF, BAS Reward Responsiveness, PSQI, and WDEQ predicted increased scores on the ARMS scale. The results revealed that the psychological variables contributed significantly to increased scores of (hypo)mania (R^2, 0.336 = F(8, 123), 7.771, p <.001); accounting for 57.9% of the variance.

(Insert Table 9: The ARMS Multiple Regression Results).

The unstandardized β values were examined to indicate each variable's individual contribution to the final model. HIQ-Experience was a significant predictor (β = 0.419, p <.001) indicating that when there is an increase in the ARMS score by the value of 1 there is an expected increase of hypomania-relevant experiences in the preceding three months by 0.419. PSQI was a significant predictor (β = - 0.172 p <.05). This suggests that when there is an increase in the ARMS score by the value of 1 there is an expected increase in sleep quality by 0.172.

Hierarchical regression analysis was used to test if the age and income (block one), HIQ-H, HIQ-Experience, RPA-EF, RPA-Dampening, RPA-SF, BAS Reward Responsiveness, PSQI, and WDEQ (block two) predicted increasing scores on the ARMS. The results revealed block one, age and income, contributed significantly to the model (R^2, 0.053 = F(2, 125), 3.825, p <.05) accounting for 24% of the variance. After introducing the psychological variables (block two), the variance of the total model increased to 59.8% (R^2, 0.358= F(8,117), 6.847, p <.001. Thus, there was a 30.1% ($\Delta R^2 = 0.301$) in predictive capacity explained by block two.

(Insert Table 10: The ARMS Hierarchical Regression Results).

The unstandardized β values were examined to indicate each variable's individual contribution to the final model. A significant predictor of an increase in ARMS score was income (β = - 0.202, p <.05). This suggests that when controlling for other variables in the final model, when there is an increase in the ARMS score by the value of 1, there is an expected decrease in income of 0.202. HIQ-Experience was a significant predictor (β = 0.398, p <.000) indicating that when there is an increase in the ARMS score by the value of 1 there is an expected increase hypomania relevant experiences in the preceding three months by 0.398.

Discussion

The aim of this study was to determine the factors associated with the occurrence of sub-clinical symptoms of mania in new mothers. One hundred and forty-five first-time mothers who had given birth between 2 and 9 months prior to completing the study were recruited via Facebook and Netmums. The majority of participants were married or in a civil partnership, white, in full-time employment prior to pregnancy, held a qualification of graduate level or above, and had a household income of £32,000 or above per year.

Symptoms of (hypo)mania were measured by two scales: The Highs scale (Glover et al, 1994) and the ARMS (Altman et al, 1997). Only 10 participants (6.9%) met the criteria for (hypo)mania (≥ 8.), for the Highs scale. These findings are lower than previous research which has demonstrated that between 9 - 19% of mothers experience (hypo)mania (Glover et al, 1994; Haswgawa et al, 2002; Heron et al, 2009; Lane et al, 1997; Webster et al, 2003). The mean scores on the Highs scale (4.02; SD: 2.432; range 0-14) was only comparable to Lane et al's (1997) findings at day three (4.4; SD:3.1; range: 0-14). The findings differed from the those found by Lane et al at week six (3.3; SD: 2.8; range 0-12); Glover et al (1994) day one to five (8.2, 9.3, 7.8, 8.7, 8.1); Haswgawa et al (2002) at day one (2.1) and day five (1.0); Heron et al (2009) at day three/four (3.79; CI: 3.41 – 4.17) and week eight (2.28; CI: 2.28-2.96).

The number of participants who met the threshold for (hypo)mania, as measured by the ARMS, was far greater with 40 participants (27.6%) being above the threshold (≥ 6). Only two studies have used the ARMS with the postpartum population. Whilst the findings from this study are considerably lower than the 44.1% found by Smith et al (2009) they are similar to the 26.4% found by Inglis et al (2014). When comparing the means, the ARMS (4.24; SD: 2.909; range: 0-14) was lower than Smith et al at day three (5.23; CI: 4.69 – 5.76);

and Inglis et al at week one (6.79; SD 5.149); one month (6.01; SD 4.702) and three months (6.21; SD 4.306).

A potential reason for the difference between participants meeting the threshold in this study and previous research may be due to the inclusion criteria of the present study when compared to previous research. Only one study excluded individuals with a history of mental health difficulties (Haswgawa et al, 2002). However, the threshold for (hypo)mania was lower than in the present study. Overall, previous research has included (Heron et al, 2009; Inglis et al, 2014) or not screened for (Smith et al, 2009; Lane et al, 1997; Glover et al, 2994; Webster et al, 2003) individuals with a current or historical mental health difficulty. Additionally, they have included primiparous and multiparous women. Women with a diagnosis of BD are at higher risk of experiencing a relapse following childbirth (Di Florio et al., 2013; Munk-Olsen et al., 2009; Jones & Craddock, 2001; Munk-Olsen et al., 2007). This risk increases for first-time mothers (Di Florio, 2014; Munk-Olsen, 2014). Higher scores found in previous studies may be due to participants already being vulnerable to these experiences as opposed to capturing the relationship between (hypo)mania and becoming a mother.

The discrepancies found between those meeting the threshold for (hypo)mania on the Highs scale and the ARMS has been noted in previous research. Smith et al (2009) compared both scales and found a prevalence of 11.1% for the Highs scale compared to 44.1% on the ARMS. The Highs scale threshold of ≥ 8 was chosen arbitrarily (Glover et al, 1994) and may be conservative (Heron et al, 2011; Smith et al, 2009). It has also been argued that the ARMS may overestimate the occurrence of these experiences and require adaption to ensure scores are not influenced by other factors related to childbirth (Smith et al, 2009). In line with the move towards viewing (hypo)mania as a continuum, using these measures on a

continuous scale may increase our understanding of the factors which may make a woman more vulnerable, or promote resilience, to experiencing (hypo)mania.

The primary aim of this study was to consider the factors associated with the occurrence of sub-clinical symptoms of mania in first-time mothers. Lower age was associated with the experience of (hypo)mania; this is reflective of previous research considering BD. First-onset episode has been associated with younger age, occurring before the age of thirty (Kroon et al, 2013). Lower income was also associated with higher scores. A range of literature has documented the detrimental effects of lower socio-economic status on mental health and well-being (Santiago et al, 2011; Hudson, 2010; Jenkins et al, 2008).

Breastfeeding was found to be associated with lower scores of (hypo)mania, as measured by the Highs scale. Fenglian et al (2014) found that those who breastfed were less likely to be admitted to hospital in the first year following child birth for schizophrenia and BD compared to those who did not breastfeed. However, a larger body of evidence exists considering feeding method and PD. Overall, the evidence is conflicting and inconclusive (Alder & Cox, 1983; Alder & Bancroft, 1988; Chaudron et al, 2001) suggesting the relationship between feeding method and postpartum mental health difficulties is likely a complex interaction of numerous mechanisms.

With regards to bottle-feeding, the qualitative literature highlights that mothers can experience a range of negative emotions (Lee, 2007; Mozingo, Davis & Droppleman, 2000). However, bottle-feeding can also ease the transition to motherhood, allow mother's time for themselves and provide shared responsibility of the considerable demands of a newborn infant (Earle, 2000). Therefore, bottle-feeding may promote greater control and balance in the mother's life allowing the increased energy required for the experience of (hypo)mania.

All three sub-scales of the HIQ scale were significantly correlated with the Highs scale, and two sub-scales (HIQ-H, HIQ-Experience) were correlated with the ARMS.

However, hypothesis one which predicted that positive self-dispositional styles (HIQ-H) would predict increases in hypomania scores and normalising external appraisal styles (HIQ-NE) would not, was not supported when controlling for other psychological processes. Greater HIQ-NE was found to significantly contribute to the final regression model for the Highs scale. However, in line with the prediction, greater hypomania-relevant experience (HIQ-Experience) contributed to increased scores of (hypo)mania on both scales. Previous studies have also found an association between HIQ-Experience and (hypo)mania. However, contrary to the present study, they have also found HIQ-H to be associated with (hypo)mania (Ankers & Jones, 2009; Jones et al, 2006; Jones & Day, 2008).

Given that all three sub-components of the HIQ scale significantly correlated with increases in scores of (hypo)mania, it would suggest that new mothers are utilising a range of appraisal styles in response to HIQ-Experiences. Within the BD literature, theoretical models exist which place emphasis on both positive and negative appraisal styles. The Integrative Cognitive Model (ICM; Mansell et al, 2007) proposes that conflicting positive and negative appraisals of the same internal state contribute to mood dysregulation. In a general population study, Jones and Day (2008), investigated the relationships between negative and positive appraisal styles and (hypo)mania. When controlling for subsyndromal symptoms only positive, and not negative, appraisal styles, contributed to (hypo)mania. However, participants in this study were university staff and students; therefore, further research may be required to establish how these factors interact within the postpartum population or whether alternative appraisal styles not captured by these measures are being utilised.

Hypothesis two, which predicted that both positive rumination and dampening rumination strategies would significantly predict increases in (hypo)mania, was supported by the findings. The ARMS correlated with RPA-SF, and both scales correlated with RPA-EF and RPA-Dampening. However, only RPA-EF and RPA-Dampening significantly

contributed to the final models for the Highs. This finding is consistent with previous research which has demonstrated that those who are vulnerable to (hypo)mania use both emotion-focused rumination (Feldman et al, 2008) and strategies to dampen positive emotion (Feldman et al, 2008; Johnson & Jones, 2009).

The finding that those with increased scores of (hypo)mania utilise strategies that would appear counterintuitive (positive and negative) has been demonstrated in research considering the general population, student samples and those with BD (Feldman et al, 2008; Johnson, Gruber & Eisner, 2007; Gruber et al, 2011; Johnson et al, 2008; Thomas et al, 2007). In line with the ICM, the use of both amplifying or dampening strategies depend on extreme appraisals (positive and/or negative) of one's internal or external state; these strategies can be simultaneous and conflicting in their direction (Mansell et al, 2007). Therefore, a fuller understanding of appraisal styles may increase our understanding of how rumination styles contribute to (hypo)mania. Interestingly, those who met the threshold for (hypo)mania scored significantly higher on RPA-EF and RPA-SF. Therefore, it may be that these factors differentiate those who are experiencing *normal* fluctuations in mood from those experiencing more severe levels of (hypo)mania.

Hypothesis three, which predicted that greater BAS sensitivity and lower BIS sensitivity would predict increases (hypo)mania scores was not supported. No factor significantly influenced the final models for either scale. This is inconsistent with previous studies demonstrating that BAS Reward Responsiveness (Alloy et al, 2008), BAS Fun seeking (Jones & Day, 2008; Meyer, Johnson & Carver, 1999) and BAS Drive (Jones et al, 2007; Meyer et al, 1999) increase the risk of (hypo)mania.

Several researchers have documented changes to self-concept following childbirth including changing priorities and motivational drives (Ladores & Aroian, 2015; Seibold, 2004; Keating-Lefler & Wilson, 2004). Within the qualitative literature, women describe

experiencing intense feelings of vulnerability to physical harm and a need to protect their child during and after pregnancy (Darvil et al, 2010). Furthermore, new mothers have described a loss of sense of self, self-confidence and self-esteem; whereby their focus and sense of responsibility is redirected towards their child (Barclay et al, 2008; McBridge & Shore, 2001). Differences found in this study compared to previous research may be due to changes in motivational drives associated with this period in a woman's life.

Hypothesis four predicted that poorer sleep quality would predict increases in (hypo)mania scores. This was not supported, with greater sleep quality being associated with increasing scores of (hypo)mania as measured by the ARMS. However, this association did not remain when age and income were held constant. Outside of the postpartum population, research has demonstrated that sleep loss is an antecedent to (hypo)mania (Levenson et al, 2013.). A small number of studies have considered sleep in the postpartum; however, the findings have been contradictory (Bilszta et al, 2010; Lewis et al, 2018; Strouse et al, 1992). Future research is required to establish the role of sleep, and the potential factors which may interact with sleep quality, to increase a woman's vulnerability to (hypo)mania in the postpartum.

No previous research has been conducted investigating the relationship between birth experience and (hypo)mania. The present study found that less fear and anxiety during childbirth were correlated with increasing scores of (hypo)mania on the ARMS; however, it was not a significant contributor to the final model. Obstetrical emergencies (Olde et al, 2006, Slade, 2006), delivery (Alcorn et al, 2010; Sorenson & Tschetter, 2010), and infant complications (Holdotch-Davis et al, 2009) have been found to increase a woman's risk of post-traumatic stress following childbirth. All of these factors are more likely to occur in women aged over forty (Aldous, & Edmonson, 1993; Cavazoz-Rehg et al, 2015).

Participants in this study were predominantly below this age; therefore, these findings may reflect a lack of diversity within the sample.

Limitations

The majority of women were white, over 30 years of age, in a relationship, and had a high level of educational attainment and household income. Therefore, the results may not apply to individuals from different ethnic, cultural or socio-economic backgrounds.

The measures used to assess symptoms of (hypo)mania have not been validated for use in the postpartum population. Both measures found different factors influenced higher scores, raising the question as to whether they are accurately measuring (hypo)mania in this population. Therefore, the results need to be interpreted with caution.

As this was an exploratory study, no control measures such as depression or anxiety were used. These factors can confound the results of certain measures. For example, lower sleep quality scores may be a result of low mood.

Whilst participants were asked to recall (hypo)manic experiences within the first two months following childbirth, measures of cognitive appraisal styles, rumination strategies and BIS/BAS sensitivity were not allocated to this time-frame. The HIQ asks individuals if they have experienced the hypomania-relevant experiences in the previous three months. Therefore, we cannot be sure whether increases in HIQ-Experience are related to the period prior to, or after, giving birth.

