ATTACHMENT RG 5

This is the attachment marked “**RG 5**” referred to in the witness statement of Rebecca Giallo dated 7th July2015.

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The relationship between parental fatigue, parenting self-efficacy and behaviour: implications for supporting parents in the early parenting period

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Abstract

Background Emerging evidence indicates that parental fatigue is associated with low warmth and increased hostility in parent–child interactions. One possible pathway by which fatigue may impact on parenting behaviour is via parental self-efficacy (PSE), whereby high fatigue may undermine PSE, which is often associated with suboptimal parenting behaviour. The current study sought to explore a model of the relationships between parental fatigue, parenting warmth and hostility, where PSE mediates these relationships and whether the nature of these relationships differ by social or family context.

Methods The current sample was drawn from a larger Australian community sample survey on parent well-being and parenting. It consisted of 1143 parents (mothers, $n = 1003$; fathers, $n = 140$) of children aged 0–4 years.

Results Path analysis revealed that the relationship between fatigue and parenting warmth and hostility was fully mediated by PSE.

Conclusions These results indicate that fatigue has the potential to negatively influence parenting behaviours that are important for their children's well-being and development, and that fatigue plays a mediating role in this relationship. Implications of the study for psycho-education and interventions targeting the management of parental fatigue are discussed.

Keywords
fatigue, hostility, parental self-efficacy, parenting, warmth

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Parent–child interactions are important for promoting children's health, well-being and development. However, parent well-being difficulties can impact on how parents interact with their children (Field 2010). In the post-natal period (0–12 months post-partum), approximately 16% of mothers experience depressive symptoms (Brown & Lumley 1998) and 4% report high levels of anxiety (Wenzel *et al.* 2003). Similarly, 10% of fathers experience distress (Paulson *et al.* 2006; Giallo *et al.* 2012b). Many more parents experience other well-being difficulties such as stress and fatigue (Fisher *et al.* 2004). Fatigue is the experience of profound tiredness that is not due to physical activity and not relieved by sleep or rest (Cahill 1999). Fatigue is considered to be a related but distinct construct from depression in the post-natal and early parenting period (Giallo *et al.* 2010). Although a common health issue reported by mothers (Glazener *et al.* 1995; Brown & Lumley 1998) and fathers (Cooklin *et al.* 2012; Giallo *et al.* 2013), fatigue is an understudied aspect of parent health, which can have potential effects on parenting behaviour and parent–child interactions.

Parents of young children are at risk of fatigue due to the demanding nature of early caregiving activities such as breastfeeding (Elek *et al.* 2002), night-time caregiving, and sleep

disruption (McQueen & Mander 2003). Fatigue in the early childhood period is often dismissed as a 'natural' consequence of the parenting experience (McQueen & Mander 2003). However, parental fatigue has been associated with poor mental health (Fisher *et al.* 2004; Giallo *et al.* 2011), poor family relations (Elek *et al.* 2002) and decreased patience (Nash *et al.* 2008). Fatigue has been associated with poor executive functioning such as impaired decision-making skills even after accounting for the effects of depression (Hockey *et al.* 2000).

Of particular interest is recent research documenting associations between fatigue and negative parenting behaviours (Cooklin *et al.* 2012; Dunning & Giallo 2012). In a community survey of 1276 Australian mothers and fathers of children aged 0–4 years, high levels of fatigue were associated with increased hostility and irritability in parent–child interactions, and lower sense of competence in the parenting role (Cooklin *et al.* 2012). A limitation of this study was the failure to explore the relationships between fatigue and parenting behaviour for mothers and fathers separately. Similarly, in several qualitative studies, both mothers and fathers have reported that they have increased irritability, and lowered tolerance and patience with their children as a result of fatigue (Nash *et al.* 2008; Giallo *et al.* 2013). Taken together, these studies suggest that fatigue may have a negative impact on parenting behaviour, contributing to parent–child interactions characterized by frustration and anger.

Irritable or hostile parenting generally refers to behaviours directed towards the child that are characterized by anger, frustration and punitive punishments (Morris *et al.* 2002). Hostile parenting behaviours displayed by mothers and fathers have been associated with child aggression (Knox *et al.* 2011) and other externalizing problems (Morris *et al.* 2002), which can last into adulthood (Aquilino & Supple 2001). Another aspect of parenting potentially affected by fatigue is parenting warmth, which refers to affection, support and comfort in the parent–child relationship (Darling & Steinberg 1993). Parenting warmth displayed by mothers and fathers have been associated with positive child outcomes such as greater peer acceptance (Davidov & Grusec 2006), better academic achievement (Uddin 2011), reduced risk of depression and fewer conduct problems in adolescence (Wagner *et al.* 1996). Given that parenting warmth and hostility are both associated with child outcomes, a better understanding of the relationships between fatigue and these parenting behaviours, along with an understanding of the mechanisms that underlie these associations, is essential.

