

**ATTACHMENT RG 4**

This is the attachment marked "**RG 4**" referred to in the witness statement of Rebecca Giallo dated 7th July 2015.

# Parental fatigue and parenting practices during early childhood: an Australian community survey

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## Abstract

**Background** Parenting behaviours are influenced by a range of factors, including parental functioning. Although common, the influence of parental fatigue on parenting practices is not known. The first aim of this study was to investigate the relationship between fatigue and parenting practices. The second aim was to identify parental psychosocial factors significantly associated with fatigue.

**Methods** A sample of 1276 Australian parents, of at least one child aged 0–5 years, completed a survey. Demographic, psychosocial (social support, coping responses) and parental sleep and self-care information was collected. Hierarchical regression was performed to assess the contribution of fatigue (modified Fatigue Assessment Scale) to parental practices (warmth, irritability and involvement), and parenting experiences (Parenting Stress Index, Parenting Sense of Competence Scale). Hierarchical multiple regression assessed the contribution of a range of parental sleep, psychosocial (social support, coping responses) and self-care variables to fatigue when demographic characteristics were held constant.

**Results** Higher fatigue was significantly associated with lower parental competence ( $\beta = -0.17, P < 0.005$ ), greater parenting stress ( $\beta = 0.21, P < 0.005$ ) and more irritability in parent–child interactions ( $\beta = 0.11, P < 0.005$ ). Several psychosocial characteristics were associated with higher parental fatigue, including inadequate social support, poorer diet, poorer sleep quality and ineffective coping styles including self-blame and behaviour disengagement.

**Conclusions** Fatigue is common, and results suggest that fatigue contributes to adverse parental practices and experiences. However, possible risk factors for higher fatigue were identified in this study, indicating opportunities for intervention, management and support for parents.

## Keywords

early childhood, fatigue, parenting, parenting practices, parents

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## Introduction

Parental tiredness is colloquially assumed to be a near universal experience associated with parenting infants and young children. Parents anticipate sleep disturbance across the transition to parenthood precipitated by the intensive demands of infant care. For many parents, however, these disruptions continue into early childhood (Armstrong *et al.* 1994; Hiscock & Wake 2001; Wake *et al.* 2006; Bayer *et al.* 2007).

Combined with the substantial domestic workload and the caring responsibilities associated with parenting young children, it is likely that this sleep disruption will result in persistent and significant fatigue. However, the nature and consequences of fatigue in parents of young children has not been widely investigated. In this paper, we investigate the relationship between fatigue and parenting practices, and identify potentially modifiable risk factors associated with parental fatigue.

There are no established clinical criteria of fatigue, nor is there a universal definition. However, fatigue has been conceptualized as a multidimensional construct, encompassing feelings of significant and persistent exhaustion, which interfere with an individual's cognitive, emotional and psychomotor functioning (Milligan *et al.* 1996; Ream & Richardson 1996; Pugh *et al.* 1999). Fatigue is considered to be more severe than 'tiredness', as it is persistent and not relieved by rest (Elek *et al.* 2002).

The available literature investigating parental fatigue has predominantly focused on mothers, rather than fathers, and on the first post-partum year (Pugh & Milligan 1995; Troy *et al.* 1997; Bozoky & Corwin 2002; Elek *et al.* 2002). International studies have described fatigue as among the most common health problems reported by mothers in the first 6 months following birth (Glazener *et al.* 1995; Saurel-Cubizolles *et al.* 2000; Ansara *et al.* 2005), persisting for 52% of women for up to 18 months post partum (Parks *et al.* 1999). Similarly, an Australian population-based survey of over 1300 women from one state (Victoria) found that fatigue, reported by 69% of women, was the most common post-partum physical health problem (Brown & Lumley 1998). Several psychosocial factors have been associated with greater maternal fatigue post partum including the intensive daily and overnight demands of infant care (Elek *et al.* 2002; Fisher *et al.* 2002), poor physical health (Parks *et al.* 1999; Bayer *et al.* 2007), insufficient support, frequent sleep disruption (Armstrong *et al.* 1998) and a substantial unpaid household workload (Fisher *et al.* 2002). It is plausible that some of these risk factors persist into the early years of childhood, yet this has not been widely investigated in mothers, and even less so in fathers.

Fatigue is a potentially serious health concern. The impact of fatigue on adults' psychological functioning has been well documented within occupational health and safety literature, adversely affecting concentration, planning, decision making and cognitive functioning (Hockey *et al.* 2000; Torres-Harding & Jason 2005; Chee *et al.* 2006). It is also likely that fatigue adversely affects parents' capacity to offer optimal parenting, including warmth, affection and engaging in shared activities with the child (McQueen & Mander 2003; Bayer *et al.* 2007), subsequently eroding parents' sense of efficacy within the parenting role. Qualitative research has reported that parents who are experiencing fatigue also report heightened irritability and reduced patience (Nash *et al.* 2008), but this has not been empirically confirmed.

Furthermore, persistent fatigue is salient to parental mood and psychological well-being. Research has documented a relationship between fatigue and maternal depressive symptoms

post partum (Dennis & Ross 2005; Meltzer & Mindell 2007), and there is clear evidence that interventions addressing infant sleep difficulties are associated with improvements in maternal psychological distress (Hiscock & Wake 2002; Fisher *et al.* 2004; Bayer *et al.* 2007; Hiscock *et al.* 2007). Fatigue and loss of energy are among the diagnostic features of clinical depression; thus, there is a need for conceptual and empirical clarification between the two psychological constructs (Milligan *et al.* 1996, 1997). However, several authors have argued that not only is clinically significant fatigue a potential explanatory factor for maternal psychological distress, but that it is a distinct state, warranting appropriate investigation and intervention (Armstrong *et al.* 1998; Fisher *et al.* 2002).