Whilst a priori power analysis was conducted this was based on detecting a medium effect size and accounted for six predictor variables. The hierarchical regression controlled for additional demographic and obstetrical variables; reducing the number of participants per variable to twelve. Harris (1985) suggests that a minimum of ten participants per variable is acceptable. However, this may not be enough to detect a small effect (Cohen & Cohen,

1975; Harris, 1985). A larger sample size may have produced greater power to detect associations.

Clinical Implications

This study has highlighted that some women experience (hypo)mania in the postpartum period. It is important that health care professionals maintain an awareness of these experiences, ensuring potential mental health difficulties are recognised as early as possible.

In particular, these findings may be relevant to midwives who have regular contact with mothers and their families during pregnancy and the postpartum period. Midwives play an essential role in promoting and enhancing the physical, emotional and psychological wellbeing of both mother and infant, alongside identifying mothers who are at risk of mental health difficulties, ensuring they are receiving the appropriate support they require within a timely manner (Nursing and Midwifery Council, 2011; Maternal Mental Health Alliance, NSPCC and Royal College of Midwives, 2013). Midwives may be best placed to recognise when women are at risk of (hypo)mania, provide emotional support and practical advice and, when required, refer those who may need additional support.

Feeding method, lower income, greater normalising appraisal styles, hypomania-relevant experiences, dampening, and emotion-focused rumination strategies have been found to contribute to these experiences. These factors may support professionals in identifying those most vulnerable.

Future research

This study did not explore the role of negative cognitive appraisal styles or descending behaviours. Future research should consider the potential for negative and positive appraisal styles, alongside the potential for both ascending and descending behaviours in the risk for experiencing (hypo)mania.

Overall, the regression models for both scales explained a limited amount of variance in scores. Research should consider a wider range of predictors which may influence a mother's mental health; for example, interpersonal factors, adjustment to motherhood, or identity and role changes. Qualitative research, focusing on new mothers' experiences, may provide additional insight into these experiences and the factors involved in their development.

Research is required to establish validated tools for measuring hypomania in the postpartum population given the differences found between measures of (hypo)mania and the lack of internal consistency of the scales.

At present, we cannot know whether experiencing (hypo)mania in the postpartum is detrimental to new mothers or their infant. There is a need for longitudinal studies that sequentially test predictors to validate the findings of this study. Future studies should also aim to prospectively recruit to gain more representative cohorts.

Conclusion

Ten participants (6.9%) met the threshold for (hypo)mania as defined by the Highs scale (Glover et al, 1994) and 40 (27.6%) as defined by the Altman Self-rating Mania Scale (ARMS; Altman et al, 1997). Feeding method, greater normalising appraisal styles, hypomania-relevant experiences, dampening, and emotion-focused rumination strategies contributed to higher scores on the Highs scale. Lower income and greater hypomania-relevant experiences predicted higher scores on the ARMS. Future research is required to establish the role of negative and positive appraisal styles, and how these interact with positive and negative cognitive and behavioural strategies. Additionally, given the limited variance accounted for by the regression models, additional factors should be investigated for this population. The lack of internal consistency in the Highs scale and the ARMS suggests

that validated measures for the postpartum population are required. Therefore, the results should be interpreted with caution.

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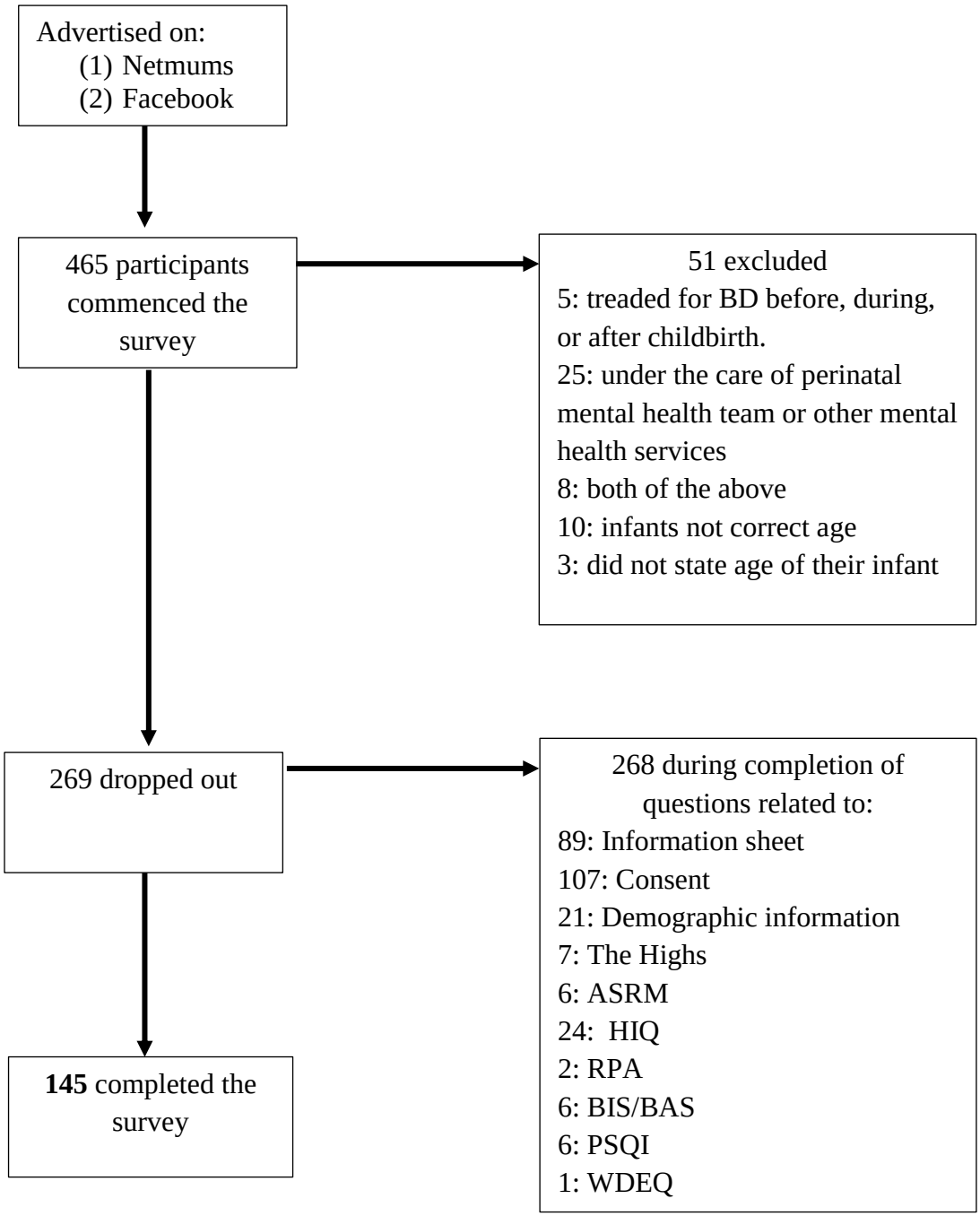

Figure 1: Participant Recruitment Flowchart.

Table 1: Participant characterises

	Range	**Mean (SD)**
Age (years) [1]	19 – 43	31.04 (4.252)
Childs Age (months)	2 – 9	4.70 (2.105)
	Total *N* (%)	**%**
Marital Status		
Single	39	26.9
Married (Living together)	99	68.3
Civil partnership	6	4.1
Married (separated)	1	.7
Cohabitating [2]		
Yes	137	94.5
No	7	4.8
Ethnicity		
White	136	93.8
Asian	3	2.1
Black African	1	.7
Arab	1	,7
Mixed/Multiple	4	2.8
Educational Attainment		
No Qualifications	1	.7
GSCEs	8	5.5
A Levels	14	9.7
Vocational	8	5.5
Graduate	49	33.8
Postgraduate	65	44.8
Employment (pre-pregnancy)		
Paid, Full time	121	83.4
Paid Part time	11	7.6
Self-employed	8	5.5
Unemployed	1	.7
Student	1	.7
Homemaker	2	1.4
Unable to work	1	**.7**
Income [3]		
£6,000 to £13,000	4	2.8
£13,000 to £19,000	7	4.8
£19,000 to £26,000	15	10.4
£26,000 to £32,000	16	11.0
£32,000 to £48,000	27	18.6
£48,000 to £64,000	37	25.5
£64,000 and above	38	26.2
Number of babies delivered		
Single	143	98.6
Multiple	2	1.4
Delivery Method		
Normal	63	43.4
Assisted	39	26.9
C-Section	43	29.7
Feeding Method		
Breastfed	62	42.8
Bottle-fed	20	13.8
Both	63	43.4

[1] $N = 142$

[2] $N = 144$

[3] $N = 143$

Table 2: Descriptive Statistics

Variable	**Mean (SD)**	**Range (possible range)**
The Highs	4.03 (2.432)	0-14 (0-14)
ARMS	4.24 (2.909)	0-14 (0-20)
HIQ		
HIQ-NE	24.42 (5.246)	11-40 (10-40)
HIQ-H	15.75 (4.630)	10-31 (10-40)
HIQ- Experience	4.67 (2.968)	0-10 (0-10)
BIS/BAS		
BIS	22.92 (3.596)	11-28(7-28)
BAS Reward	16.52 (2.536)	8-20 (5-20)
BAS Drive	9.86 (2.894)	4-16 (4-16)
BAS Fun	9.39 (2.662)	4 – 16 (4-16)
RPA		
Emotion-Focused	11.59 (2.428)	6-19 (5 – 25)
Dampening	16.14 (4.644)	8-30 (8 – 32)
Self-Focused	7.52 (2.571)	19-30 (4 – 20)
WDEQ	68.34 (29.265)	14 -139 (0 – 165)
PSQI	9.72 (3.042)	3- 17 (0-21)
	Frequency	**Percentage (%)**
The Highs		
*Above threshold (≥8)	10	6.9
Below threshold (<8)	135	93.1
Altman		
Above threshold (≥6)	40	27.6
Below threshold (<6)	105	72.4

* Those who answered “No” to question 1 did not meet inclusion criteria.

Table 3: Intercorrelations with demographic and obstetrical

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 HIGHS													
2 ARMS	.605**												
3 AGE	-.302**	-.186*											
4 CHILDS AGE	-0.078	-0.042	0.055										
5 NUMBER	-0.141	-0.123	0.076	.185*									
6 DELIVERY	-0.105	-0.088	.244**	0.063	0.092								
7 FEEDING	.223**	0.139	-0.102	0.029	-0.065	0.046							
8 ETHNICITY	0.129	0.032	-0.162	0.022	-0.030	-0.001	.212*						
9 MARITAL	0.062	0.010	0.096	0.035	0.056	0.129	.252**	0.121					
10 COHABILITATING [1]	0.049	0.157	-0.084	0.080	-0.027	-0.079	-0.039	0.080	-0.039				
11 EDUCATION	-0.135	-0.126	.211*	-0.026	0.035	0.064	-0.058	0.056	0.136	-.211*			
12 EMPLOYMENT	0.018	-0.040	-0.004	-0.089	-0.052	-0.015	0.032	-0.032	-0.085	0.078	-0.091		
13 INCOME	-0.095	-.197*	.376**	-0.011	0.100	-0.072	0.039	-0.057	.172*	-.168*	.283**	-.229**	

N = 142

[1]*N* = 141

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4: Intercorrelations with psychological variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 HIGHS														
2 ARMS	.605**													
3 HIQ NE	.273**	0.093												
4 HIQ-EXPERIENCE	.567**	.484**	.318**											
5 HIQ H	.193*	.175*	.317**	.204*										
6 RPA-EF	.303**	.333**	0.075	.302**	.261**									
7 RPA-DAMPENING	.324**	.178*	0.160	.227**	0.031	-0.010								
8 RPA-SF	0.138	.202*	.171*	0.138	.318**	.364**	-0.160							
9 BIS	.261**	0.077	.225**	.211*	0.029	0.024	.425**	-0.132						
BAS REWARD	.205*	.222**	0.129	0.163	.225**	.262**	-0.037	.216**	.228**					
10 RESONSIVENESS														
11 BAS DRIVE	0.160	0.021	0.160	.200*	0.126	.204*	0.064	0.048	0.145	.400**				
12 BAS FUN	0.142	0.059	0.044	0.158	0.157	.189*	-0.058	0.008	0.009	.230**	.424**			
13 PSQI [1]	0.008	-.196*	0.145	0.136	-0.097	-.182*	.184*	-.266**	.203*	-0.051	0.019	0.082		
14 WDQI	-0.129	-.182*	-0.015	-0.025	-.170*	-0.129	0.136	-0.114	0.109	-0.078	0.124	-0.063	.326**	

N = 142

[1] *N* = 131

**. Correlation is significant at the 0.01 level (2-

*. Correlation is significant at the 0.05 level (2-

Table 5: The Highs Scale Mann-Whitney U Test Results

	Mean Rank		***U***
	Above Threshold	**Below Threshold**	
HIQ-NE	92.10	71.59	484.00
HIQ-H	75.15	72.84	653.50
HIQ-Experience	106.20	69.99	333.00**
RPA-EF	104.10	70.70	364.00*
RPA-SF	75.90	72.25	636.00
RPA-Dampening	101.10	70.92	394.00*
BIS	81.05	72.40	594.50
BAS Reward Responsiveness	74.55	72.89	659.50
BAS Drive	59.60	73.99	541.00
BAS Fun	54.05	74.40	485.50
PSQI	57.28	68.24	470.50
WDEQ	52.85	74.49	473.50