One potential mechanism mediating the relationships between fatigue and parenting warmth and hostility is PSE. PSE refers to parents' perceptions of their ability to parent successfully (Jones & Prinz 2005), and has been associated with parent motivation to engage in more effortful discipline, increased parenting warmth and lower hostility (Coleman & Karraker 1998; Jones & Prinz 2005). In his pioneering work on self-efficacy theory, Bandura (1982) suggested that self-efficacy is derived from several sources: (1) one's previous success and failures; (2) vicarious experiences; (3) verbal feedback; and (4) aversive psychological and physiological arousal states. Specifically, fatigue is a state that has the potential to undermine confidence in the parenting role. For example, in a study of 1022 mothers of children aged 0–4 years, high fatigue was associated with low parenting efficacy and satisfaction (Dunning & Giallo 2012). It is likely that compromised PSE will in turn affect parenting behaviours; however, no studies have investigated the mediating role of PSE in the relationship between fatigue and parenting behaviours.

To address this gap, the current study sought to investigate the associations between parental fatigue, parenting warmth and hostility among mothers and fathers of young children (aged 0–4 years), where PSE mediates this relationship (see Fig. 1). It was hypothesized that parents who reported high levels of fatigue would experience lower levels of PSE and this in turn would be related to low parenting warmth and high parental hostility.

A second aim of the study was to determine whether the strength and pattern of the relationships between fatigue, PSE and parenting behaviour were moderated by parent gender, parent age, number of children, employment and couple relationship status. Parent gender was of particular interest as research into fatigue and parenting has primarily focused on mothers (i.e. Dunning & Giallo 2012), or examined relationships separately for mothers and fathers (i.e. Cooklin *et al.* 2012). We anticipated that the mechanism by which fatigue impacts upon parenting behaviour via PSE would work similarly for mothers and fathers, and therefore hypothesized that there would be no evidence of moderation. We also explored the potential moderating role of a range of socio-demographic factors as it is possible that the nature of the relationships between fatigue, PSE and parenting behaviour may vary in different social contexts. Previous research has shown that younger maternal age, having two

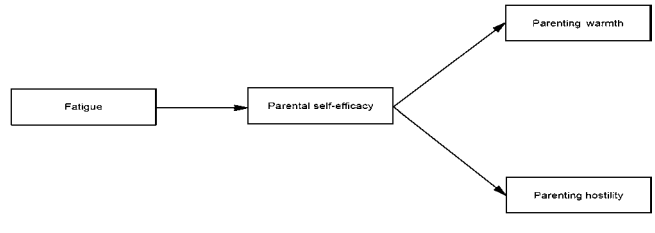

Figure 1. A conceptual model of the relationship between fatigue and parenting warmth and hostility.

or more children and heading a single-parent household are associated with higher levels of fatigue in the early parenting period (Cooklin *et al.* 2012). We hypothesized that the model pathways would be stronger for these parents.

Method

Participants

Data for this study were drawn from the Parenting Research Centre's Parent Wellbeing Survey. Australian parents with at least one child aged 0–4 years completed a survey on parent well-being and parenting. Of the 1387 participants who completed the survey, 232 were excluded due to more than 20% missing data on the study variables of interest in the present study. A further 12 were excluded because data relating to the child's age were not given. The final sample was 1143 participants (mothers, $n = 1003$; fathers, $n = 140$) and their demographic characteristics are presented in Table 1. The majority of parents were in a couple relationship, born in Australia and spoke English at home. There were significant differences between mothers and fathers in age, couple status, level of education and employment status.

Measures

Demographics

Information pertaining to parent age, gender, postal code, level of education, country of birth, language spoken at home, employment status, number of children, relationship status, gender and age of the focus child was collected. Socio-economic status was assessed using the *Australian Bureau of Statistics, Socio-Economic Indexes for Areas* (SEIFA; Trewin 2003). Each participant was given an index score on the index of relative socioeconomic disadvantage based on their postal code. This is derived from levels of income, rates of unemployment and educational attainment within the postal area. The average score on the SEIFA is 1000, with higher scores indicating relative socioeconomic advantage. The mean index value of participants was 1020.00.