While parenting experiences and behaviours are influenced by a broad range of demographic and psychosocial factors (Belsky 1984; Bronfenbrenner 1986), it is practicable to identify those that are potentially amenable to intervention. Given that fatigue has implications for psychological functioning, it is possible that fatigue is associated with less optimal parenting practices, and poorer sense of self-efficacy. The paucity of existing research investigating parental fatigue indicates the need for initial investigation of the relationship between fatigue and parenting. The first aim of this study was to investigate whether parental fatigue would explain additional variance in adverse parenting experiences and behaviours in a community sample of Australian parents with child(ren) aged 0–5 years, when the variance accounted for by parent demographic, psychosocial and health factors were held constant. It was hypothesized that higher fatigue would be associated with higher parenting stress (PSI), lower parenting sense of competence (PSOC), less warmth and involvement with the child, and more irritability in the parenting role. The second aim was to identify which of parental psychosocial, sleep and self-care variables were significantly associated with higher fatigue. It was hypothesized that worse parental sleep, poorer self-care, inefficient coping strategies, poor health and inadequate social support would contribute to higher parental fatigue.

## Methods

Ethical approval to conduct a nationwide survey was obtained from the Department of Health, Victoria, Australia. Ethical approval was obtained to approach a range of organizations, some of which have national reach, for them to advertise the study. Recruitment occurred from February to June 2008. Twenty-seven service providers, including maternal and child health, and early education or pre-school services (Kinders), some with national presence, advertised the survey, providing

the link to the survey on their own websites or via email distribution lists. Concurrently, an extensive, national, media campaign was conducted advertising a survey about parent well-being, via national television, radio and online parenting websites. Parents willing to participate then volunteered to complete the standard consent form and the survey via the website link provided, or by contacting the research team for a hard copy of the consent form and the survey.

### Participants

Participants were mothers or fathers of at least one dependent child (aged 0–5 years) living in the household, with sufficient English for completion of the survey, and over 18 years of age.

### Measures

The primary outcome for the study was parental fatigue, assessed using a modified version of the Fatigue Assessment Scale (FAS; Michielsen *et al.* 2004). The original FAS is a 10-item, self-report measure that assesses the presence of physical and cognitive symptoms of fatigue. A psychometric evaluation of the FAS for use with parents of young children has been reported elsewhere (Giallo *et al.* 2010). As recommended, three items ('I don't do much during the day', 'I feel no desire to do anything' and 'I have problems starting things') were removed due to high negative skewness and limited item response variability. The confirmatory factor analysis also indicated that two items ('I have problems thinking clearly' and 'When I am doing something, I can concentrate well') be removed due to low factor loadings and item redundancy. Measurement invariance across mothers in the post-natal period and mothers of older children (Giallo *et al.* 2010), as well as discriminant validity between fatigue using the modified five-item version of the scale and depression, has been established (Giallo *et al.* 2011). Items are rated on a 5-point scale (1 = 'Never' to 5 = 'Always') and summed, with higher scores indicating more fatigue symptoms. Internal consistency as measured by Cronbach's alpha for the current sample was 0.88.

Measures used to assess parents' socio-demographic, psychosocial, health and parenting characteristics are summarized in Table 1.

### Statistical analysis

Data were entered into SPSS (Version 18.0; IBM SPSS Statistics 2010). Missing data were minimal, with less than 0.5% missing across all variables. A total of 111 cases had one missing item on

the modified FAS scale, and these values were imputed using expectation-maximization algorithm available in SPSS. Bivariate relationships between fatigue and parent psychosocial characteristics and parenting experiences were assessed (Pearson's *r*-test for correlation), as were mean differences on the modified FAS (*t*-test) for parent socio-demographic characteristics (gender, tertiary qualification, number of children, infant in household, household type and employment status). Three-step hierarchical regression was performed on each of the parenting outcomes (dependent variables: lower PSOC, PSI, warmth, irritability, involvement) separately, to investigate the additional contribution of fatigue (Block 3) to parenting when the variation provided by fixed demographic characteristics (Block 1) and psychosocial factors (Block 2) was held constant (Aim 1). Two-step hierarchical regression was performed to ascertain which of the psychosocial factors assessed in the study made a unique contribution to fatigue (modified FAS) when demographic factors were held constant (Aim 2). No two independent variables included in the final models had an association of  $r \geq 0.70$ , minimizing the likelihood of confounding on the basis of multi-collinearity.

### Results

A total of 1431 parents responded to the survey. Forty-four were excluded due to incomplete demographic information. Of the remaining 1387 participants, only those with at least one child aged 0–5 years and those who nominated a 0- to 5-year-old as their 'focus child' (as required by the protocol for completion of the Parenting Stress Index; Abidin 1986) were included in analyses ( $n = 1276$ ). Demographic characteristics of the sample are summarized in Table 2. Compared with Australian Census population data (Australian Bureau of Statistics 2007a), a similar proportion of participants were Australian born (84%). The proportion of couple families was higher in the sample (92%) compared with all Australian households with dependent children <15 years (78%). Participants were more likely to speak English as their main language (98% vs. 79%; Australian Bureau of Statistics 2006), and to have obtained a university qualification (63% vs. 29%) than national population estimates (Australian Bureau of Statistics 2007b).