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

Table 6: The ARMS Scale Mann-Whitney U Test Results

	Mean Rank		***U***
	Above Threshold	**Below Threshold**	
HIQ-NE	77.58	71.26	1917.00
HIQ-H	80.89	70.00	1784.50
HIQ-Experience	99.44	62.14	1002.50**
RPA-EF	91.14	66.09	1374.50**
RPA-SF	86.60	67.26	1497.50*
RPA-Dampening	83.94	68.83	1662.50
BIS	78.06	71.07	1897.50
BAS Reward Responsiveness	90.95	66.16	1382.00**
BAS Drive	73.43	72.84	2083.00
BAS Fun	76.18	71.79	1973.00
PSQI	58.81	70.81	1473.00
WDEQ	62.20	77.11	1668.00*

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

Table 7: The Highs Scale Multiple Regression Results

					BCa 95% CI's	
	b	***SE b***	**Bootstrap *SE b***	***β***	**Lower**	**Upper**
Constant	-3.514	1.640	-3.514		-6.604	-0.393
HIQ-NE	0.050	0.034	0.050	0.109	0.000	0.098
HIQ-EXPERIENCE	0.333	0.061	0.333	0.407**	0.217	0.446
HIQ-H	0.009	0.038	0.009	0.018	-0.058	0.074
RPA-EF	0.220	0.072	0.220	0.220*	0.064	0.358
RPA-DAMPENING	0.100	0.038	0.100	0.191*	0.022	0.173
BIS	0.031	0.051	0.031	0.046	-0.057	0.118
BAS REWARD RESPONSIVENESS	-0.016	0.068	-0.016	-0.016	-0.207	0.217

N = 141
Note: R^2 = 0.402 *(p* <.000) **p* <.05, ***p* <.001

Table 8: The Highs Scale Hierarchical Regression Results

					BCa 95% CI's	
	b	***SE b***	**Bootstrap *SE b***	***β***	**Lower**	**Upper**
Step 1						
Constant	9.559	1.448	1.766		6.160	13.010
Age	-0.178	0.046	0.055	-0.310***	-0.290	-0.068
Step 2						
Constant	9.583	1.472	1.805		5.894	13.304
Age	-0.161	0.046	0.054	-0.281**	-0.267	-0.057
Breastfed	-1.184	0.603	0.735	-0.245	-2.694	0.163
Breastfed and Bottle-fed	-0.066	0.601	0.740	-0.014	-1.559	1.185
Step 3						
Constant	0.162	1.997	2.173		-4.286	5.363
Age	-0.080	0.040	0.041	-0.139	-0.159	-0.008
Breastfed	-1.112	0.510	0.598	-0.230*	-2.395	-0.028
Breastfed and Bottle-fed	-0.463	0.510	0.634	-0.096	-1.783	0.639
HIQ-NE	0.068	0.033	0.026	0.149	0.022	0.112
HIQ-EXPERIENCE	0.300	0.061	0.065	0.372***	0.174	0.426
HIQ-H	0.019	0.037	0.036	0.038	-0.045	0.087
RPA-EF	0.160	0.070	0.085	0.162*	0.005	0.311
RPA-Dampening	0.075	0.037	0.036	0.146*	-0.001	0.143
BIS	0.028	0.051	0.047	0.041	-0.065	0.119
BAS Reward Responsiveness	-0.003	0.067	0.089	-0.004	-0.184	0.186

N = 129

Note: $R^2 = 0.096$ at Step 1: $\Delta R^2 = 0.054$ at Step 2 (*ps <.000).* $\Delta R^2 = 0.304$ at Step 3 (ps <.000).
*p <.05, **p <.01, ***p<.001.

Table 9: The ARMS Multiple Regression Results

					BCa 95% CI's	
	b	***SE b***	**Bootstrap *SE b***	***β***	**Lower**	**Upper**
Constant	-1.205	2.093	2.022		-5.349	2.471
HIQ-EXPERIENCE	0.402	0.078	0.089	0.419**	0.234	0.571
HIQ-H	-0.021	0.047	0.047	-0.035	-0.125	0.079
RAP-EF	0.175	0.094	0.093	0.151	-0.005	0.358
RPA-DAMPENING	0.077	0.047	0.053	0.129	-0.027	0.186
RPA-SF	0.053	0.095	0.096	0.047	-0.138	0.227
PSQI	-0.158	0.076	0.076	-0.172*	-0.298	-0.017
WDEQ	-0.010	0.008	0.007	-0.099	-0.024	0.004
BAS-REWARD RESPONSIVENESS	0.142	0.086	0.092	0.124	-0.030	0.348

N = 141

Note: R^2 = 0.336 (p <.000) **p* <.05, ***p* <.001.

Table 10: The ARMS Hierarchical Regression Results

					BCa 95% CI's	
	b	***SE b***	**Bootstrap *SE b***	***β***	**Lower**	**Upper**
Step 1						
Constant	8.169	1.822	1.633		5.160	11.486
Age	-0.097	0.063	1.633	-0.145	-0.217	0.018
Income	-0.251	0.165	0.144	-0.143	-0.535	0.011
Step 2						
Constant	-1.231	2.661	2.321		-6.028	3.343
Age	0.034	0.058	0.061	0.051	-0.074	0.162
Income	-0.353	0.149	0.157	-0.202 *	-0.686	-0.037
HIQ-EXPERIENCE	0.382	0.081	0.097	0.398 **	0.183	0.593
HIQ-H	-0.027	0.047	0.047	-0.046	-0.124	0.066
RPA-EF	0.180	0.095	0.093	0.156	0.016	0.355
RPA-Dampening	0.067	0.048	0.052	0.112	-0.042	0.162
RPA-SF	0.112	0.100	0.100	0.099	-0.069	0.293
BAS Reward Responsiveness	0.151	0.087	0.089	0.133	-0.002	0.321
PSQI	-0.137	0.077	0.078	-0.149	-0.273	-0.013
WDEQ	-0.011	0.008	0.007	-0.113	-0.024	0.003

N = 129

Note: $R^2 = 0.058$ at Step 1: $\Delta R^2 = 0.358$ at Step 2 (*ps <.000). *p <.05*, **p<.001

Appendix A

Archives of Women's Mental Health: Authors Guidelines

Essential information is provided below. Full guidelines are available at https://www.springer.com/medicine/psychiatry/journal/737

Types of papers

Original Contributions / Research Articles should be arranged into sections conforming to standard scientific reporting style, i.e. under the following headings:

Title Page

The title page should include:

- The name(s) of the author(s)
- A concise and informative title
- The affiliation(s) and address(es) of the author(s)
- The e-mail address, and telephone number(s) of the corresponding author
- If available, the 16-digit ORCID of the author(s)

Abstract:

Should not exceed 150–250 words and be structured as follows: Purpose, Methods, Results, Conclusions

Keywords:

Not more than five, separated by semicolons

Introduction:

A brief outline of the background literature leading to the objective(s) of the study.

Materials and Methods:

Describe the basic study design. State the setting (e.g., primary care, referral center). Explain selection of study subjects and state the system of diagnostic criteria used. Describe any interventions and include their duration and method of administration. Indicate the main outcome measure(s). Specify the dates in which data were collected (month/year to month/year).

Results:

Include the key findings. Give specific data and their statistical significance, if possible. Subset Ns should accompany percentages if the total N is ‹100.

Discussion and Conclusions:

Discuss your findings critically in comparison to existing literature and considering your methodological and other limitations.

Conclusions should highlight the potential meaning for the field given the limitations.

Text Formatting:

Manuscripts should be submitted in Word.

- Use a normal, plain font (e.g., 10-point Times Roman) for text.
- Use italics for emphasis.
- Use the automatic page numbering function to number the pages.
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the table function, not spreadsheets, to make tables.
- Use the equation editor or MathType for equations.
- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Headings:

Please use no more than three levels of displayed headings.

Abbreviations:

Abbreviations should be defined at first mention and used consistently thereafter

Footnotes:

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

Acknowledgments:

Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be written in full.

Important note:

Authors are requested to use **automatic continuous line numbering** throughout the manuscript and in double space.

References:

Citation:

Cite references in the text by name and year in parentheses. Some examples:

- Negotiation research spans many disciplines (Thompson 1990).
- This result was later contradicted by Becker and Seligman (1996).
- This effect has been widely studied (Abbott 1991; Barakat et al. 1995a, b; Kelso and Smith 1998; Medvec et al. 1999, 2000).

Reference list:

The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list.

Reference list entries should be alphabetized by the last names of the first author of each work. Order multi-author publications of the same first author alphabetically with respect to second, third, etc. author. Publications of exactly the same author(s) must be ordered chronologically.

Journal article:

Gamelin FX, Baquet G, Berthoin S, Thevenet D, Nourry C, Nottin S, Bosquet L (2009) Effect of high intensity intermittent training on heart rate variability in prepubescent children. Eur J Appl Physiol 105:731-738. https://doi.org/10.1007/s00421-008-0955-8

Ideally, the names of all authors should be provided, but the usage of “et al” in long author lists will also be accepted:

Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. N Engl J Med 965:325–329

Article by DOI:

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med. https://doi.org/10.1007/s001090000086

Book:

- South J, Blass B (2001) The future of modern genomics. Blackwell, London
- Book chapter:

- Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York, pp 230-257
- Online document:
- Cartwright J (2007) Big stars have weather too. IOP Publishing PhysicsWeb. http://physicsweb.org/articles/news/11/6/16/1. Accessed 26 June 2007
- Dissertation:
- Trent JW (1975) Experimental acute renal failure. Dissertation, University of California

Always use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations, see

Tables:

All tables are to be numbered using Arabic numerals. Tables should always be cited in text in consecutive numerical order. For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption. Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Appendix B

Demographic Information Questions

What is your date of birth?

What is the date of birth of your baby(ies)?

Did you have single (one baby) or multiple births (i.e twins or triplets)

- o Single
- o Multiple

How was your baby(ies) born?

- o Normal vaginal delivery
- o Assisted delivery (e.g. Kiwi, Forceps or Ventouse)
- o Caesarean section

Since your baby has been born have you:

- o Breastfed
- o Bottlefed
- o Both

What is your ethnic group?

White

- o English/Welsh/Scottish/Northern Irish/British/
- o Irish
- o Gypsy or Irish traveller

Any other White background, please describe

Mixed / Multiple ethnic groups

- o White and Black Caribbean
- o White and Black African
- o White and Asian

Any other Mixed / Multiple ethnic background, please describe

Asian / Asian British

- o Indian
- o Pakistani
- o Bangladeshi
- o Chinese

Any other Asian background, please describe	
Black / African / Caribbean / Black British	o African o Caribbean
Any other Black / African / Caribbean background, please describe	
Other ethnic group	o Arab
Any other ethnic group, please describe	

Are you currently…	
	o Single, that is never married o Married and living with your husband/wife o A civil partner in a legally recognised Civil Partnership o Married and separated from your husband/wife o Divorced o Widowed
May I just check, are you living with someone in this household as a couple?	o Yes o No

What is your education level? (Please select the highest qualification you have)	
	o No qualifications o GCSE's (or equivalent) o A Levels (or equivalent) o Vocational qualifications o Graduate o Post Graduate

What was your pre-pregnancy employment status?	
	o Paid full-time employment o Paid part-time employment o Self-employed o Unemployed

	○ Voluntary work ○ Student ○ Homemaker ○ Unable to work due to sickness/disability
Please tell us the total annual income of your household (before tax deductions but including benefits/allowances):	
	○ £6,000 to £13,000 GBP ○ £13,000 to £19,000 GBP ○ £19,000 to £26,000 GBP ○ £26,000 to £32,000 GBP ○ £32,000 to £48,000 GBP ○ £48,000 to £64,000 GBP ○ £ 64,000 or more GBP

Appendix C

Full Cronbach's Alpha analysis

Cronbach's alpha was used to estimate the internal consistency of the items on each scale. An alpha level between .65 and .80 is widely accepted to be adequate (Vaske, Beaman & Sponarski, 2017).

The Highs α = *.542;* indicating that the scale's internal consistency may not be acceptable. Most items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. The one exception was question 6, which would increase alpha to α = .571. All items correlated well with the total scale, except question 5 (r = .180) and 6 (r = .122).

The Altman α = .535; indicating that the scale may not be acceptable. Only one item appeared not to be worth retention; question 3, which would increase the alpha to α = .570. Question three appeared not to correlate well with the scale (r = .166).

All subscales on the HIQ had acceptable levels of alpha. The HIQ-NE α = .768. Most items appeared to be worth or retention, resulting in a decrease in the alpha if deleted. The one exception was item 9(b)which would increase the alpha to α = .788. Only item 9(b) did not correlate well with the scale (r = .145). The HIQ-H α = .816. Only item 10(b) would increase alpha if deleted α = .834. only this question did not correlate well with the scale (r = .181). The HIQ-Experience subscale α = .811. Only item 10(b) would minimally increase the alpha if deleted α = .813. Only item 10(c) did not correlate well with the scale (r = .293).

All sub-scales on the RPA were acceptable. RPA-EF α = .639. All items appeared to be worth or retention, resulting in a decrease in the alpha if deleted. The only exception was question 5 which would increase marginally increase the alpha if deleted α = .670. Only one item, question 5, appeared to not correlate with the sub-scale (r = .224). RPA-Dampening α = .812. All items appeared to be worth or retention, resulting in a decrease in the alpha if deleted. All items appeared to correlate well with the scale. RPA-SF α = .814. All items

appeared to be worth or retention, resulting in a decrease in the alpha if deleted. All items appeared to correlate well with the scale.

All items on the BIS/BAS scale appeared acceptable. The BIS subscale α = .771. All items appeared to be worth or retention, resulting in a decrease in the alpha if deleted. All items correlated well with the scale being above r = .341. The BAS reward subscale α = .771. all items were worth retention, decreasing the alpha if deleted. All items correlated well with the scale being above r = .499. BAS Drive scale α = .886. All items were worth retention; lowering the alpha if deleted. All items correlated well with the scale being above r = .682. The BAS Fun subscale α = .785. Only one item, "I often act on the spur of the moment", would increase the alpha minimally if deleted (α = .799). All items correlated well with the scale being above r = .486.