Fatigue Assessment Scale (FAS)

FAS (Michielsen *et al.* 2004) measures physical and cognitive symptoms of fatigue. The FAS consists of 10 items (e.g. 'I get tired very quickly'; 'mentally, I feel tired') rated on a 5-point scale (1 = *never* to 5 = *always*). High scores on the FAS indicate higher levels of fatigue. The FAS is reported to have good reliability and validity (Michielsen *et al.* 2004). Discriminant validity between fatigue as measured by the FAS and depressive symptoms using the depression subscale from the Depression Anxiety Stress Scale has been established (Giallo *et al.* 2010). Cronbach's alpha for the current sample was 0.80.

Parenting Sense of Competence Scale (PSOC)

PSOC (Johnston & Mash 1989) assesses PSE. It has two subscales: 'efficacy', which assesses efficacy in the parenting role (e.g. 'I meet my own personal expectations for expertise in caring for my child'), and 'satisfaction', which assesses satisfaction in the parenting role (e.g. 'My talents and interests are in other areas, not in being a parent'). In the present study, the Total Scale Score was used. The Total Scale Score is commonly

Table 1. Comparisons between mothers and fathers on demographic characteristics

	Parent gender				
	Fathers ($n = 140$)	**Mothers ($n = 1003$)**	**Total ($n = 1143$)**	***F*† or χ^2‡**	***P***
Parent age, M (SD)	36.39 (5.10)	34.34 (4.81)	34.59 (4.89)	22.14 (1,1140)	<0.001
Number of children in household, M (SD)	1.86 (0.82)	1.82 (0.90)	1.83 (0.89)	0.312 (1,1141)	0.576
Socioeconomic status,§ M (SD)	1034.82 (61.79)	1024.99 (79.58)	1026.18 (77.68)	1.92 (1,1119)	0.166
Couple with dependent children, *n* (%)	139 (100.0%)	910 (91.2%)	1049 (92.3%)	13.29 (1,1137)	<0.001
Single parent, *n* (%)	0 (0.00%)	88 (8.8%)	88 (7.7%)	13.29 (1,1137)	<0.001
Born in Australia, *n* (%)	108 (77.1%)	856 (85.5%)	964 (84.5%)	6.57 (1,1141)	0.010
English as primary language spoken at home, *n* (%)	139 (100.0%)	975 (97.3%)	1114 (97.6%)	3.836 (2,1141)	0.147
University level education, *n* (%)	100 (71.4%)	625 (62.3%)	725 (63.4%)	4.401 (1,1143)	<0.001
Parent employed, *n* (%)	135 (96.4%)	624 (62.4%)	789 (66.6%)	63.91 (1,1140)	<0.001

†Analysis of variance for continuous scores.
‡Chi-square tests for categorical variables.
§Socio-economic indexes for areas – Index of Relative Socioeconomic Disadvantage.
SD, standard deviation.

used to assess overall PSE. Items are rated on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*), with higher scores indicating higher levels of satisfaction and efficacy. Cronbach's alpha was 0.80 for the current sample.

Parenting warmth

Parenting warmth (Sanson 1995) consists of six items assessing the frequency of affectionate responses from the parent towards the child (e.g. 'In the last 6 months, how often did you show affection by hugging, kissing and holding your child?'). Items were rated on a 5-point scale (1 = *never* to 5 = *almost always*), with high scores indicating greater warmth. Cronbach's alpha was 0.86 for the current sample.

Parenting hostility

Parenting hostility (National Center for Education Statistics 2000) consists of five items (e.g. 'how often have you been angry with your child') rated on a 5-point scale (1 = *never* to 5 = *almost always*), with high scores indicating higher hostility and irritability directed towards the child. Cronbach's alpha was 0.86 for the current sample.

Procedure

Ethics approval for the study was granted by the Victorian Government Department of Human Services Human Research Ethics Committee. Parents were recruited via an extensive media campaign, and 27 organizations providing services to parents and children such as childcare centres, Maternal and Child Health Services and a universal government-funded primary care service to promote healthy outcomes for children from birth to school age and their families. Invitations and advertising material contained a web link to an online copy of the survey. Parents also had the option of contacting the researchers for a hard copy. Parents were not compensated for participation in the study. One parent from each family completed the survey in reference to a focus child aged 0–4 years (referred to as the study child). Parents with more than one child <4 years were asked to select one as the study child.

Results

Descriptive statistics

Missing data were minimal with less than 1% missing across all the study variables. Little's Missing Completely at Random test indicated that the data were missing at random ($P > 0.05$). For cases with less than 10% missing data, values were imputed using the expectation maximization algorithm using the missing values analysis option available in SPSS version 20.0 (IBM Corp 2011).

