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## Differentiating maternal fatigue and depressive symptoms at six months and four years post partum: Considerations for assessment, diagnosis and intervention

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## ABSTRACT

*Objective:* fatigue and depressive symptoms are common among women in the postpartum period, and it has been proposed that fatigue is a risk factor for later depression. To progress this research, there is a need to clarify the conceptual and measurement issue of whether these two sets of symptoms are distinct constructs. There is also a need to determine whether they are distinct constructs beyond the postnatal period. The aim of the study was to assess the construct and discriminant validity of fatigue and depressive symptoms as measured by the SF-36 Vitality subscale (SF-36) and the Edinburgh Postnatal Depression Scale (EPDS) at six months and at four years post partum.

*Design, setting and participants:* data from over 1000 women participating in the Maternal Health Study, a longitudinal study of women's physical and psychological health and recovery after childbirth were used.

*Findings:* confirmatory factor analysis revealed a two-factor model of fatigue and depressive symptoms represented as distinct but related constructs was a better fit to the data than a one-factor model of fatigue and depression sharing the same underlying construct at both six months and four years post partum.

*Key conclusions and implications for practice:* this study provides empirical evidence that maternal fatigue and depression in the first year after having a baby and at four years post partum are best understood as separate psychological constructs or experiences. The findings have important implications for clinical practice, in particular underlining the importance of differentiating tiredness from depression.

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## Introduction

In the first year after having a baby, it is estimated that up to 70% of women experience exhaustion (Glazener et al., 1995; Brown and Lumley, 1998; Saurel-Cubizolles et al., 2000; Ansara et al., 2005; Woolhouse et al., 2013), and 52% continue to experience exhaustion at 18 months post partum (Parks et al., 1999). Exhaustion and fatigue are terms often used interchangeably in the literature. The chronic and persistent nature of exhaustion is a defining feature of fatigue (Ream and Richardson, 1996; North American Nursing Diagnosis Association, 2001), and symptoms generally include a sense of mental and physical exhaustion, tiredness, lack of energy, and perceived problems with attention,

concentration and other cognitive functions (Milligan et al., 1996; Ream and Richardson, 1996; Pugh et al., 1999).

Although often overlooked as an expected part of early parenting, there is a growing body of research indicating that fatigue is associated with a range of mental health difficulties (Fisher et al., 2002; Giallo et al., 2011) and adverse parenting experiences (Cooklin et al., 2011). Several studies have shown that high levels of fatigue among mothers of infants and young children have been associated with increased parenting stress (Cooklin et al., 2011; Dunning and Giallo, 2012), lowered sense of competence and satisfaction in the parenting role (Cooklin et al., 2011; Dunning and Giallo, 2012), increased irritability, and frustration in the parent-child relationship (Cooklin et al., 2011; Giallo et al., 2013).

Fatigue has also been associated with depression, stress and anxiety symptoms among women in the post partum and early parenting period (Gardner, 1991; Corwin et al., 2005; Dennis and Ross, 2005; Rychnovsky and Beck, 2006). In what is likely to be a

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complex bidirectional relationship, it has been posited that fatigue may contribute to the development of depressive symptoms among women in the postnatal period (Pugh and Milligan, 1995). Evidence for this comes from several studies showing that fatigue several days after birth predicts depression several weeks later (Gardner, 1991; Rychnovsky and Beck, 2006). Two small studies of approximately 40 women found that fatigue on day 7 post partum accounted for approximately 20–30% of the variance in depressive symptoms around day 28 post partum (Bozoky and Corwin, 2002; Corwin et al., 2005). Most recently, in a study of over 1000 Australian mothers, reports of extreme exhaustion at three months post partum was associated with depressive symptoms at 6–12 months post partum (Woolhouse et al., 2013). Support for fatigue as a risk factor for depression also comes from a study of 505 mothers of infants (4–8 weeks old) with frequent infant night waking, which found that maternal fatigue at one week post partum was associated with the onset of new depressive symptoms at four and eight weeks post partum (Dennis and Ross, 2005).

One of the challenges of progressing research into fatigue as a risk factor for depression is the need to clarify the conceptual and measurement issue of whether these two symptoms are indeed distinct constructs. Fatigue or loss of energy is a key symptom of establishing a clinical diagnosis of depression, and both have the potential to affect cognitive functioning such as concentration, attention and memory (Hockey et al., 2000; van der Linden et al., 2003; Chee et al., 2006). This raises questions about whether symptoms of fatigue and depression typically co-exist and share a single underlying construct or dimension (Runquist, 2007; Brown and Kroenke, 2009), or whether it is possible to experience fatigue symptoms without being depressed.