The WDEQ was acceptable α = .940. Only question 21 would increase the alpha minimally if deleted (α= .943), question 24 (α = .942), questions 26, 27 and 28 (α = .941). Item 21 (r = .032), q24 (r = .211), q28 (r = .267) did not correlate well with the scale.

The PSQI was α = .612. indicated that it may not be acceptable. Removing habitual sleep efficiency (α =.620) and use of sleeping medication (α=.630) would increase the alpha. Sleep latency (r =.294), habitual sleep efficiency (r = .245) and use of sleeping medication (r = .048) did not correlate well with the scale.

Doctorate in Clinical Psychology | Lancaster University

SECTION THREE

CRITICAL APPRAISAL

Catrina Stansfield

Doctorate in Clinical Psychology

Division of Health Research, Lancaster University

Word Count: 3, 315

(Excluding tables, figures, reference lists and appendices)

In this critical appraisal, I will provide an overview of the research process with an initial summary of the main findings from both the systematic literature review and the empirical paper. I will then discuss some of the limitations of this research, including the instruments used to measure (hypo)mania in the postpartum and the recruitment process. Finally, I will discuss the process of conducting research as a clinical psychologist whist working within a diagnostic framework and the difficulties of balancing the danger of pathologising mothers' emotional responses during this period of transition with increasing our understanding of psychological difficulties in the postpartum.

Summary of Systematic Literature Review

The systematic literature review aimed to review the psychosocial factors which may influence whether a woman experiences severe postpartum mental health difficulties, including psychotic symptoms and bipolar episodes. The review was conducted on the 15th of April 2018 across five databases: PsychInfo, Pubmed, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Academic Search Ultimate. 11, 374 articles were screened, of which 15 met the inclusion criteria. Of the studies which have considered psychosocial factors, the varying methods utilised and the small sample sizes suggested that the results should be interpreted cautiously. Only women's experiences of mental health difficulties prior to, and during, pregnancy demonstrated a consistent association across all studies which considered this. There was very limited, and predominantly contradictory, evidence to form a conclusion of contribution of socio-demographic, birth experience, interpersonal, social and personality factors, alongside life events on women's experience of severe postpartum mental health difficulties. The findings suggested that future research which takes a theory-driven approach is required to examine the interactions and relationships between factors and to develop our understanding of how these factors make some mothers more vulnerable than others.

Summary of Empirical Paper

The empirical paper aimed to determine the relationship between sub-clinical symptoms of mania and cognitive appraisal styles, rumination strategies, Behavioural Activation System (BAS) sensitivity, sleep deprivation and birth experience. One hundred and forty-five first-time mothers with a child aged between two and nine months were recruited through Netmums and Facebook. Participants took part in an online survey administered via RedCap. Demographic and obstetric information was collected alongside symptoms of (hypo)mania, cognitive appraisal styles, rumination strategies, Behavioural Approach System (BAS) sensitivity, sleep quality and birth experience.

The findings demonstrated that ten participants (6.9%) met the threshold for (hypo)mania as defined by the Highs scale (Glover et al, 1994) and 40 (27.6%) met the threshold as defined by the Altman Self-rating Mania Scale (ARMS; Altman et al, 1997). Younger age, feeding method, more frequent normalising appraisal styles, hypomania-relevant experiences, dampening, and emotion-focused rumination styles were predictors of higher scores on the Highs scale. Greater hypomania-relevant experiences and lower income predicted increases in (hypo)mania score for the ARMS. The paper concluded that the experience of sub-clinical symptoms of mania in the post-partum is likely to be the result of several complex and interacting factors. Future research is required to establish the role of negative and positive appraisal styles, and how these interact with different cognitive and behavioural strategies. The differences in those meeting the threshold for (hypo)mania and factors significantly contributing to the models for each (hypo)mania scale suggests that validated measures for the postpartum population are required. This was also demonstrated by a lack of internal consistency in the Highs scale and the ARMS.

Inclusion Criteria

The empirical paper excluded participants who (1) had a diagnosis of Bipolar Disorder, or (2) were under the care of perinatal mental health teams or other mental health services. These exclusion criteria were chosen based on evidence that those with a history of Bipolar Disorder are at high risk of experiencing a relapse episode (Di Florio et al, 2013; Munk-Olsen et al, 2009), or any mood 'episode' including Postpartum Psychosis or Postpartum Depression (Jones & Craddock, 2001; Munk-Olsen et al., 2007).

The aim of this study was to understand the factors which may place a first-time mother at risk of experiencing (hypo)mania in the general population. Arguably, by including individuals with prior experiences of BD, and therefore (hypo)mania, it increases the risk that we are not investigating the relationship between childbirth, and the transition to motherhood, and (hypo)mania; but rather investigating risk factors or experiences that may be relating to women's vulnerability to experience (hypo)mania more generally. It may be beneficial for future research to consider investigating whether there are different factors associated with (hypo)mania in the postpartum between those who have a diagnosis and those who do not. This may further increase our understanding of the mechanisms underlying the relationship between (hypo)mania and childbirth; alongside, factors which may promote more severe forms of (hypo)mania.

The systematic literature review did not have this exclusion criteria, including women with both first onset and pre-existing diagnosis. An initial scoping exercise highlighted that very limited research had been conducted considering psychosocial factors. All initially identified articles had not screened for, or excluded, those with a historical diagnosis or other mental health difficulties. As such, the decision was made to broaden the inclusion criteria to ensure that all psychosocial factors were captured by the review. This would allow for

discussion around what research had been done to date and pertinent areas requiring future investigation.

Recruitment and Participants

An online survey has the potential to target a large sample of participants both nationally and internationally (Gosling & Mason, 2015). Regardless, some have argued that online samples often lack diversity, as such, findings may not be representative of the general population; with individuals from ethnic minority and lower socioeconomic backgrounds have been found to be underrepresented in online research (Van Dijk & Hacker, 2013). The majority of participants within this empirical paper were white, over 30 years of age, had graduate or above educational attainment, were married or in a civil partnership, were in full-time employment, and had higher rates of household income. Consequently, the results may not be generalisable to individuals from different ethnic and cultural backgrounds and of lower socioeconomic status.

Given the lack of diversity in the study, it may have been useful to offer alternative methods to participants. For example, offering the survey in paper copy with a free return envelope may have increased accessibility for those with no access to a computer or internet. Whilst the researcher actively sought to advertise to new mothers' groups and parents' groups on Facebook, many of these would not allow research to be advertised. Broadening the recruitment to include local and national organisations, charities, parenting groups and health services and council services, may have been beneficial and widened access to the survey and may have contributed to gaining a more diverse and representative sample.

Rates of participants dropping-out of the research is also higher with online research (Coulson, 2015). This study had a considerable number of participants leave the survey before completing it in its entirety. Two hundred and sixty-eight eligible participants did not complete the data set. There are several potential reasons for this. First, it may be that caring

for a child meant that additional demands interrupted participation. Therefore, there is potential that these participants retuned and completed the survey at a later point in time. Secondly, the length of the participant information sheet and the several measures included in the study may have potentially caused some people to leave the survey. The greatest number of participants came following the research being advertised on the National Child's Trust Facebook page. The research was usually advertised with a picture which clearly outlined the inclusion criteria. However, on the NCT site it was advertised by the research department with a statement outlining an overview of the study. Therefore, it may be that several people were not clearly aware of the inclusion criteria until entering the survey. This may also explain why ten people entered the study with children who were outside of the two to nine-month inclusion criteria.

Measures

(Hypo)mania is a challenging concept to measure, blurring into '*normal*' at one end of the spectrum and mania, often accompanied with psychosis, at the other (Heron et al, 2011). The postpartum period presents additional challenges given that women experience substantial social, psychological, and physical changes which understandably produces a range of different emotions and responses (Ria, Pathak & Sharma, 2015). One of the largest weaknesses for the empirical study was the lack of validated measures for the postpartum population.

The Highs scale (Glover et al, 1994) is the only measure which has been developed for the postpartum population. Glover et al (1994) state that the scale has been validated against a clinician rated diagnosis of mild mania on the Comprehensive Psychopathological Rating Scale. However, this was only in a group of 16 women. This is arguably not a large enough sample size to validate a measure. Whilst sample size for validation studies is based

on the statistical procedure being employed, a general rule of thumb is 5 to 10 participants per item on the scale (Gorsuch, 1983).

The Highs scale was also adapted from the mania section of the DSM-III-R (APA, 1987). Since this publication, there have been several revisions to the DSM, with the current version being DSM-5 (APA, 2013). In general, the definition of 'mania' has remained the same and includes elevated mood, grandiosity, more talkative than normal, racing thoughts, increased in goal-directed activity, increased risky behaviours, and decreased need for sleep. Hypomania has been defined by the same experiences; however, these are less severe than those found with mania. The most recent DSM publication has seen some important changes which impact what we define as an 'episode' of mania or hypomania.

The DSM-5 has shifted from purely categorical to a more dimensional approach acknowledging subthreshold syndromes, for example, "short-duration hypomanic episodes (2-3 days)". Additionally, whilst in the past only a distinct period of elevated mood was required for diagnosis, now differences in mood need to be combined with increased goal-directed activity and energy. As such, many individuals who would have met the criteria for (hypo)mania as defined by the DSM-III-R may now be allocated a 'subthreshold' diagnosis. Therefore, arguably the Highs scale is potentially not compatible with the current diagnostic criteria. However, the scale may still be in-line with the ICD-10 (World Health Organisation, 1992) criteria, which does not require the presence of both increased mood and activity and may be in line with the Highs scale criteria.

The Altman Self-Rating Mania Scale (Altman et al, 1997) has been more stringently validated against both the Clinical Administered Rating scale for mania (CARS-M) and the Young Mania Rating Scale (YMRS). Whilst based on the DSM-IV (APA, 1994) it has been recommended by the DSM-5 as a self-report tool for measuring the severity of mania (APA, 2013). However, the ARMS has not been validated for use in the postpartum population.

The empirical study found that the internal consistency of both instruments was low: The alpha coefficient was $\alpha = .542$ for the Highs scale and was $\alpha = .535$ for the ARMS. Therefore, this would suggest that the different measures are not necessarily measuring the same concept, or the concept of (hypo)mania. The fact that both scales yielded vastly different numbers of participants reaching the threshold for (hypo)mania, different factors correlated with increasing scores on these scales, alongside, different factors contributing to the final regression models would suggest that at least one, if not both, of these measures lack validity and/or reliability for the postpartum population. As such, we cannot be sure that we are capturing (hypo)mania in the postpartum, or if we are measuring some other construct.

A Diagnostic Framework

My reason for undertaking research in this field was related firstly to my limited experience in this area and an interest in increasing my knowledge in this field. Secondly, I was interested in developing my experience in using quantitative methods, as I had predominantly only conducted research using qualitative methods.

Since starting this thesis, I have undergone considerable changes in my views of diagnosis, my role as a trainee clinical psychologist, and the way I practice. I always held an awareness of the 'flaws' of diagnosis, for example, being defined almost arbitrarily by committee members and lacking validity and evidence base to justify them (Kirk & Kutchins, 1992) and practised in a formulation led and person-centred way. However, until half way through my training my only experience with the medical model was with regards to medication, and the culture of viewing medicine as the preferred and 'best' treatment for mental health difficulties. Many service users described feeling unsupported in withdrawing from medication they felt was unhelpful, often being told that it would be required for life like insulin for diabetes. Additionally, an assessment for medication was offered routinely, above and with little acknowledgment of, the essential need to receive psychological support

to address the underlying reasons as to why an individual may have experienced these difficulties. As such, many of the negative aspects of a medically dominated model had largely sat outside of my one-to-one work with service users. Therefore, whilst not agreeing with the principles of diagnosis, I tended to hold the view that whilst problematic, and not ideal, diagnosis provided a shared vocabulary for different professions (Cromby, Harper & Reavey, 2007) and opened access to services and benefits that without a diagnosis, service users could not gain.

Over my last year and a half of training, I have worked within two forensic, secure inpatient services. Through working in my forensic placements, I have seen the power that a medically dominated, and diagnostically orientated, model hold over service users and their lives. Through this model, individuals can become defined by their diagnosis; whereby all expression of emotion is a 'symptom' of an individual's diagnosis, resulting in unnecessary use, or changes to, medication. It does not contextualise individuals' difficulties or behaviours. Consequently, interventions are superficial and overly focused on risk, restriction and 'symptom' reduction. This view has been documented by service users and researchers alike (Arrigo, 2001; Byrt & Reece, 1999; Hinsby & Baker, 2004; Ward & Stewart, 2003; Vaughan & Stevenson, 2002).

A plethora of research exists demonstrating that diagnosis is stigmatising, simplistic and reductionist; restricting the focus of research and preventing a complete understanding of psychological distress and developing effective interventions (Read et al, 2009; Cromby et al, 2007). As such, there has been a strong call for a paradigm shift whereby we contextualise human experience and acknowledge psychological distress as an understandable, human response to social and relational adversities (DCP, 2013; Boyle & Johnson 2014; Johnstone, & Boyle, 2018).