### Demographic factors associated with fatigue

Mean (SD) scores on the modified FAS scale were 14.0 (SD = 4.2, range 5–25). Mothers reported higher fatigue than fathers, and being a sole rather than partnered parent was associated with higher fatigue (Table 3). Participants with more than one

**Table 1.** Measures

Construct	Measure (source)	Additional information
Socio-demographic characteristics		
Parent characteristics		Age (years), gender (male = 0, female = 1), main language (English = 0, other = 1), Aboriginal status (no = 0, yes = 1), household type (couple = 0, 1 = sole parent), age/no. of children <5 years (one only = 0, two or more = 1), educational attainment (no tertiary qualification = 0, Bachelor/higher degree = 1), employment status (not employed = 0, employed = 1)
Relative socio-economic position of residential area	Socio-Economic Index for Areas – Index of Relative Socio-Economic Disadvantage (SEIFA)*	Based on 2001 Australian population census data. Lower scores reflect an area of relatively low socio-economic advantage, used as a continuous measure
Parental psychosocial characteristics		
Sleep patterns	Pittsburgh Sleep Quality Index (PSQI)†	18 items, e.g. 'I cannot get to sleep within 30 min'; 'During the past month, how often have you had trouble staying awake?' Rating scale from 0 = not at all to 3 = three or more times/week. Higher scores indicate poorer quality sleep (Cronbach's alpha = 0.83)
Parental sleep expectations and rating of sleep adequacy	Study-specific measure	5 items, e.g. 'I expected to be this tired when my children were young'; 'I get as much sleep as other parents of young children'. Rating scale from 1 = strongly disagree to 5 = strongly agree. Total PES score range 5–25, with higher scores indicating a more positive assessment of sleep and energy levels (Cronbach's alpha = 0.81)
General health	SF-36 global assessment of self-rated health‡	Single item, 5-point scale ranging from 1 = poor to 5 = excellent. Higher scores indicate better overall physical health
Self-care behaviours	Study-specific assessment	Two items: 'How would you rate the quality of your diet?' and 'How would you rate the level of your physical activity?' Responses from 0 = poor to 5 = excellent. Higher scores indicate better quality diet and level of physical activity
Parental coping style	Brief Coping Scale§	28 items, e.g. 'I seek emotional support from others'; 'I blame myself for things that have happened'. Rating scale from I don't usually do this = 1 to I usually do this a lot = 4. Yields 14 distinct coping strategies, each with an individual score range 2–8. Higher scores are indicative of greater use of that strategy (Cronbach's alpha > 0.75 for each coping strategy, with the exception of Distraction, Behaviour disengagement, Venting, Acceptance with Cronbach's alpha values of >0.60; and Denial Cronbach's alpha = 0.39)
Social support	Parent Social Support Index (PSSI)¶	14 items, consisting of two subscales: Support need (Cronbach's alpha = 0.82) items include: 'How much did you need advice and information about the care of your child?'; 'How much did you need people to pitch in with your household tasks?' Responses range from 1 = no need at all to 5 = very great need. Support satisfaction subscale (Cronbach's alpha = 0.78), e.g. 'How satisfied were you with the amount of help you receive with household tasks?' Response range from 1 = very dissatisfied to 6 = very satisfied
Parenting experiences and parenting behaviours		
Parenting stress	The Parenting Stress Index (PSI)**	36 items, assessment of parenting distress, frustration and demands, items include: 'I feel trapped by my responsibilities as a parent'; 'My child does a few things which bother me a great deal'. Rating scales from 1 = strongly disagree to 5 = strongly agree. Higher total PSI scores indicate more parental stress and emotional strain associated with parenting (Cronbach's alpha = 0.93)
Parental self-efficacy	Parenting Sense of Competence Scale (PSOC)††	16 items, two subscales dimensions: Satisfaction scale, e.g. 'I meet my own expectations for expertise in caring for my child' (Cronbach's alpha = 0.75) and Efficacy scale, e.g. 'I honestly believe I have all the skills necessary to be a good parent to my child' (Cronbach's alpha = 0.76). Ratings from strongly agree = 1 to strongly disagree = 5. Higher scores indicate more self-efficacy
Parental warmth	Parenting warmth scale‡‡	6 items assessing frequency of affectionate responses, e.g. 'In the last 6 months, how often did you show affection by hugging, kissing and holding your child?' and 'enjoy doing things with your child?' Rating from 1 = never to 5 almost always (Cronbach's alpha 0.86)
Parental irritability	Parenting irritability scale‡‡	5 items, e.g. 'Over the past 4 weeks, how often have you been angry with this child?' or 'lost your temper with this child?' Rating from 1 = never to 5 almost always (Cronbach's alpha = 0.86)
Parental involvement	Parental involvement scale‡‡	5 items, e.g. 'Over the past week, how often have you personally done the following activities with your child: read from a book' or 'played a game outdoors?' Rating from 0 = none to 3 = 6 or 7 days of the week (Cronbach's alpha = 0.72)
Impact on parenting		One item: 'Tiredness gets in the way of being the parent I would like to be'. Responses from strongly disagree = 1 to strongly agree = 5

\*Trewin (2003).

†Buysse and colleagues (1989).

‡Ware and colleagues (1993).

§Carver (1997).

¶Telleen (1990).

\*\*Abidin (1986).

††Johnston and Mash (1989).

‡‡Sanson and colleagues (2002).

PES, Parent Expectations about Sleep.

	Mothers ( <i>n</i> = 1122)	Fathers ( <i>n</i> = 154)	Total sample ( <i>n</i> = 1276)
Age years, mean (SD)	34.3 (4.8)	36.7 (5.5)	35 (5.0)
English main language, <i>n</i> (%)	1121 (97)	153 (99)	1245 (98)
Aboriginal/Torres Strait Islander, <i>n</i> (%)	16 (1)	5 (3)	22 (2)
Household type, <i>n</i> (%)			
Couple	1016 (91)	152 (99)	1168 (92)
Sole parent	106 (9)	2 (<1)	108 (8)
Infant in household, <i>n</i> (%)	262 (22)	25 (16)	356 (22)
No. of children <5 years, <i>n</i> (%)			
One	459 (41)	58 (38)	522 (41)
Two	464 (41)	66 (43)	525 (41)
Three or more	199 (18)	30 (19)	229 (18)
Bachelor degree or higher, <i>n</i> (%)	694 (62)	108 (70)	802 (63)
Employment status, <i>n</i> (%)			
Full-time	197 (18)	132 (86)	330 (26)
Part-time	504 (45)	16 (10)	517 (40)
Not employed	421 (38)	6 (4)	429 (34)

Table 2. Characteristics of the study sample

child <5 years of age reported more symptoms of fatigue than parents with only one child <5 years. There were no significant associations between modified FAS scores and parents' age, highest level of educational attainment or socio-economic position (Socio-Economic Index for Areas index).