There is some evidence suggesting that fatigue and depressive symptoms during the postnatal period are likely to be distinct constructs. In a study of 228 women in the first postnatal year, the discriminant validity of fatigue and depression was assessed by the Fatigue Assessment Scale (FAS; Michielsen et al., 2004) and Depression subscale of the Depression Anxiety Stress Scale-21 (DASS-21; Lovibond and Lovibond, 1995), respectively (Giallo et al., 2008). Using confirmatory factor analysis, the results revealed that a two-factor model of fatigue and depression as distinct but related constructs was a better fit to the data than a one-factor model measuring the same underlying construct.

Further to this, two studies have demonstrated that it is possible for women to be fatigued but not depressed. In a study of 109 women attending a mother–baby unit for infant sleep and settling issues, psychological distress symptoms assessed by the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) and Profile of Mood States subscales (POMS; McNair et al., 1971) were clustered into three distinct groups (Fisher et al., 2002). Approximately 26% of women reported high depression and other symptoms of distress (anxiety, anger, and fatigue), and were likely to be clinically depressed. A further 32% reported extreme fatigue, and elevated anxiety scores but not within the clinical range. For the final group of women, 34% reported high fatigue only. The approach used in this study was replicated with a larger community-based sample of 254 women in the first postnatal year who completed the FAS and Depression subscale from the DASS-21 (Wade et al., 2012). Four distinct groups were identified, with three groups reporting low (49%), moderate (22%) and high (9%) fatigue and depressive symptoms, and a final group (20%) reporting high levels of fatigue only.

Whilst this small body of research provides some evidence for fatigue and depressive symptoms as separate constructs, there is a need to replicate and extend this work in several ways. First, replication with larger and more representative samples of women is needed. Second, replicating previous findings (e.g., MacArthur

et al., 2003; Gartland et al., 2010) with other self-report measures of fatigue and depressive symptoms, particularly with those commonly used in the postnatal period such as the SF-36, a measure of general health status and the EPDS is necessary. Finally, establishing discriminant validity between fatigue and depressive symptoms beyond the first postnatal year is needed. Given growing evidence that fatigue persists beyond the first year post partum for many women (Parks et al., 1999; Troy, 1999), and that moderate to high levels of fatigue and depression are also reported by mothers of children up to five years of age (Cooklin et al., 2011), there is a need to identify whether it is possible to differentiate between fatigue and depressive symptoms during the early parenting period.

We had a unique opportunity to address all these considerations with a sample of over 1000 women participating in a longitudinal study of women's physical and psychological health after childbirth (Brown et al., 2006). The aim of the current study was to assess the construct and discriminant validity of fatigue and depressive symptoms as measured by the SF-36 Vitality subscale and the Edinburgh Postnatal Depression Scale at six months and at four years post partum. On the basis of previous research (i.e., Giallo et al., 2011), it was hypothesised that a two-factor model representing fatigue and depressive symptoms as distinct but related constructs would be a better fit of the data than the one-factor model of fatigue and depression which assumes that they share the same underlying dimensionality.

## Method

### Study design and sample

Data for this study were drawn from the Maternal Health Study (MHS), a longitudinal study of women's physical and psychological health and recovery after childbirth. This study was approved by the relevant ethics committees in the participating hospitals, La Trobe University and the Royal Children's Hospital, Melbourne. A detailed description of the study design, sampling and field methods are available in the published study protocol (Brown et al., 2006). Briefly, women registered to give birth at six metropolitan public hospitals in Melbourne, Australia between April 2003 and December 2005, were recruited to the study. Eligibility criteria for participation were: (a) 18 years or older; (b) nulliparity (i.e., no prior live births or pregnancies ending in a stillbirth); (c) estimated gestation of up to 24 weeks at time of enrolment; and (d) sufficient proficiency in English to complete written questionnaires and interviews. Data were collected using a combination of mailed questionnaires and telephone interviews during pregnancy at (a) 10–24 weeks' gestation, (b) 30–32 weeks' gestation, (c) three, six, nine, 12 and 18 months post partum, and (d) when the index (firstborn) child was four years of age.

Over 6000 invitations to participate in the study were distributed to women by their antenatal care health professional at the participating hospitals. It was not possible to determine how many ineligible women received an invitation, how many invitations were incorrectly addressed or how many women received more than one invitation. Assuming that 80–90% of invitations reached eligible women, we conservatively estimate that the final response rate was between 28% and 31%. Excellent retention rates were achieved at all follow-ups ranging from 95% in late pregnancy to 83% at four years post partum. This paper draws on data collected in the self-administered questionnaires completed at six months and four years post partum.

### Measures

Fatigue was assessed by using the Vitality subscale of the SF-36, a self-report measure of general health status (Ware et al., 1993).

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