Descriptive statistics for mothers and fathers is presented in Table 2. The K.S. Lilliefor's test of normality indicated that parenting warmth scores were skewed ($P < 0.001$) and Mardia's coefficient of 28.94 suggested multivariate non-normality. Table 2 also revealed that mothers scored significantly higher on the FAS and lower on the PSOC than fathers.

Correlations between the study variables for mothers and fathers are presented in Table 3. All variables were significantly associated with one another, except the relationship between fathers' fatigue and parenting warmth. High parental fatigue was significantly associated with decreased PSE and increased parental hostility.

Testing the model

Path analysis in MPlus version 7.11 (Muthén & Muthén, 1998–2012) was used to test the conceptual model for both mothers and fathers together (Fig. 1). Given the multivariate normality, the models were estimated using maximum likelihood estimation with standard errors and a mean-adjusted chi-square statistic robust to non-normality, also referred to as the

Table 2. Descriptive statistics for mothers and fathers on study variables

	Fathers				Mothers					
	Range	**M**	**SD**	**Skewness**	**Range**	**M**	**SD**	**Skewness**	***F***	***P***
Revised FASS	(5, 23)	12.40	4.01	0.675	(5, 25)	14.14	4.38	0.414	20.84	<0.001
PSOC (total)	(42, 91)	67.34	10.35	–0.159	(19, 95)	64.91	11.13	–0.220	5.96	0.015
Warmth	(17, 30)	27.83	2.78	–1.288	(16, 30)	28.05	2.66	–1.481	0.86	0.353
Hostility	(5, 23)	11.11	4.04	0.359	(5, 25)	11.73	3.99	0.241	2.90	0.089

Hostility, Parental Practices Hostility Scale; FASS, Fatigue Assessment Scale; PSOC, Parenting Sense of Competence Scale; SD, standard deviation; Warmth, Parenting Practices Warmth Scale.

Table 3. Summary of intercorrelations of scores on study variables for mothers and fathers

Measure	1	2	3	4
1. Fatigue	–	−0.40**	−0.13**	0.25**
2. Parenting self-efficacy	−0.44**	–	0.42**	−0.49**
3. Parenting warmth	−0.16	0.36**	–	−0.35**
4. Parenting hostility	0.19*	−0.53**	−0.30**	–

Intercorrelations for mothers ($n = 1003$) are presented above the diagonal, and intercorrelations for fathers ($n = 140$) are presented below the diagonal.
*$P < 0.05$; **$P < 0.01$.

Figure 2. Mediating model of the relationship between fatigue, parental self-efficacy and parenting warmth and hostility. *Note.* All model pathways are significant at $P < 0.001$; residual error terms between parenting warmth and hostility correlate.

Satorra–Bentler chi-square (Muthén & Muthén, 1998–2012). Model fit was assessed using the chi-square test (χ^2), and other practical fit indices including the Tucker–Lewis index (TLI), the comparative fit index (CFI) and root mean square error of approximation (RMSEA). Indices for the TLI and CFI should exceed 0.90 for an acceptable fit, and values for the RMSEA are acceptable when close to or below 0.05 (Hu & Bentler 1999).

The hypothesized model of the relationship between fatigue, parenting warmth and hostility, where PSE mediates this relationship, was tested (Fig. 1). In this model, to account for the relationships between parenting warmth and hostility, the residual error terms were correlated. The model was an excellent fit to the data, Satorra–Bentler χ^2 (2, $N = 1143$) = 3.55, $P = 0.170$, RMSEA = 0.02 (90% confidence interval = 0.00–0.07), CFI = 1.00, TLI = 0.99. The model significantly accounted for 25% of the variance in parenting hostility ($R^2 = 0.25$, $P < 0.001$), 17% of the variance in parenting warmth ($R^2 = 0.17$, $P < 0.001$) and 22% of the variance in PSE ($R^2 = 0.22$, $P < 0.001$). The standardized parameter estimates are shown in Fig. 2. High fatigue was associated with low PSE, which in turn was associated with low parenting warmth and high hostility.