### Relationship between fatigue, parenting practices and parenting experiences

Sixty-two per cent (*n* = 789) of participants (strongly) agreed that 'tiredness gets in the way of being the parent I would like to be'. Higher fatigue had a significant bivariate association with more PSI, lower PSOC, less parental warmth, more parental irritability and less parental involvement with the focus child (Table 3). Similar bivariate associations between modified FAS and parenting variables were found for mothers and fathers separately as for the whole sample, and are not reported separately here.

Results of the three-step hierarchical regression analyses performed on each of the parenting outcomes (PSI, PSOC, parenting warmth, irritability and involvement) are presented in Table 4. All fixed parent demographic characteristics (Table 2) were entered as Block 1, with the exception of those with too little variability (i.e. those without English as main language, Aboriginal status), all parent health and psychosocial factors assessed were added as Block 2 and modified FAS scores as Block 3. Psychosocial and health characteristics were retained in all models to ascertain the relative contribution of fatigue alongside the influence of the parent psychological, personal and socio-contextual characteristics that normally influence parenting behaviours (Belsky 1984; Bronfenbrenner 1986).

Results in Table 4 present the regression coefficients for the final model only (full results available from the authors).

Even when accounting for the variance explained by parental demographic, health and psychosocial factors, higher parental fatigue was significantly associated with higher PSI (Model 1), lower PSOC (Model 2) and more parental irritability (Model 4). The addition of modified FAS in the third step of each of these regression analyses significantly improved these models (adjusted  $R^2$  reported; Table 4). There was no significant association between fatigue and parenting warmth, or involvement when all demographic, psychosocial and health characteristics were held constant.

### Factors independently associated with fatigue

Bivariate analyses, presented in Table 3, revealed several psychosocial factors associated with higher fatigue. Several of the ineffective coping styles (Brief Cope Scale) were significantly correlated with higher modified FAS scores: behavioural disengagement ( $r = 0.33$ ,  $P < 0.001$ ) and self-blame ( $r = 0.32$ ,  $P < 0.001$ ). Conversely, effective coping strategies significantly correlated with reporting fewer symptoms of fatigue were active coping ( $r = -0.19$ ,  $P < 0.001$ ), use of emotional ( $r = -0.07$ ,  $P = 0.03$ ) and instrumental support ( $r = -0.09$ ,  $P = 0.003$ ), positive reframing ( $r = -0.23$ ,  $P < 0.001$ ), planning ( $r = -0.15$ ,  $P < 0.001$ ), humour ( $r = -0.14$ ,  $P < 0.001$ ) and acceptance ( $r = -0.12$ ,  $P < 0.001$ ). There were no significant correlations between parental fatigue and the remaining coping responses assessed (self-distraction, denial, substance abuse, venting and religious belief).

Variables with a significant correlation with fatigue were entered hierarchically into a linear regression model (see Table 5). Fixed demographic characteristics (Block 1) were

**Table 3.** Mean fatigue scores, compared for all demographic, psychosocial, health and parenting characteristics ( $n = 1276$ )

	R-FAS scores, mean (SD)	Pearson's correlation <i>r</i> (or <i>t</i> -value)	Effect size, Cohen's <i>d</i> (95% CI)	P-value
Demographic characteristics				
Age		-0.05		NS
SEIFA index*		-0.02		NS
Mothers	14.2 (4.0)	(-5.16)	0.48 (0.31 to 0.65)	<0.001
Fathers	12.3 (3.9)			
Tertiary qualification	13.9 (4.3)	(1.00)	0.05 (-0.16 to 0.07)	NS
No tertiary qualification	14.1 (4.5)			
Infant <12 months	14.0 (4.3)	(0.01)	0.02 (-0.10 to 0.14)	NS
No infant <12 months	13.9 (4.6)			
Two or more children $\leq 5$ years of age	14.2 (4.4)	(-0.25)	0.14 (0.02 to 0.25)	0.01
One child <5 years	13.6 (4.4)			
Couple household	13.9 (4.3)	(2.27)	0.25 (0.06 to 0.45)	0.02
Sole-parent household	15.0 (4.8)			
Employed (full-time, part-time/casual)	13.8 (4.3)	(2.19)	0.14 (0.02 to 0.25)	0.03
Non-employed	14.4 (4.5)			
Psychosocial characteristics				
Social support need <sup>†</sup>		0.36		<0.001
Social support satisfaction <sup>‡</sup>		-0.28		<0.001
Quality of intimate relationship <sup>‡</sup>		-0.28		<0.001
Sleep and self-care				
Self-rated health		-0.42		<0.001
Quality of diet		-0.33		<0.001
Level of physical activity		-0.32		<0.001
Expectations about sleep and activity (PES scores)		-0.55		<0.001
Parenting practices and experiences				
Parenting stress <sup>§</sup>		0.47		<0.001
Parental sense of competence <sup>¶</sup>		-0.40		<0.001
Parental warmth		-0.13		<0.001
Parental involvement		-0.11		<0.001
Parental irritability		0.25		<0.001

\*Socio-Economic Index for Areas (SEIFA; Trewin 2003).