Given my views on diagnosis, at times when conducting this research there was a tension. For example, the reference to diagnostic categories, and the use of diagnostic language. Attempts were made to reduce this tension, for example, by conducting research in the general population and focusing on the experience of subclinical forms of (hypo)mania rather than a diagnostic category. Furthermore, by shifting focus from biological factors which has dominated the research in postpartum mental health difficulties towards psychosocial factors. Attempts were also made to use language that was in line with Division of Clinical Psychology (DCP; 2015) guidelines on language in relation to functional psychiatric diagnosis. For example, using the term severe postpartum mental health difficulties as opposed to 'psychiatric disorders'. However, this became increasingly difficult to do given the range of different diagnostic terms used in the papers included in the literature review and the different inclusion criteria. As such, using the authors' original diagnostic terms had to be included throughout the review.

A way to potentially overcome these difficulties would be to combine quantitative and qualitative methodologies for both the literature review and the empirical paper. Drawing on both methods has been argued to be complimentary (Borland, 2002). This would have allowed for predictors to be quantifiably measured whilst simultaneously contextualising this experience and offering unique insight which cannot be captured by the use of measures alone.

Pathologising motherhood

At the milder end of the spectrum, (hypo)mania can be difficult to differentiate from extreme happiness, wellbeing, '*normal*' mood fluctuations and features of individuals' personality (Malhi, 2016; Heron et al, 2009). Conducting a piece of research on whether first-time mothers experience sub-clinical symptoms of mania has the potential danger that

we are pathologising one of a range of emotional responses that may be experienced by mothers following childbirth.

The western 'ideal' of motherhood has typically been depicted as an intuitive, joyous, and fulling experience (Douglas & Micheals, 2004). In a recent review, covering the past 50 years of media representation and dominant discourses of mothering, Held and Rutherford (2012) argued that despite cultural, political, and scientific shifts the deeply held assumption that motherhood should not produce negative emotions, and if it does there is something inherently wrong with the mother, has transcended these shifts and remained, unshifting and unexamined. Such discourses set a dichotomy between 'good and happy' mothers, and 'bad and depressed' mothers; as such, sets a standard for women to measure themselves against (Ussher, 1989).

Several researchers have documented that women's expectations of motherhood are influenced by this ideology and having to accept that they cannot meet this ideal leads to conflict (Mauthner, 1999; Phoenix et al, 1991; Ussher, 1989. Weaver & Ussher, 1997). In a British qualitative study (Choi et al, 2005) on the 'myths' and the 'reality' of motherhood, many of the women in the study had idealised beliefs about what motherhood was going to be like and then, faced with reality, went through stages of disappointments and feelings of failure.

Women have to manage feelings about changed status, and loss of former self (Nicholson, 1998; Oakey, 1980), changing relationship with partners, families and friends (Mauthner, 1998; Woollett & Parr, 1997); alongside, sleep deprivation, lengthy labour, pain following labour, fatigue, a lack of personal time, and feeling unprepared for the harsh and unrelenting nature of caring for a newborn (Choi et al, 2005; McVeigh, 1997; Mercer, 2004).

Oakley (1986, p.61) stated that '[i]t is hard to avoid the fact that there is something really depressing about motherhood'. A growing literature argues that a degree of

unhappiness may be a '*normal*' human response to adjusting to motherhood. Indeed, within mothers' accounts of their experiences, many feel that their experience of PD was a '*normal*' part of motherhood which can be attributed to causes such as fatigue, relationship difficulties, adjustment difficulties (Sword et al, 2008), and losses to identity and autonomy (Nicolson, 1990).

Whilst the empirical paper has not focused on postpartum depression, these debates highlight some important implications for researchers considering (hypo)mania in the postpartum period. Namely, that there is an inherent tension in attempting to understand women's experiences in the postpartum. We need to ensure that there is a balance between investigating factors which may create psychological distress for women whilst simultaneously ensuring that we do not pathologise '*normal*' experiences.

Conclusion

In this critical appraisal, I have discussed some of the limitations of this research including the recruitment process and instruments used in the empirical study. I reflected on the difficulties of being a trainee clinical psychologist conducting research within a diagnostic framework. Furthermore, I discussed the need to balance a danger of pathologising mothers' emotional responses with increasing our understanding of psychological difficulties in the postpartum. I reflected that increasing accessibility to the study alongside recruiting from a broader range of sources may have resulted in a more diverse range of participants. A major limitation of this study is a lack of validated measures for (hypo)mania in the postpartum population. I reflected that a mixed-method design may have been useful to move beyond a diagnostic framework, contextualise the experiences being measured, and provide a richer and fuller account. Finally, I highlight the need for researchers considering women's mental health in the postpartum, to maintain a balance

between investigating factors which may cause psychological distress whilst ensuring that we do not promote the view that these experiences are '*abnormal*'.

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Doctorate in Clinical Psychology | Lancaster University

SECTION FOUR

ETHICS FORMS

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Research Protocol

The Occurrence of Sub-Clinical Symptoms of Mania in New Mothers and Factors Predicting its Development

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Under the supervision of:

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Professor Steven Jones (Lancaster University)

Introduction

Literature Review

Bipolar Disorder (BD) is conceptualised by periods of fluctuating mood, energy and behaviour (Grande et al, 2016); which is interspersed with periods of improved function or full recovery (NICE, 2015). The defining characteristic of BD is the experience of mania or hypomania (NICE, 2015); which includes elevated mood, grandiose or irritable affect associated with increased motor drive and decreased sleep which can culminate in psychosis (Grande et al, 2016; NICE, 2015). Whilst mania and hypomania are the defining features, depressive symptoms are also common (NICE, 2015).

Accurate diagnosis and the recognition of BD is difficult (Munk-Olsen, 2012). Misdiagnosis is extremely common (Mahli, 2016); and on average, individuals experience a wait of five to ten years from first onset episode to diagnosis (Berk et al, 2007; Grande et al, 2016). Furthermore, several researchers have documented that the prevalence of symptoms of BD in the general population are higher than the prevalence of clinical diagnosis (Kaymaz et al. 2007; Regeer et al, 2015).

If BD goes unrecognised or untreated, the consequences include decreased functioning, quality of life, loss of employment, increased rates of suicide, financial problems, relationships difficulties, substance misuse and homelessness (Copeland et al, 2009; Miklowitz & Johnson, 2006). The impact of receiving the wrong medication from misdiagnosis can result in less effective treatment, worsen the long-term course, and promote rapid cycling from mania to depression (Altshuler et al, 1995; Dunner, 2003).

It has been argued that a central factor in the under-recognition and misdiagnosis of BD is the developing understanding that symptoms of BD exist on a spectrum, rather than being separate and discrete entities (NICE, 2015; Dunner, 2003). Between the two extreme ends of the spectrum (severe mania and highly recurrent depression) are milder mood variations which

can be difficult to distinguish from ‘normal’ mood fluctuations and features of personality (Malhi, 2016; NICE, 2015). It has been suggested that milder presentations are the biggest challenge to diagnosis and therapy within clinical practice (Akiskal, 1996; Dunner, 2003). Hypomania frequently goes unrecognised, in part due to the considerable debate surrounding its definition (Dunner, 2003). Unlike mania, the characteristics of hypomania do not always interfere with functioning. Service users, their families and professionals do not always perceive the impact as negative, therefore, it goes unnoticed (Akiskal et al, 2000; Hirschfeld, 2001). However, hypomania often progresses into a severe manic or depressive episode and the associated consequences (Grande et al, 2016).

Developing our understanding of the mechanisms involved, and factors affecting the onset and course of BD is important. Research has predominately considered possible biological underpinnings such as genetic components, neurohormonal abnormalities and structural brain differences. However, overall the findings remain unclear and there is no one accepted overarching explanation (NICE, 2015). Recently, researchers have considered psychosocial factors which have been found to impact the onset and course of BD. Childhood maltreatment and traumatic experiences have been associated with early onset and a more adverse course of BD (Brown et al, 2005; Hammersley et al, 2003). Social class, social support and self-esteem may act as course modifiers or precipitants for episodes. (NICE, 2015). Life events, cognitive appraisal styles, and behavioural responses have also been found influence whether an individual experiences depression or mania and the maintenance of fluctuating mood.

Specifically, for mania and hypomania, positive life events, life events relating to goal attainment and striving, or result in social/circadian rhythm disruption, predict symptoms. How individuals appraise these events may predict the development of hypomania. Following initial success, individuals at risk for hypomania, demonstrate elevated confidence and increases in

setting of overly ambitious goals and striving for success (Alloy et al, 2009). They interpret their high moods as a sign that they can achieve more; referred to as 'positive overgeneralization' (Jones et al, 2006). They have been found to make overly positive self-appraisals and maintain positive emotions by 'positively ruminating'; that is, having additional thoughts about their own positive qualities, previous positive experiences and positive circumstances (Segerstrom et al, 2003).

Increases in positive affect and the positive self-appraisal, in turn lead to increases in energy which promote increases in motivation towards pursuing goal driven behaviour (Alloy et al, 2008; Jones et al, 2007; Jones et al, 2008). The Behavioural Approach System (BAS), theorised to regulate the approach behaviour and motivation towards goals and rewards, is activated by external or internal stimuli, such as expectancies of goal attainment. Prolonged activation can lead to symptoms of mood elevation. Therefore, individuals with BAS sensitivity are more prone to experiencing hypomania/mania (Alloy et al, 2006; Salavert et al, 2007).

Heightened levels of creativity have been demonstrated in individuals with BD, those with milder BD presentations and those at risk of developing BD in the future (Murray & Johnson, 2010). A central element of creativity is inspiration (Schuldberg, 2000). Like, BD, inspirational events have been associated with positive cognitive style, rumination response, and heightened rewards responsiveness and approach motivation (Johnson et al, 2012; Jones et al, 2014; Thrash & Elliot, 2004;). There is some evidence to suggest that an individual's beliefs around the source of inspiration, is associated with elevated risk (Jones et al, 2014)

Study rationale

There is a specific link between childbirth and BD (Munk-Olsen et al, 2006; 2007; Jones & Craddock, 2001; Jones & Craddock, 2007). Those with a vulnerability to, or history

of BD, are five times more likely to experience a relapse or first onset following giving birth (NICE, 2015). Furthermore, there is evidence which suggests that women with BD are at high risk of experiencing Postpartum Psychosis (PP), with episodes following 25-50% of deliveries (Jones & Craddock, 2001). PP, which takes the form of mania, depression, or mixed episodes of low and high mood (NICE, 2015), are now recognised to be presentations of BD which have been triggered by pregnancy (Jones & Craddock, 2001; 2002; Munk-Olsen et al, 2012).

Postpartum onset of bipolar symptoms has been found to raise the risk of underlying BD. Woman who have received psychiatric contact within the first month following giving birth are three times more likely to receive a diagnosis of BD within 15 years than those who have initial psychiatric contact at other times in their life (Munk-Olsen, 2012). Regardless of this, within the postpartum mental health literature, there has been a focus on depressive and psychotic symptoms (Weinberg et al, 2001; Mannion and Slade, 2014). To date, research considering the 'soft' or subclinical bipolar spectrum, including milder symptoms of mania, and hypomania have received little attention.

Two studies (Heron et al, 2007; 2008) retrospectively interviewed women who had previously experienced an episode of PP within the past 6 to 33 years. The findings suggested that women report experiencing symptoms of hypomania within the first week/s of motherhood and this may be a prodrome of PP. A further two further studies, considering early signs of Postpartum Depression (PD), measured symptoms of hypomania and depression in new mothers at day 3, and or, day 5, with a follow up screening at week 6 (Glover et al, 1994; Lane et al 1997). The findings suggested that symptoms of hypomania in new mothers is common (around 11%) and woman who experience these symptoms are more likely to develop PD. However, in both studies, a high proportion of the women identified as having hypomania at the six-week follow-up were not the same women as identified as having hypomanic symptoms

in the initial screening; therefore, making it likely that women can experience the onset of hypomanic symptoms beyond the first week postpartum.

Only one study considered risk factors in the development of hypomanic symptoms in the postpartum (Lane et al 1997) however, there was a high correlation between the measures of hypomania and depression, making the results around risk factors for hypomania difficult to interpret. Indeed, the risk factors identified mirrored those consistently found within the PD literature; making it unclear whether women showing signs for only hypomania would also have these same risks.

The consequence of experiencing mental ill health following childbirth are wide ranging; disrupting attachment between child and mother, negatively impacting infant development and health, alongside the health of other family members (Jones et al, 2014; O'Hara & McCabe, 2013). Given that research into hypomanic symptoms in new mothers has been limited, focused on identifying prodromal symptoms for PP and PD, rather than looking at hypomania itself, not considered the onset of symptoms beyond the first few days or weeks, or investigated risk factors for hypomania, it seems appropriate that further research is conducted. Particularly, given that previous research has identified new mothers who experience symptoms of hypomania as being at greater risk of experiencing PP, PD and later receiving a diagnosis of BD. In addition, identifying risk factors to allow insight into the mechanisms involved in such experiences, may inform our understanding of how we can identify and support women in reducing these risks (Heron & Oyebode, 2011).

Research Questions

- The principle aim is to determine the frequency of sub-clinical symptoms of mania in new mothers.
- The second aim is to establish the potential risk factors for sub-clinical symptoms of mania by determining the relationship between cognitive appraisals, birth experience,

BIS/BAS sensitivity and sleep deprivation with the experience of sub-clinical symptoms of mania.

Method

Design

The purpose of this research is to establish the prevalence of sub-clinical symptoms of mania in new mothers, alongside, potential factors which may predict this experience. Participants will be asked to complete online self-assessment questionnaires which will measure their symptoms of elevated mood, cognitive styles, inspiration, BAS sensitivity, birth experience and sleep disruption. Data will be collected and analysed using correlational analysis and path analysis.

Participants

A priori power analysis was conducted using G*Power, a software programme designed to calculate statistical for a wide variety of statistical tests. The power value was set at .8 (Cohen, 1988) which gives an 80% probability of detecting associations. α was set at 0.05 A medium effect size of f^2 0.15 was set (Cohen, 1988). The study will aim to recruit a minimum of 92 participants. Six predictors are anticipated for the analysis; these were accounted for in the power analysis.