†Parent Social Support Index (Tellegen 1990).

‡Quality of Relationship Index (Norton 1983).

§Parenting Stress Index (Abidin 1986).

¶Parenting Sense of Competence Scale (Johnston & Mash 1989).

R-FAS, Revised Fatigue Assessment Scale; PES, Parent Expectations about Sleep.

entered first, followed by psychosocial factors (Block 2). The introduction of these variables in the final step resulted in a significant change in  $R^2$ , significantly accounting for a further 46% of the variance in fatigue scores.

Notably, mothers reported higher fatigue than fathers. As expected, parental sleep quality and self-care variables were independently and significantly associated with higher fatigue,

including more sleep disturbance, worse physical health and lower level of physical activity. Expecting more sleep during parenting had a significant independent association with more fatigue symptoms. Relying on ineffective coping styles in particular self-blame and behaviour disengagement was associated with higher fatigue, as was a greater need for social support and lower satisfaction with available social support.

**Table 4.** Relationship between parental fatigue and parenting outcomes, adjusting for parental demographic, health and psychosocial characteristics: results of hierarchical regression analyses

Independent variables	Parenting outcome (dependent variable), standardized regression coefficients ( $\beta$ )†				
	Model 1 PSI‡	Model 2 PSOC§	Model 3 Warmth	Model 4 Irritability	Model 5 Involvement
Block 1					
Parental age	-0.03	0.01	0.02	-0.03	0.03
Tertiary qualification	-0.03	-0.05	0.13**	-0.02	0.09**
SEIFA index	-0.01	0.01	0.02	-0.01	0.01
Couple household	-0.02	-0.03	0.02	-0.04	0.02
Parent gender	-0.01	0.01	0.02	0.03	0.09**
Over one child less than 5 years	0.12**	-0.05*	-0.13*	0.36**	-0.12**
Employed	0.01	-0.03	0.02	0.09**	-0.06
Adjusted $R^2$	0.04	0.01	0.03	0.14	0.04
Block 2					
Coping strategies¶					
Active coping	-0.01	0.09*	0.03	0.07	0.03
Using emotional support	-0.05	0.07	0.12*	0.01	-0.03
Using instrumental support	-0.01	-0.08	-0.02	-0.03	0.02
Behavioural disengagement	0.03	-0.01	0.02	-0.01	0.01
Positive reframing	-0.07	0.14**	0.07	-0.07	0.10*
Planning	-0.11*	0.12**	0.05	-0.14**	0.08*
Humour	-0.06	0.02	0.01	0.01	0.07
Acceptance	-0.01	0.02	0.03	0.01	0.03
Self-blame	0.21**	-0.24**	-0.14**	0.18**	-0.06
Social support satisfaction	-0.13**	0.05	0.04	-0.05	-0.06
Social support need	0.21**	-0.17**	-0.03	0.13**	0.01
Physical health	-0.07**	0.02	0.05	0.04	0.07*
$R^2$ change	0.37**	0.37**	0.09**	0.12**	0.08**
Block 3					
Fatigue (revised FAS)	0.20**	-0.18**	-0.02	0.09**	0.01
$R^2$ change	0.03**	0.02**	0.00	0.06	0.00
Adjusted $R^2$	0.44**	0.39**	0.10	0.25**	0.10
Final model	$F(20, 935) = 36.40**$	$F(20, 973) = 32.65**$	$F(20, 974) = 6.68**$	$F(20, 974) = 17.19**$	$F(20, 972) = 6.34**$

\* $P \leq 0.05$ , \*\* $P \leq 0.005$ .†Regression coefficients ( $\beta$ ) presented for final model (including Blocks 1, 2 and 3) only. Full results available from the authors.

‡Parenting Stress Index (Abidin 1986); higher scores indicate more parental distress.

§Parenting Sense of Competence Scale (Johnston &amp; Mash 1989); higher scores indicate higher parenting self-efficacy/satisfaction.

¶Items from the Brief Cope Scale (Carver 1997).

PSI, parenting stress; PSOC, parenting sense of competence; SEIFA, Socio-Economic Index for Areas; FAS, Fatigue Assessment Scale.

## Discussion

This study is one of the few studies investigating the nature of fatigue in parents of young children beyond the first postpartum year. Findings from this study of a large community sample of Australian parents of young children indicate that fatigue is associated with both parental functioning and parenting behaviours. Given that parental fatigue has been under-investigated, this study was exploratory, and provides a preliminary understanding of some of the factors associated with significant fatigue and exhaustion. However, taken together, findings suggest that fatigue is a relevant state within the spectrum of parent well-being and parental functioning, requiring further investigation.

The first aim of this study was to investigate the relationship between parenting experiences, parenting practices and fatigue. Higher fatigue was significantly associated with reporting higher PSI, including more frustrated expectations, perceiving the child's behaviour as more demanding, and lower satisfaction in parenting. Similarly, higher fatigue was associated with reduced parenting sense of competence and efficacy within parent-child interactions (PSOC scores) (Johnston & Mash 1989). It is possible that parents who feel exhausted and irritable, with reduced capacity for clear thinking and decision making, find parenting more demanding than those who are less compromised by constant exhaustion. Fatigued parents may also find it challenging to meet the demands of their children in a way that is consistent with their own parenting hopes