Inclusion Criteria

- Aged 18 and over
- Participants will be women who have given birth to their first child.
- Given birth in the past 9 months.
- Their child is older than 2 months.

Exclusion Criteria

- Have a diagnosis of Bipolar Disorder
- Cannot read English

- Having had input from perinatal mental health teams
- Currently under care of mental health services

Materials

A summary letter to advertise the research (Appendix A); participant information sheet and Eligibility Sheet (Appendix B); information sheet for eligible participants (Appendix C); information sheet for participants not eligible (Appendix C), consent form (Appendix E), demographic information questionnaire (Appendix F) self- administered measures (appendix G to L); participant debriefing and prize draw sheet (Appendix M).

Procedure

Recruitment of Participants

(1) Participants will be recruited through Emma's diary an online resource dedicated to mothers, which offers information surrounding pregnancy, birth and babies. It is standard practice for information about Emma's diary to be supplied to pregnant women by their NHS GP or midwife. An email invitation (Appendix A) will be sent out to all mothers who meet the inclusion criteria on the service email registry. The email will be sent by a member of staff working in the service, not by the researcher, to protect participants' anonymity.

(2) Net mums a website for parents in the UK which offers social networking, education around pregnancy and parenting, alongside, offers information on local and national support groups, classes, and activities. An advertisement will be placed on the 'Survey Request' section of their website (Appendix A). This is an online thread where members of University may post requests for mums to complete surveys which will be used for research purposes.

(3) Facebook. The researcher will create a Facebook account specifically for the purposes of advertising this research (Appendix A).

Gaining Informed Consent

Participants will be given information about the study at the beginning of the online survey (Appendix B). Participants will be made aware that once they click the final submit button any data collected cannot be withdraw. They will also be made aware that if they partially complete the survey then any data they have inputted will be used for the study. Participants will be asked to check that they are eligible to take part in the study (Appendix C) and that they consent to taking part in the study (Appendix D). They will also be asked for their consent to store their information for potential follow up research. Participants will be made aware that this is entirely voluntary, and their information will be allocated a numerical ID which will be allocated to their data. Their corresponding contact information will be held in a separate file. If they consent they will be asked to click on the link which will direct them to the questionnaires (Appendix F-L).

Once participants have completed the survey they will be thanked for their participation and provided with debrief information (Appendix M). This will contain relevant contact details should they have any questions or concerns. It will also offer participants the opportunity to enter into a prize draw and receive a copy of the summary report which will detail the findings of the research. If they wish too they will be asked to enter their email address. The prize draw will be conducted after data collection has been completed. Data collection is expected to be complete by June. Participants will be informed that the prize draw is expected to take place no later than August; this is to allow for the potential that recruitment will take longer than expected. The winners will be informed via their preferred contact method. If, after two contacts, the research has been unable to contact a winner another winner will be selected.

Data Collection

Participants will be required to complete an online survey via redcap and online survey package. Demographic information on participants' age, ethnicity, marital status, employment status, household income, educational level, birth method and number of babies delivered will be collected (Appendix E).

Participants will be asked to complete seven self-administered scales (below). The High Scale, the Altman Self-Rating Mania Scale, Pittsburgh Sleep Quality and the Wijma Delivery Experience Questionnaire will ask participants to recall their experiences within the first two months following giving birth. This time period was chosen in accordance with the defined onset within the DSM-5 (APA, 2013). The time frame is also in line with memory research which has found that women accurately recall birth experiences one year postpartum (Waldenström, 2003; however, recollection changes over five years (Waldenström & Schytt, 2009).

The Highs Scale (Glover, Liddle, Taylor, Adams & Sandler, 1994; Appendix F).

The Highs Scales was developed specifically for use in the post-partum population. Items include: feeling more elated than usual, more talkative than usual, more active than usual, thoughts racing, feelings of being an especially important person, needing less sleep and problems with concentration due to attention jumping to unimportant things. Each item is scored on a three-point Likert scale.

The scale has been validated again a clinician-rated diagnosis of mild mania on the Comprehensive Psychopathological Rating Scale (CPRS) with a small group of women. The correlation between the Highs score and mania sub score on the CPRS was (r=.62). (Glover et al, 1994). No other validation work has been carried out.

The Altman Self-Rating Mania Scale (ASRM; Altman, Hedkeker, Peterson & Davis, 1997; Appendix G)

The Altman self-rating mania scale measures current symptoms of mania. The scale comprises of 5 items which include increased cheerfulness, inflated self-confidence, talkativeness, reduced need for sleep and excessive behavioural activity. Each item has five response options with descriptions increasing in severity. This scale is a widely used and validated measure of hypo/mania symptoms and was designed for use inside and outside of hospital settings (Altman et al, 1997; Altman et al, 2001). Items are compatible with the DSM-IV criteria, the scale correlates well with the Young Mania rating Scale (r=0.72). It has been reported to have a high sensitivity (87.3%) and specificity (85.5%) in identifying mania and hypomania against the CARS (Altman et al, 2001).

Hypomania Interpretations Questionnaire (HIQ; Jones, Mansell & Waller, 2006; Appendix H).

Positive life events, life events relating to goal attainment and striving, or result in social/circadian rhythm disruption, predict symptoms of mania. There are inconsistent findings around whether negative life events can also predict mania. It has been argued that rather than the event itself, it is how an individual appraises the event that predicts the development of hypomania. Therefore, the HIQ, which is designed to assess the tendency to make overly positive self-appraisals, will be administered. The scale comprises 10 items each related to a hypomanic relevant situation, and followed up by two explanations, (1) Positive self-dispositional appraisals and, (2) normalising appraisals. The internal consistency has been found "acceptable" HIQ-H (α=.82), HOQ-NE (α=.71) and HIQ-NI (α=.68) (Jones et al, 2006). Test-rest reliability was acceptable (HIQ-H: r=0.56; HIQ-NE: r=0.59) (Jones et al, 2006).

Responses to Positive Affect Questionnaire (RPA; Fieldman, Joorman & Johnson, 2008, Appendix I)

It has been found that individuals vulnerable to experiencing hypomania may maintain positive emotions by, having additional thoughts about their own positive qualities, previous positive experiences and positive circumstances (Segerstrom et al, 2003). The RPA is a 17-item self-report measure deigned to assess the tendency to ruminate to positive affective states. Items on the RPA are divided into three factors measuring positive rumination of (1) mood and bodily experiences (Emotion-focused), (2) self and goal attainment (self-focussed) and (3) thought processes that attempt to reduce the intensity of positive emotions and experiences (Dampening). The scale has demonstrated acceptable structural validity and internal consistency ranging from a = .69 to .79 (Frieldman et al, 2008).

The Behavioural Inhibition/Behavioural Activation Scale (BIS/BAS; Carver & White, 1994, Appendix J).

The Behavioural Approach System (BAS) is theorised to regulate approach behaviour towards goals and rewards (Gray, 1991). Individuals with BAS sensitivity are more likely to have a lifetime bipolar spectrum disorder and are more prone to experience hypomanic symptoms (Alloy et al, 2006; Salavert et al, 2007). Therefore, the BIS/BAS scale, a widely used questionnaire, which assesses sensitivity to incentive/reward and threat stimuli. The scale comprises of 24 items rated on a 4-point Likert scale. The BAS reward responsiveness scale, assess the tendency to experience excitement and energy during and after goal attainment. The scale demonstrated adequate levels of internal consistency ranging from a=.66 to .74 and test-retest reliability ranging from r =.59 to .69 (Carver & White, 1994).

Pittsburgh Sleep Quality Index (PSQI; Buysse et al. 1989, Appendix K).

Sleep disturbance has been consistently cited as a trigger for both hypomania and mania (Bilszta, Meyer & Buist, 2010; Sharma and Mazmanian, 2003). Therefore, the PSQI, widely used with postpartum women (Dorheim et al, 2009), will be administered. The scale comprises 18 questions relating to timings of sleep, difficulties with sleep and the impact these sleep difficulties have. The PSQI has been validated in various populations (Buysse et al, 1989); however, not in postpartum populations. In non-postpartum cohorts it has been found to show favourable sensitivity (89.6%) and specificity (86.5%) for discriminating between "good" and "poor" sleepers when using a cut off of ≤5 (Buysse at al, 1989)

Birth experience: The Wijma Delivery Experience Questionnaire (Version B; Wijma et al. 1998, Appendix L).

Life events, and how an individual then appraises and interprets those events, has consistently been found to predict symptoms of mania. Therefore, the Wijma Delivery Experience Questionnaire (Version B, Wijma et al, 1998) will be used to establish whether the event of childbirth is related to whether new mothers experience sub-clinical symptoms of mania. The scale is designed to measure fear related to childbirth by asking questions relating to the labour and delivery; targeting cognitive appraisals of their experience and behaviour during delivery (Wijma et al, 1998). The scale comprises of 33 questions rated on a 6-point Likert scale (0 = extremely fantastic and 5= not at all safe). This scale has been found to have excellent internal consistency (a = .92) and split-half reliability (r = .92) in women five weeks postpartum (Wijma et al. 1998).

Proposed analysis

Univariate correlational analysis will be used to identify the relationship between symptoms and demographic information, cognitive styles, BAS sensitivity, birth experience and sleep.

Multiple regression will be used to predict the relationship between sub-clinical symptoms of mania (DV) and the independent variables hypothesised to predict these symptoms: sleep deprivation, cognitive styles, BAS sensitivity and birth experience.

Practical issues

Participants will be informed that the study is looking at elevated mood following childbirth rather than sub-clinical symptoms of mania. This is due to the study not using diagnostic measures of mania. It is thought that using the term elevated mood will avoid confusion given that the study is aimed at the general, non-clinical population.

Several questionnaires are included. It is recognised that not all participants will complete every questionnaire. Therefore, the researcher will ask for consent to use any data collected from the participant up until the point they have stopped.

Ethical concerns

Gaining Ethical Approval

This study does not access NHS staff or patients and therefore requires FHMREC approval.

Potential to cause distress

Given the focus of this study and the generic questions being asked, it is it is unlikely to be distressing for participants. However, the researcher will not meet with any participant and therefore cannot recognise if the study has caused any unintended concern or distress. Therefore, the researcher will ensure that there is clear debrief information following the survey which will include information on who they can contact should they have any questions or concerns about the research. In addition, it will include information on where they can seek advice if they experience distress, such as their GP, health visitor, or MIND, a mental health charity which provides advice and support.

Data Management Plan

Questionnaires will be completed anonymously with no personal or identifiable information asked for. Data will be collected online, via RedCap, and stored electronically.

Participants will have the opportunity to take part in a prize draw for one £100 and two £50 pound Amazon vouchers. If participants wish to enter this draw they will be asked to complete a short form (Appendix N) asking for contact details should they win. Participants will be informed that this information will not be stored with their data. This information will be stored in a separate encrypted electronic file, stored on University servers, in order to protect their anonymity. All data gained for the purpose of the prize draw will be destroyed once the winners have been contacted. Should the winner prove to be uncontactable after one month a second draw will be made for the award of the prize. Participants who enter into the prize draw will be allocated a number. The researcher will use a random number generator to pick the winner. This will be witnessed by the researcher's supervisor.

Participants will also be asked for their consent to use their information for follow up research. If they agree, they will be asked to give their information, and contact details (Appendix D). If participants consent to this they will be informed that they will be allocated a numerical ID, which will be assigned to their data. The participants consent forms and contact information will be stored in a separate electronic file for their data to protect their anonymity.

In compliance with Lancashire Care NHS Foundation Trust, the Data Protection Act (Great Britain, 1998) and Information Governance requirement, all data will be transferred and stored onto the Lancaster university server. If the researcher is not on university grounds, this will be done via the Virtual Private Network (VPN). Files will be password protected as an additional security measure.

Data will be stored by the researcher on the Lancaster University Server until the researcher has obtained the marked results from the Exam Board for the assignment. The

data generated by the research will then be transferred, electronically, to the research co-ordinator for the Doctorate in Clinical Psychology for long-term storage. Files will be encrypted at this point. After a period of 10 years, the data will be deleted.

Timescale

The project will commence, following the receipt of ethical approval from the FHMREC. The project will end with the submission of the assignment to Lancaster University in 2018.

April 2018	Begin recruitment following approval
April 2018	Systematic Literature review draft
June 2018	Stop Recruitment (potential to extend to July if not enough participants recruited)
May 2018	Critical Review First Draft
June/July 2018	First draft of research paper
July 2018	Final thesis

Dissemination Strategy

A full report will be written and submitted to an academic journal. A short lay report detailing the main research findings will be provided to Netmums and Emma's diary to place on their websites and circulated to those on their email registry. In addition, the summary will be placed on the researchers Facebook account.

A presentation will be given at Lancaster University, to staff who work in the Faculty of Health and Science Department and trainee clinical psychologists. The presentation will be made available via the University's website.

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Appendix A

Advertisement

Health & Medicine | Lancaster University

My name is Catrina Stansfield and I am a Trainee Clinical Psychologist on the Doctorate in Clinical Psychology at Lancaster University. As part of my training I am carrying out a piece of research

What is the project about?

This research is looking at the types of thoughts and emotional experiences that new mothers can have after giving birth and the factors which may contribute to these experiences. It is hoped that this will allow us to better understand how to support new mothers.

Who can participate?

We are looking for first time mothers to take part in the study

If you have given birth to your first child in the past nine months and your child is two months or older, we would like to invite you to take part in an online survey by clicking the link below.

What is involved?

You will be asked to complete an online questionnaire about your thoughts and experiences since giving birth. Your responses will be collected anonymously. This should take about 20 minutes.

There will be a prize draw open to all people who complete the full survey.

One £100 and two £50 Amazon vouchers.

Please click on the link below for more information and to access the survey:

Appendix B

Information and Eligibility

My name is Catrina Stansfield and I am a Trainee Clinical Psychologist on the Doctorate in Clinical Psychology at Lancaster University. As part of my training I am carrying out a piece of research.

What is the study about?

The purpose of this study is to explore the types of thoughts and emotional experiences that new mothers can experience and the factors which may contribute to these experiences. It is hoped that this study will contribute to a better understanding of the experiences of new mothers the support they may need.

Why have I been approached?

You have been asked to take part in this research because the study requires information from first time mothers who have given birth within the past 9 months and whose child is older than 2 months.

Please confirm that you are eligible to take part by answering the following questions:

Have you ever been treated for Bipolar Disorder, before, during or after your pregnancy?	Yes No
Are you under the care of a perinatal mental health team or other mental health services?	Yes No

Appendix C

Information Sheet for Those Eligible

Do I have to take part?

No. Taking part is completely voluntary; it is completely up to you to decide whether you want to take part in this study. If you decide not to take part, this will not affect any treatment or care you are receiving.

What would I need to do if I take part?

If you decide to take part in the study, you would be asked to complete an online questionnaire that will take about 20 minutes to complete.

Will my data be identifiable?

The information you provide is anonymous. The data collected for this study will be stored securely on the Lancaster University server. The files will be encrypted with a password for additional security. Only the researchers conducting this study will have access to this data.

At the end of the study you will be asked if you would like to enter an online prize draw. If you decide to enter the prize draw, you will be asked to supply an email address so that we can contact you if you should win. Your email address will be kept completely separate from your answers to the questionnaire. The file with your contact information will be encrypted with a password and stored on the Lancaster University secure server. The file with your email addresses will be destroyed following the prize draw. Only those who complete the entire questionnaire will be entered into the prize draw.

Future research

You will be asked if you would be happy to be contacted for future research. For example, we might invite you to take part in a survey that looks at other factors that contribute to the experiences of new mothers. If you agree to potentially being contacted for future research, you will need to provide your contact information. Your questionnaire answers will be assigned a numerical ID which will also be kept with your contact details. Your contact details will be stored separately from your questionnaire answers. No one will be able to link your answers to your contact details unless you give your consent when contacted in the future. By providing your contact details you are not consenting to be involved in future research, only to be contacted about it. Providing contact details for future research is completely voluntary; you do not need to give your contact details to take part in this study.

Can I withdraw my consent?

As this study is completed anonymously it is not possible for you to withdraw. This is because I would not be able to identify which data is yours to destroy it. If you start the study, but choose not to finish, any data you have submitted prior to stopping will be kept and used for this study.

What will happen to the results?

The results will be written into a full thesis which will be submitted for publication to an academic journal. The research will be presented at Lancaster University to staff and trainees who work in the Division of Health Research. The presentation slides will be made available via the University's website, allowing both trainee clinical psychologists and the public to have access. A short summary of the findings will be placed on the Netmums website, Facebook, and circulated to those on the Emma's diary registry.

Are there any risks?

There are no risks anticipated with participating in this study. However, if you do experience any distress following participation you are encouraged to contact the resources provided at the end of this information sheet.

Are there any benefits to taking part?

Although you may find participating interesting, there are no direct benefits in taking part.

Who has reviewed this project?

This study has been reviewed and approved by the Faculty of Health and Medicine Research Ethics Committee at Lancaster University.

Where can I obtain further information about the study if I need it?

If you have any questions about the study, please contact me:
Catrina Stansfield
Doctorate in Clinical Psychology,
Division of Health Research,
Furness Building C34
Lancaster University,
LA1 4YG
Email: c.stansfield@lacnaster.ac.uk

Supervisors

Professor Bill Sellwood
Programme Director
Doctorate in Clinical Psychology
Division of Health Research
Furness Building
Lancaster University
LA1 4YG
Email: b.sellwood@lancaster.ac.uk
Or,
Professor Steven Jones
Doctorate in Clinical Psychology
Division of Health Research
Furness Building
Lancaster University
LA1 4YG
Email: s.jones7@lancaster.ac.uk

Complaints

If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researcher, you can contact:

Professor Bill Sellwood
Programme Director
Doctorate in Clinical Psychology

Division of Health Research
Furness Building
Lancaster University
LA1 4YG

If you wish to speak to someone outside of the Lancaster University Doctorate Programme, you may also contact:

Professor Roger Pickup
Associate Dean for Research Faculty of Health and Medicine
(Division of Biomedical and Life Sciences)
Lancaster University
Lancaster
LA1 4YG
Email: r.pickup@lancaster.ac.uk
Tel: 01524 593 746

Resources in the Event of Distress

Should you feel distressed either as a result of taking part, or in the future, you can contact your General Practitioner (GP), health visitor, or MIND, a mental health charity which provides support, or advice on how to access local services, to those experiencing mental health difficulties You can get in touch with MIND at https://www.mind.org.uk/about-us/local-minds/ or by phoning their central office at 020 8519 2122. Alternatively, the Samaritans offer a free listening service for UK residents and provide links to other services on their website. You can get in touch with the Samaritans at https://www.samaritans.org/ or by phoning 116 123 (UK).

You may want to print, or take note, of these resources and contact details now. They will be repeated at the end of the survey if it is fully completed.

Thank you for taking the time to read this information sheet.

Appendix D

Information Sheet for Participants Not Eligible

Thank you for taking the time to read the participant information sheet. We are sorry but you can't take part in this study.

This is because this study is looking at the emotional experiences specific to new mothers who have not previously had a diagnosis of Bipolar Disorder and who are not under the care of the perinatal mental health team.

If you are currently experiencing any difficulties, you can contact either your GP or health visitor who can offer you advice and support.

You can also contact MIND, a mental health charity which provides support, or advice on how to access local services, to those experiencing mental health difficulties. You can get in touch with MIND at https://www.mind.org.uk/about-us/local-minds/ or by phoning their central office at 020 8519 2122. Alternatively, the Samaritans offer a free listening service for UK residents and provide links to other services on their website. You can get in touch with the Samaritans at https://www.samaritans.org/ or by phoning 116 123 (UK).

If you are unhappy or unsure about why you cannot take part in this research, please feel free to contact me, Catrina Stansfield, on c.stansfield@lancaster.ac.uk and I can try to help. If you still feel unhappy or wish to make a complaint you can contact:

Professor Bill Sellwood
Programme Director
Doctorate in Clinical Psychology
Division of Health Research
Furness Building
Lancaster University
LA1 4YG

If you wish to speak to someone outside of the Lancaster University Doctorate Programme, you may also contact:

Professor Roger Pickup
Associate Dean for Research Faculty of Health and Medicine
(Division of Biomedical and Life Sciences)
Lancaster University
Lancaster
LA1 4YG
Email: r.pickup@lancaster.ac.uk

Thank you for taking the time to read this information

Appendix E

Consent Form

We are asking if you would like to take part in a research project which is looking at the thoughts and emotional experiences of new mothers and the factors which may contribute to these experiences.

By proceeding to the survey, you confirm that:

- You have given birth to your first child in the past 9 months and your child is older than 2 months.
- You have read the information sheet and understand what is expected of you.
- You have had the opportunity to consider the information and are aware of the researcher's contact details should you wish to ask questions.
- You understand that any responses and information you give will remain anonymous.
- You understand that you do not have to give your name or contact details. You understand that if you do choose to enter the prize draw, you will need to leave your email address at the end of the questionnaire. You understand that this information will be deleted following the prize draw. You understand that your email address will be kept separate from your answers to the questionnaire.
- You understand that participation is voluntary.
- You understand that you cannot withdraw your data from this study.
- You consent to any data you submit being used, even if you choose not to finish the entire questionnaire.
- You consent for the information you provide to be discussed with my supervisor at Lancaster University
- You consent to Lancaster University keeping the anonymised data for a period of 10 years after the study has finished.

By clicking the link below, you consent to **taking part in this study**.

Future research:

If you consent to your information being kept for follow-up research, please complete the sections below before clicking the survey link (If not, then please leave blank)

1. Your name:
2. Your email:

Submit

Appendix F

Health & Medicine | Lancaster University

Demographic Information

What is your date of birth?

What is the date of birth of your baby(ies)?

Did you have single (one baby) or multiple births (i.e twins or triplets)

- o Single
- o Multiple

. How was your baby(ies) born?

- o Normal vaginal delivery
- o Assisted delivery (e.g. Kiwi, Forceps or Ventouse)
- o Caesarean section

Since your baby has been born have you:

- o Breastfed
- o Bottlefed
- o Both

What is your ethnic group?

White

- o English/Welsh/Scottish/Northern Irish/British/
- o Irish
- o Gypsy or Irish traveller

Any other White background, please described

Mixed / Multiple ethnic groups

- o White and Black Caribbean
- o White and Black African
- o White and Asian

Any other Mixed / Multiple ethnic background, please describe

Asian / Asian British

- o Indian
- o Pakistani

	o Bangladeshi o Chinese
Any other Asian background, please describe	
Black / African / Caribbean / Black British	o African o Caribbean
Any other Black / African / Caribbean background, please describe	
Other ethnic group	o Arab
Any other ethnic group, please describe	

Are you currently…	
	o Single, that is never married o Married and living with your husband/wife o A civil partner in a legally recognised Civil Partnership o Married and separated from your husband/wife o Divorced o Widowed
May I just check, are you living with someone in this household as a couple?	o Yes o No

What is your education level? (Please select the highest qualification you have)	
	o No qualifications o GCSE's (or equivalent) o A Levels (or equivalent) o Vocational qualifications o Graduate o Post Graduate

What was your pre-pregnancy employment status?	
	o Paid full-time employment o Paid part-time employment

- Self-employed
- Unemployed
- Voluntary work
- Student
- Homemaker
- Unable to work due to sickness/disability

Please tell us the total annual income of your household (before tax deductions but including benefits/allowances):

- £6,000 to £13,000 GBP
- £13,000 to £19,000 GBP
- £19,000 to £26,000 GBP
- £26,000 to £32,000 GBP
- £32,000 to £48,000 GBP
- £48,000 to £64,000 GBP
- £ 64,000 or more GBP

Appendix G

The Highs Scale

Please answer the following question – in the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES)** have you felt any of the following conditions.

	Yes, a lot.	Yes, a little	No
1. Have your felt elated (high or unusually cheerful)?	○	○	○
2. Have you felt more active than usual?	○	○	○
3. Have you felt more talkative than usual, or a pressure to keep on talking?	○	○	○
4. Have your thoughts raced?	○	○	○
5. Have you felt that you are a specially important person with special talents or abilities?	○	○	○
6. Have you felt the need for less sleep?	○	○	○
7. Have you had trouble concentrating because your attention keeps jumping to unimportant things around you?	○	○	○

Appendix H

The Altman Self-Rating Mania Scale

1. Now you will be shown groups of five statements. Please read each group of statements carefully.
2. Choose the one statement in each group that best describes the way you felt in the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES).**
3. Check the number next to the statement you picked.
4. *Please note:* The word "occasionally" when used here means once or twice; "often" means several or more; "frequently" means most of the time.

Question 1:

- o I did not feel happier or more cheerful than usual
- o I occasionally felt happier or more cheerful than usual
- o I often felt happier or more cheerful than usual.
- o I felt happier or more cheerful than usual most of the time.
- o I felt happier or more cheerful than usual all of the time.

Question 2:

- o I did not feel more self-confident than usual.
- o I occasionally felt more self-confident than usual.
- o I often felt more self-confident than usual.
- o I felt more self-confident than usual most of the time.
- o I felt extremely self-confident all of the time.

Question 3:

- o I did not need less sleep than usual
- o I occasionally needed less sleep than usual.
- o I often needed less sleep than usual.

- I frequently needed less sleep than usual.
- I could go all day and night without any sleep and still not feel tired.

Question 4:

- I did not talk more than usual
- I occasionally talked more than usual.
- I often talked more than usual.
- I frequently talked more than usual.
- I talked constantly and could not be interrupted.

Question 5:

- I was not more active (either socially, sexually, at work, home, or school) than usual.
- I was occasionally more active than usual.
- I was often more active than usual
- I was frequently more active than usual.
- I was constantly active or on the go all the time.

Appendix I

Hypomania Interpretations Questionnaire

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Listed below are situations that you may or may not have ever experienced. For each situation, please check the letter next to each reason that corresponds to how much that might explain the situation for you. Please check every item for each question. Also, answer whether you have experienced the situation in the last 3 months by checking A or B.

1. If I thought my thoughts were going too fast I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am intelligent and full of good ideas	○	○	○	○
2) There are too many competing tasks for me at present	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

2. If I was on the go so much that other people couldn't keep up with me, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am overdoing it and will soon need a rest.	○	○	○	○
2) I have more stamina than other people	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

3. If my thoughts were coming so thick and fast that other people couldn't keep up I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal

1) I am full of good ideas and others are too slow	○	○	○	○
2) There are too many demands on my time.	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

4. If I was feeling 'sped up' inside, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am under pressure for work and social demands.	○	○	○	○
2) I am in good spirits and can take on challenges	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

5. If I felt physically restless and kept moving from one activity to the next, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am full of energy and raring to go.	○	○	○	○
2) There is too much pressure and I need a break	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

6. If I felt impulsive, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I could make rapid decisions and good choices	○	○	○	○
2) There are lots of external demands.	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

7. If I felt in high spirits and full of energy, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am a talented person with lots to offer	○	○	○	○
2) Things happen to be going well for me at present.	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

8. If I woke up earlier than normal and felt full of energy, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) I am a happy, positive and energetic person.	○	○	○	○
2) Something has disrupted my routine	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

9. If I found my thinking was very quick and clear, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) There are few distractions at present.	○	○	○	○
2) I am clever and talented.	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

10. If I found that tastes, smells or things I touched seemed more vivid, I would probably think it was because:

	Not at all	Somewhat	Quite a bit	A great deal
1) It is just a phase and will pass	○	○	○	○
2) I am more sensitive and 'tuned in' than other people	○	○	○	○
3) Have you experienced this situation in the last 3 months?	○ A Yes ○ B No			

Appendix J

Responses to Positive Affect Questionnaire

People think and do many different things when they feel happy. Please read each of the following items and indicate whether you never, sometimes, often or always think or do each one when you feel happy, excited, or enthused. Please indicate what you generally do, not what you think you should do.