**Table 5.** Results of hierarchical regression analyses investigating factors associated with fatigue scores (R-FAS\*)

Model	Independent variables	Standardized regression coefficients ( $\beta$ )	Model $R^2$ (adjusted $R^2$ )	P-value	
1	Over one child of less than 5 years of age	0.08	0.03	0.01	
	Female respondent	0.13		<0.001	
	Couple household	0.05		0.08	
	Employed	-0.29		0.34	
2	Over one child of less than 5 years of age	0.04	0.49**	0.09	
	Female respondent	0.05		0.03	
	Couple household	-0.02		0.32	
	Employed	-0.01		0.59	
	Social support (PSSI† scores)				
	Higher need for support	0.12		<0.001	
	Higher satisfaction with support	-0.06		0.03	
	PSQI‡ score (sleep disturbance)	0.19		<0.001	
	PES§ score (expectations about sleep)	-0.31		<0.001	
	Self-rated health	-0.15		<0.001	
	Quality of diet	-0.02		0.13	
	Quality of exercise	-0.08		0.002	
	Brief Cope¶ items				
	Behavioural disengagement	0.10		<0.001	
	Self-blame	0.06		0.03	
	Active coping	0.02		0.64	
	Use of emotional support	0.05		0.21	
	Use of instrumental support	-0.06		0.13	
	Positive reframing	-0.06		0.07	
	Planning factors	0.03		0.53	
Humour	-0.01	0.82			
Acceptance	0.005	0.86			

Final model:  $F(20, 1082) = 53.78, P < 0.001$ .

\*\* $P \leq 0.005$ .

\*Revised Fatigue Assessment Scale.

†Parent Social Support Index (PSSI; Telleen 1990).

‡Pittsburgh Sleep Quality Index (PSQI; Buysse *et al.* 1989), higher scores indicate greater sleep disruption.

§Expectations about sleep, higher scores indicate more positive assessments of expected sleep duration and activity levels.

¶Brief Cope Scale (ref), higher scores indicate more reliance on each coping strategy.

R-FAS, Revised Fatigue Assessment Scale; PES, Parental Expectations about Sleep.

and expectations, eroding parenting sense of competence and satisfaction with their own capacity to respond to their children confidently and sensitively. In a cross-sectional study of this kind, casual direction cannot be inferred from these associations, and it is also possible that higher parenting stress and experiencing low efficacy and competence contribute to parental workload and higher parental fatigue. Further research about the aetiology of fatigue will contribute to conceptual clarity about the relationship between fatigue and parenting experiences.

Higher fatigue was uniquely associated with more frequent displays of frustration, impatience and irritability towards the child. Fatigue plausibly reduces parental capacity for managing the frustration, challenges and demands that frequently accompany the daily tasks of parenting young

children. Not only is parental irritability associated with a range of adverse child outcomes (Capaldi 1992; Chang *et al.* 2003) but parents' sense of confidence, competence and self-esteem is likely to be significantly compromised by frequent irritable reactions towards their child. Alleviating fatigue is a potential means through which to support optimal parental functioning, capacity and confidence. The direction of this relationship needs to be confirmed in future investigations.

The second aim of the study was to identify which of a range of parental health and psychosocial variables were associated with higher parental fatigue, identifying likely opportunities for intervention and support. Not surprisingly, higher fatigue was associated with lower levels of physical activity, poorer self-rated health and worse quality of sleep. While it is probable that these associations are the effect of fatigue and

exhaustion, rather than the cause, it may be that improved self-care may alleviate some of the experiences and symptoms of fatigue, and provide short-term nurturance to parents when adequate rest is not immediately possible. Primary healthcare interventions that provide parents with psycho-education and support to prioritize and plan for routine self-care – including sleep hygiene, adequate rest, protecting discretionary leisure time – might be effective in reducing symptoms of fatigue.

In addition, more frustrated and unrealistic expectations about sleep and negative assessments of sleep duration were also uniquely associated with higher fatigue. Although disrupted sleep in early parenting is commonly anticipated, it may be that parents are ill prepared for the effects of this on their daily functioning, health and well-being. Psycho-educational strategies to enhance parents' awareness about the common sleep patterns and disturbances of early childhood and of realistic, age-appropriate expectations about sleep may also be important for inclusion in prevention and treatment interventions targeting fatigue.

Social support is well established as protective of optimal parent well-being and parenting practices (O'Hara & Swain 1996; Hogan *et al.* 2002), and the results of this study suggest that both a high perceived need for social support and low satisfaction with existing supports are associated with higher fatigue. Accessing appropriate practical, informational, social and emotional support is a skill, and it is possible that psycho-educational and health promotion interventions enhancing parents' capacity to utilize a range of support options might be effective in managing fatigue. A structured intervention specifically targeted at fatigue might include education for parents about the importance of routine self-care in order to support their own well-being and promote optimal parenting practices. This could be supplemented with strategies assisting parents to prioritize effectively to manage their workload, and to identify opportunities for maximizing practical support.

Finally, several specific coping strategies were significantly associated with high fatigue. Parents who indicated that they were more likely to blame themselves for their current circumstances or use behavioural disengagement strategies such as giving up or distracting oneself reported higher levels of fatigue. It must be noted, however, that the reliability of several of the Brief Cope items was lower than conventionally acceptable, and it may be that the capacity of the Brief Cope to identify coping strategies in this particular sample was constrained. These results need to be confirmed. It is plausible, however, that parents who do not engage in planning and

positive reframing to prioritize and manage their daily demands may experience more demanding situations. It is important to note, however, that the relationship between fatigue and avoidant forms of coping is likely to be bidirectional. Fatigue has the potential to impact on executive functions including attention, memory and concentration, and it is possible that fatigue may have an impact on parents' ability to plan and problem-solve. Conversely, positive reframing was associated with lower fatigue levels. Positive reframing is particularly relevant for parents in the early parenting period, when parents might benefit understanding that fatigue is particular to the demands of the early parenting period, and thus finite.

There are several limitations to the present study. The sample was not systematically obtained, and there are no normative data available for comparison. The representative adequacy of fatigue levels reported in this sample is not able to be established. The sampling strategy utilized is likely to have introduced bias into the sample, attracting parents who had sufficient motivation to participate, possibly those least affected by very high levels of fatigue. Accordingly, survey respondents were more likely to have a tertiary education, to be partnered and to speak English as their primary language than national population estimates, so the relevance of these results to parents who are single, without a tertiary qualification or English literacy is limited. Some of the relationships reported here might be either an under- or an over-estimate of the experience of fatigue, and may not be broadly generalized to all parents of children aged 0–5 years. The cross-sectional nature of the survey does not allow for causal relationships to be inferred. Despite this, interventions to alleviate fatigue may enhance parents' capacity to manage the intensive physical and emotional caregiving demands of early parenting.

This study investigated fatigue, a significant dimension of parental health and well-being, in a community sample of Australian parents of pre-school aged children. These preliminary findings suggest that fatigue is associated with adverse parenting behaviours such as high parenting stress, low parental self-efficacy and greater irritability in parent–child interactions, even when accounting for known predictors of parenting behaviours. Although further research is needed to confirm the direction of these relationships, the findings from this research indicate that fatigue is potentially amenable to support and management. The prevention and management of fatigue in parents may promote parenting behaviours that are important for optimal child health, well-being and development.

### Key messages

- Fatigue is one of the most common health problems reported by parents of infants and young children.
- Little is known about the relationship between fatigue and parenting practices and experiences.
- This study found that higher parental fatigue was associated with lower parental sense of confidence, higher parenting stress and less optimal parenting behaviours.
- Interventions that support parents to manage fatigue have potential implications of optimal parental functioning, capacity and confidence.

### References

- Abidin, R. (1986) *Parenting Stress Index*. Pediatric Psychology Press, Charlottesville, VA, USA.
- Ansara, D., Cohen, M., Gallop, R., Kung, R. & Schei, B. (2005) Predictors of women's physical health problems after childbirth. *Journal of Psychosomatic Obstetrics and Gynaecology*, *2*, 115–125.
- Armstrong, K., Quinn, R. & Dadds, M. (1994) The sleep patterns of normal children. *The Medical Journal of Australia*, *161*, 202–206.
- Armstrong, K., Van Haeringen, A., Dadds, M. & Cash, R. (1998) Sleep deprivation or postnatal depression in later infancy: separating the chicken from the egg. *Journal of Paediatrics and Child Health*, *34*, 260–262.
- Australian Bureau of Statistics (2006) *Census of Population and Housing*. Catalogue No. 2914.0.55.002. Australian Bureau of Statistics, Canberra, ACT, Australia.
- Australian Bureau of Statistics (2007a) *Australian Social Trends: One Parent Families*. Catalogue No. 4102.0. Australian Bureau of Statistics, Canberra, ACT, Australia.
- Australian Bureau of Statistics (2007b) *Australian Social Trends: Qualification Profile of Australians*. Catalogue No. 4102.0. Australian Bureau of Statistics, Canberra, ACT, Australia.
- Bayer, J., Hiscock, H., Hampton, A. & Wake, M. (2007) Sleep problems in young infants and maternal mental and physical health. *Journal of Paediatrics and Child Health*, *43*, 66–73.
- Belsky, J. (1984) The determinants of parenting: a process model. *Child Development*, *55*, 83–96.
- Bozoky, I. & Corwin, E. J. (2002) Fatigue as a predictor of postpartum depression. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *31*, 436–443.
- Bronfenbrenner, U. (1986) Ecology of the family as context for human development: research perspectives. *Developmental Psychology*, *22*, 723–742.
- Brown, S. & Lumley, J. (1998) Maternal health after childbirth: results of an Australian population based survey. *British Journal of Obstetrics and Gynaecology*, *105*, 156–161.
- Buysse, D., Reynolds, C., Monk, T., Berman, S. & Kupfer, D. (1989) The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Research*, *28*, 193–213.
- Capaldi, D. (1992) Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: a 2-year follow-up at grade 8. *Development and Psychopathology*, *4*, 125–144.
- Carver, C. (1997) You want to measure coping but your protocol's too long: consider the brief COPE. *International Journal of Behavioral Medicine*, *4*, 92–100.
- Chang, L., Schwartz, D., Dodge, K. & McBride-Chang, C. (2003) Harsh parenting in relation to child emotion regulation and aggression. *Journal of Family Psychology*, *17*, 598–606.
- Chee, M. W., Chuah, L. Y., Venkatraman, V., Chan, W. Y., Philip, P. & Dinges, D. F. (2006) Functional imaging of working memory following normal sleep and after 24 and 35 h of sleep deprivation: correlations of fronto-parietal activation with performance. *NeuroImage*, *31*, 419–428.
- Dennis, C. & Ross, L. (2005) Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. *Birth (Berkeley, Calif.)*, *32*, 187–193.
- Elek, S., Hudson, D. & Fleck, M. (2002) Couples' experiences with fatigue during the transition to parenthood. *Journal of Family Nursing*, *8*, 221–240.
- Fisher, J., Feekery, C. & Rowe-Murray, H. (2002) Nature, severity and correlates of psychological distress in women admitted to a private mother-baby unit. *Journal of Paediatrics and Child Health*, *38*, 140–145.
- Fisher, J., Feekery, C. & Rowe, H. (2004) Treatment of maternal mood disorder and infant behaviour disturbance in an Australian private mothercraft unit: a follow-up study. *Archives of Women's Mental Health*, *7*, 89–93.
- Giallo, R., Wade, C., Ward, J. & Kienhuis, K. (2010) *Fatigue in Mothers of Infants and Young Children: Factor Structure of the Fatigue Assessment Scale*. Parenting Research Centre, Melbourne, Vic., Australia.
- Giallo, R., Wade, C., Cooklin, A. & Rose, N. (2011) Assessment of fatigue and depression in the mothers of young children: support for two separate constructs. *Journal of Reproductive and Infant Psychology*, *29*, 69–80.
- Glazener, C., Abdalla, M., Stroud, P., Naji, S., Templeton, A. & Russell, I. (1995) Postnatal maternal morbidity: extent, causes, prevention and treatment. *British Journal of Obstetrics and Gynaecology*, *102*, 282–287.
- Hiscock, H. & Wake, M. (2001) Infant sleep problems and postnatal depression: a community-based study. *Pediatrics*, *107*, 1317–1322.
- Hiscock, H. & Wake, M. (2002) Randomised controlled trial of behavioural infant sleep intervention to improve infant sleep and maternal mood. *British Medical Journal*, *324*, 1062.
- Hiscock, H., Bayer, J., Gold, L., Hampton, A., Ukoumunne, O. & Wake, M. (2007) Improving infant sleep and maternal mental health: a cluster randomised trial. *Archives of Disease in Childhood*, *92*, 952–958.