	Almost never	Sometimes	Often	Always
1. Think about how happy you feel	○	○	○	○
2. Think about how strong you feel	○	○	○	○
3. Think about how you feel up to doing everything	○	○	○	○
4. Notice how you feel full of energy	○	○	○	○
5. Savour this moment	○	○	○	○
6. Think "My streak of luck is going to end soon"	○	○	○	○
7. Think "I don't deserve this"	○	○	○	○
8. Think about things that could go wrong	○	○	○	○
9. Think about things that have not gone well for you	○	○	○	○

10. Remind yourself these feelings won't last	○	○	○	○
11. Think "this is too good to be true"	○	○	○	○
12. Think about how hard it is too concentrate	○	○	○	○
13. Think "people will think I'm bragging"	○	○	○	○
14. Think "I am achieving everything"	○	○	○	○
15. Think "I am living up to my potential"	○	○	○	○
16. Think about how proud you are of yourself	○	○	○	○
17. Think "I am getting everything done"	○	○	○	○

Appendix K

The Behavioural Inhibition/Behavioural Activation Scale

Each of the following items is a statement that a person may either agree or disagree with. For each item indicate how much you agree or disagree with that the item says.

		1 (Strongly agree)	2	3	4 (Strongly disagree)
1.	**If I think something unpleasant is going to happen I usually get pretty 'worked up'**	○	○	○	○
2.	**I worry about making mistakes**	○	○	○	○
3.	**Criticism or scolding hurts me quite a bit**	○	○	○	○
4.	**I feel pretty worried or upset when I think or know somebody is angry at me**	○	○	○	○
5.	**Even if something bad is about to happen to me I rarely experience fear or nervousness**	○	○	○	○
6.	**I feel worried when I think I have done poorly at something**	○	○	○	○
7.	**I have very few fears compared to my friends**	○	○	○	○
8.	**When I get something I want, I feel excited and energised**	○	○	○	○

9. When I'm doing well at something, I love to keep at it	○	○	○	○
10. When good things happen to me, it affects me strongly	○	○	○	○
11. It would excite me to win a contest	○	○	○	○
12. When I see an opportunity for something I like, I get excited right away.	○	○	○	○
13. When I want something I usually go all-out to get it	○	○	○	○
14. I go out of my way to get things I want	○	○	○	○
15. If I see a chance to get something I want, I move on it right away	○	○	○	○
16. When I go after something I use a "no holds barred" approach	○	○	○	○
17. I will often do things for no other reason than that they might be fun	○	○	○	○
18. I crave excitement and new sensations	○	○	○	○
19. I'm always willing to try something new if I think it will be fun	○	○	○	○
20. I often act on the spur of the moment.	○	○	○	○

Appendix L

Pittsburgh Sleep Quality Index

The following questions relate to your usual sleep habits during the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES)**. Your answers should indicate the most accurate reply for the majority of days and nights during the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES)**. Please answer all questions.

During the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES)**:

1. When have you usually gone to bed? _____
2. How long (in minutes) has it taken you to fall asleep each night? _____
3. When have you usually gotten up in the morning? _____
4. How many hours of actual sleep do you get at night? (this may be different than the number of hours you spend in bed). _____

For each of the remaining questions, check the one best response. Please answer all questions.

5. How often have you had trouble sleeping because….

	Not at all	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes	○	○	○	○
b. Wake up in the middle of the night or early morning	○	○	○	○
c. Have to get up to use the bathroom	○	○	○	○

d. Cannot breathe comfortably	○	○	○	○
e. Cough or snore loudly	○	○	○	○
f. Feel too cold	○	○	○	○
g. Feel too hot	○	○	○	○
h. Had bad dreams	○	○	○	○
i. Have pain	○	○	○	○

j. Other reasons please describe: [ ]

How often during the first two months after having your baby(ies) did you have trouble sleeping because of this?	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
	○	○	○	○

	Very good	Fairly Good	Fairly bad	Very bad
6. How would you rate your sleep quality overall?	○	○	○	○

	Not at all	Less than once a week	Once or twice a week	Three or more times a week
7. How often have you taken medicine (prescribed or "over the counter") to help you sleep	○	○	○	○
How often have you had trouble staying awake while driving, eating meals, or engaging in social activity?	○	○	○	○

8. How much of a problem has it been for you to keep up enough enthusiasm to get things done?	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
	○	○	○	○

Appendix M

The Wijma Delivery Experience Questionnaire

This questionnaire is about feelings and thoughts women may have after childbirth.

The answers to each question appear as a scale from 1 to 6. The outermost answers (1 and 6 respectively) correspond to the opposite extremes of a certain feeling or thought.

Please complete each question by ticking the number belonging to the answer which most closely corresponds to how think your labour and delivery was, in the **FIRST TWO MONTHS AFTER HAVING YOUR BABY(IES).** – not the way you wish it would have been.

How did you experience your labour and delivery as a whole?	
	1 (Extremely fantastic) 2 3 4 5 6 (Not at all fantastic)
	1 Extremely frightful) 2 3 4 5 6 (Not at all frightful)
How did you feel in general during the labour and delivery?	
	1 (Extremely lonely) 2 3 4 5 6 (Not at all lonely)
	1 (Extremely strong) 2 3 4 5 6 (Not at all strong)
	1 (Extremely confident) 2 3 4 5 6 (Not at all confident)
	1 (Extremely afraid) 2 3

	4 5 6 (Not at all afraid)
	1 (Extremely deserted) 2 3 4 5 6 (Not at all deserted)
	1 (Extremely weak) 2 3 4 5 6 (Not at all weak)
	1 (Extremely safe) 2 3 4 5 6 (Not at all safe)
	1 (Extremely independent) 2 3 4 5 6 (Not at all independent)
	1 (Extremely desolate) 2 3 4 5 6 (Not at all desolate)
	1 (Extremely tense) 2 3 4 5 6 (Not at all tense)
	1(Extremely glad) 2 3 4 5 6 (Not at all glad)
	1 (Extremely proud) 2 3 4 5 6 (Not at all proud)
	1 (Extremely abandoned) 2 3

	4 5 6 (Not at all abandoned)
	1 (Totally composed) 2 3 4 5 6 (Not at all composed)
	1 (Extremely relaxed) 2 3 4 5 6 (Not at all relaxed)
	1 (Extremely happy) 2 3 4 5 6 (Not at all happy)
What did you feel during the labour and delivery?	
	1 (Extreme panic) 2 3 4 5 6 (No panic at all)
	1 (Extreme hopelessness) 2 3 4 5 6 (No hopelessness at all)
	1 (Extreme longing for the child) 2 3 4 5 6 (No longing for the child at all)
	1 (Extreme self-confidence) 2 3 4 5 6 (No self-confidence at all)
	1 (Extreme trust) 2 3 4 5 6 (No trust at all)
	1 (Extreme pain)

	2 3 4 5 6 (No pain at all)
What happened when labour was most intense?	
	1 (I behaved extremely badly) 2 3 4 5 6 (I did not behave badly at all)
	1 (I dared to totally surrender control to my body) 2 3 4 6 (I did not dare surrender control to my body at all)
	1 (I lost total control of myself) 2 3 4 5 6 (I did not lose control of myself at all)
How was the very moment you delivered the baby?	
	1 (Extremely funny) 2 3 4 5 6 (Not at all funny)
	1 (Extremely natural) 2 3 4 5 6 (Not at all natural)
	1 (Extremely self-evident) 2 3 4 5 6 (Not at all self-evident)
	1 (Extremely dangerous) 2 3 4 5 6 (Not at all dangerous)
Had you, during the labour and delivery, fantasies like for example….	

…fantasies that your child would die during labour/delivery?	1 (Never) 2 3 4 5 6 (Very often)
…fantasies that your child would be injured during the labour/delivery?	1 (Never) 2 3 4 5 6 (Very often)

Appendix N

Debrief and Prize draw

As a thank you for taking the time to complete this study you can enter into a prize draw for **one** £100 and **two** £50 Amazon vouchers. If you would like to enter this draw, please provide an email address we can contact you on should you win. This information will be stored completely separately from your questionnaire answers. Your contact information will be deleted once a winner has been selected. The draw will take place when the study has closed. This is expected to be no later than August.

If you would like to be entered the draw, please provide the following information:

Your email address:

If an email address is not the best way to contact you, please specify an alternative contact method:

We hope that this study has not caused you any concern. However, if you found that you were distressed, you can contact your General Practitioner (GP) or health visitor who can offer you advice and support. Or, you can contact MIND, a mental health charity which provides support, or advice on how to access local services, to those experiencing mental health difficulties. You can get in touch with MIND at https://www.mind.org.uk/about-us/local-minds/ or by phoning their central office at 020 8519 2122. Alternatively, the Samaritans offer a free listening service for UK residents and provide links to other services on their website. You can get in touch with the Samaritans at https://www.samaritans.org/ or by phoning 116 123 (UK).

If you have any further questions or concerns you can also contact me (Email: c.stansfield@lancaster.ac.uk) or my supervisors Professor Bill Sellwood (Email: b.sellwood@lancaster.ac.uk) and Professor Steven Jones (Email: s.jones7@lancaster.ac.uk).

If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researchers, you can contact Professor Roger Pickup (Email: r.pickup@lancaster.ac.uk; Tel: 01524 593 746

Thank you for your participation.

Doctorate in Clinical Psychology | Lancaster University

SECTION FIVE

APPENDICES

Catrina Stansfield

Doctorate in Clinical Psychology

Division of Health Research, Lancaster University

Appendix A

Ethical Approval

Lancaster University

Applicant: Cat Stansfield
Supervisors: Bill Sellwood and Steve Jones
Department: Health Research
FHMREC Reference: FHMREC17065

17 April 2018

Dear Cat

Re: The Occurrence of Sub-Clinical Symptoms of Mania in New Mothers and Factors Predicting its Development

Thank you for submitting your research ethics application for the above project for review by the **Faculty of Health and Medicine Research Ethics Committee (FHMREC)**. The application was recommended for approval by FHMREC, and on behalf of the Chair of the Committee, I can confirm that approval has been granted for this research project.

As principal investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research to the Research Ethics Officer at the email address below (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- submitting details of proposed substantive amendments to the protocol to the Research Ethics Officer for approval.

Please contact me if you have any queries or require further information.

Tel:- 01542 592838
Email:- fhmresearchsupport@lancaster.ac.uk

Yours sincerely,

Dr Diane Hopkins
Research Integrity and Governance Officer, Secretary to FHMREC.

Appendix B

Prize Draw £100 Receipt

amazon.co.uk

Details for Order #205-8694422-7985900

Print this page for your records.

Order Placed: 2 October 2018
Amazon.co.uk order number: 205-8694422-7985900 Printable Order Summary | Print Invoice
Order Total: £100.00

Gift Certificates

Sent	Amount
Email gift voucher to: [redacted] - **From:** Cat Stansfield- Thesis Prize Draw - **Message:** Hope you enjoy this Amazon Gift Card!	£100.00

If you want to cancel a gift card, please send an e-mail to customer service. We will do our best to fulfil your request.

Payment information

Payment Method:
Visa/Delta/Electron | [redacted]

Item(s) Subtotal: £100.00

Total: £100.00

Grand Total: £100.00

To view the status of your order, return to Order Summary.

Please note: this is not a VAT invoice.

Appendix C

Prize Draw £50 Receipt

amazon.co.uk

Details for Order #205-4745243-1201147

Print this page for your records.

Order Placed: 2 October 2018
Amazon.co.uk order number: 205-4745243-1201147
Order Total: £50.00

Printable Order Summary | Print Invoice

Gift Certificates

	Amount
Sent **Email gift voucher to:** [redacted] - **From:** Cat Stansfield- Thesis Prize Draw - **Message:** Hope you enjoy this Amazon Gift Card!	£50.00

If you want to cancel a gift card, please send an e-mail to customer service. We will do our best to fulfil your request.

Payment information

Payment Method:
Visa/Delta/Electron | [redacted]

Item(s) Subtotal: £50.00

Total: £50.00

Grand Total: £50.00

To view the status of your order, return to Order Summary.

Please note: this is not a VAT invoice.

Appendix D

Prize Draw £50 Receipt

amazon.co.uk

Details for Order #205-3456317-0170710

Print this page for your records.

Order Placed: 2 October 2018
Amazon.co.uk order number: 205-3456317-0170710
Order Total: £50.00

Printable Order Summary | Print Invoice

Gift Certificates

	Amount
Sent **Email gift voucher to:** [redacted] - **From:** Cat Stansfield- Thesis Prize Draw - **Message:** Hope you enjoy this Amazon Gift Card!	£50.00

If you want to cancel a gift card, please send an e-mail to customer service. We will do our best to fulfil your request.

Payment information

Payment Method:
Visa/Delta/Electron | [redacted]

Item(s) Subtotal: £50.00

Total: £50.00

Grand Total: £50.00

To view the status of your order, return to Order Summary.

Please note: this is not a VAT invoice.