- Hockey, G., Maule, A., Clough, P. & Bdzola, L. (2000) Effects of negative mood states on risk in everyday decision making. *Cognition & Emotion*, **14**, 823–855.
- Hogan, B. E., Linden, W. & Bahman, N. (2002) Social support interventions: do they work? *Clinical Psychology Review*, **22**, 381–440.
- IBM SPSS Statistics (2010) *SPSS (PASW Statistics Base) Version 18.0*. SPSS, Chicago, IL, USA.
- Johnston, C. & Mash, E. (1989) A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology*, **18**, 167–175.
- McQueen, A. & Mander, R. (2003) Tiredness and fatigue in the postnatal period. *Journal of Advanced Nursing*, **42**, 463–469.
- Meltzer, L. & Mindell, J. (2007) Relationship between child sleep disturbances and maternal sleep, mood, and parenting stress: a pilot study. *Journal of Family Psychology*, **21**, 67–73.
- Michielsen, H., De Vries, J., Van Heck, G., Van de Vijver, F. & Sijtsma, K. (2004) Examination of the dimensionality of fatigue: the construction of the Fatigue Assessment Scale (FAS). *European Journal of Psychological Assessment*, **20**, 39–48.
- Milligan, R., Lenz, E., Parks, P., Pugh, L. & Kitzman, H. (1996) Postpartum fatigue: clarifying a concept. *Scholarly Inquiry for Nursing Practice*, **10**, 279–291.
- Milligan, R., Parks, P., Kitzman, H. & Lenz, E. R. (1997) Measuring women's fatigue during the postpartum period. *Journal of Nursing Measurement*, **5**, 3–16.
- Nash, C., Morris, J. & Goodman, B. (2008) A study describing mothers' opinions of the crying behaviour of infants under one year of age. *Child Abuse Review*, **17**, 191–200.
- Norton, R. (1983) Measuring marital quality: a critical look at the dependent variable. *Journal of Marriage and the Family*, **45**, 141–151.
- O'Hara, M. & Swain, A. (1996) Rates and risks of postpartum depression – a meta analysis. *International Review of Psychiatry*, **8**, 37–54.
- Parks, P., Lenz, E. & Milligan, R. (1999) What happens when fatigue lingers for 18 months after delivery? *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, **28**, 87–93.
- Pugh, L. & Milligan, R. (1995) Patterns of fatigue during child bearing. *Applied Nursing Research*, **8**, 140–146.
- Pugh, L., Milligan, R., Parks, P. & Lenz, E. (1999) Clinical approaches in the assessment of childbearing fatigue. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, **28**, 74–80.
- Ream, E. & Richardson, A. (1996) Fatigue: a concept analysis. *International Journal of Nursing Studies*, **33**, 519–529.
- Sanson, A., Nicholson, J., Ungerer, J., Zubrick, S., Wilson, K., Ainley, J., Berthelsen, D., Broom, D., Harrison, L., Rodgers, B., Sawyer, M., Silburn, S., Strazdins, L., Vimpani, G., Wake, M. & Bittman, M. (2002) Introducing the longitudinal study of Australian children: Australian Institute of Family Studies.
- Saurel-Cubizolles, M.-J., Romito, P., Lelong, N. & Ancel, P.-V. (2000) Women's health after childbirth: a longitudinal study in France and Italy. *British Journal of Obstetrics and Gynaecology*, **107**, 1202–1209.
- Telleen, S. (1990) Parental beliefs and help seeking in mothers' use of a community-based family support program. *Journal of Community Psychology*, **18**, 264–276.
- Torres-Harding, S. & Jason, L. (2005) What is fatigue? History and epidemiology. In: *Fatigue as a Window to the Brain*, Vol. 1 (ed. J. DeLuca), pp. 3–17. Bradford Book, Cambridge, MA, USA.
- Trewin, D. (2003) *Socio-Economic Indexes for Areas, Australia 2001*. Australian Bureau of Statistics, Canberra, ACT, Australia.
- Troy, N., Dalgas-Pelish, P. & Vichitsukon, K. (1997) The natural evolution of postpartum fatigue among a group of primiparous women. *Clinical Nursing Research*, **6**, 126–139.
- Wake, M., Morton-Allen, E., Poulakis, Z., Hiscock, H., Gallagher, S. & Oberklaid, F. (2006) Prevalence, stability, and outcomes of cry-fuss and sleep problems in the first 2 years of life: prospective community-based study. *Pediatrics*, **117**, 836–842.
- Ware, J., Snow, K., Kosinski, M. & Gandek, B. (1993) *SF-36 General Health Survey: Manual and Interpretation Guide*. The Health Institute, Boston, MA, USA.