In order to formally investigate whether PSE mediated the relationship between fatigue and parenting behaviour, several steps were undertaken. First, a model of the direct relationships between fatigue and parenting behaviour was tested. The relationships between fatigue and parenting warmth (−0.16, $P < 0.001$) and fatigue and parenting hostility (0.26, $P < 0.001$) were significant. Second, a full model in which both the direct and mediating relationships between fatigue, parenting warmth, parenting hostility and PSE was tested. When PSE was entered into the model, the relationship between fatigue and parenting warmth weakened and became non-significant (0.04, $P = 0.176$), as did the relationship between fatigue and parenting hostility (0.03, $P = 0.297$). This provides evidence that PSE fully mediates the relationships between fatigue and parenting behaviour. Therefore, the hypothesized model was accepted as the final model.

Next, multigroup analyses were conducted to test whether any of the paths in the hypothesized model were moderated by parent gender (father vs. mother), parent age (18–24, 25–34 vs. 35+ years), number of children in the family (one child vs. two or more children), relationship status (single parent vs. couple parent family) and employment (full time, part time vs. not in paid employment). For each analysis, a model with all parameters freely estimated was compared with a model with all parameters constrained to be equal using a nested chi-square difference test for the Satorra–Bentler scaled chi-square. A lack of significant differences between the models indicated that the paths were similar for each group, and therefore no evidence of moderation was found. Table 4 reveals that there was no evidence of moderation by parent gender, parent age, number of children, employment or relationship status.

Discussion

The current study explored PSE as one possible pathway underlying the association between parental fatigue and parenting warmth and hostility. As hypothesized, the results revealed that PSE fully mediated the relationships between fatigue and parenting warmth and hostility, whereby high levels of fatigue was associated with lower PSE, which in turn was associated with lower parenting warmth and higher hostility. Although it is not possible to infer causality, these findings suggest that fatigue may undermine parents' self-efficacy in the parenting role, which can negatively influence the ways in which they interact with their children. Furthermore, as hypothesized, we found that the pathways between fatigue, parenting warmth and hostility were similar for both mothers and fathers. This suggests that the mechanism by which fatigue impacts on parenting behaviour via its adverse effects on PSE operates similarly for both mothers and fathers.

The strongest pathways identified in the current model were between fatigue and hostile parenting behaviours mediated by

Table 4. Multigroup analyses

Multigroup analyses	χ^2	Satorra–Bentler scaled χ^2 difference test (d.f.)
Parent gender (mother, *n* = 992; father, *n* = 133)		
Unconstrained	2.92 (4)	
Constrained	6.71 (7)	3.10 (3), *P* = 0.376
Parent age (18–24 years, *n* = 28; 25–34 years, *n* = 509; vs. 35+, *n* = 597)		
Unconstrained	11.57 (6)	
Constrained	17.27 (12)	0.91 (6), *P* = 0.99
Number of children (one, *n* = 465, vs. two or more, *n* = 803)		
Unconstrained	3.85 (4)	
Constrained	8.57 (7)	4.76 (3), *P* = 0.190
Employment status (full time, *n* = 288; part time, *n* = 458; not employed, *n* = 379)		
Unconstrained	5.43 (6)	
Constrained	14.62 (12)	9.00 (6), *P* = 0.174
Relationship status (couple, *n* = 1037, vs. single, *n* = 90)		
Unconstrained	3.04 (4)	
Constrained	8.00 (7)	5.07 (3), *P* = 0.167

d.f., degrees of freedom.

PSE. When experiencing prolonged mental and physical exhaustion, parents may find it more difficult to manage stressful and/or challenging parent–child interactions, and consequently may feel less competent in their parenting capabilities. With high levels of fatigue and lowered PSE, parents are likely to have very limited emotional and cognitive energy, making it harder for them to respond in a calm and thoughtful way during difficult interactions with their children. Fatigued parents may respond with little patience or tolerance, reacting by yelling, blaming or hitting.

PSE also mediated the relationship between parental fatigue and parenting warmth. These results suggest that when parents are emotionally and physically exhausted, they may lose confidence in their parenting ability, which may in turn lead to reduced motivation, energy and drive to engage in and maintain warm parent–child interactions such as hugging, kissing and praising their child (Jones & Prinz 2005).

Another aim of the study was to explore whether the strength and directions of the relationships between fatigue, PSE and parenting behaviour varied for parents experiencing different social or family circumstances. For instance, we hypothesized that fatigue may have a significantly stronger impact on PSE and parent–child interactions for parents experiencing difficult or vulnerable life circumstances such as younger parents or parents heading a single-parent household. We found that the model pathways were similar for parents of different ages; parents in a couple relationship or heading a single-parent household; parents working full time, part time and those not in paid employment; and parents with varying numbers of children. This highlights that fatigue has the potential to undermine parents' sense of competence and parent–child interactions despite their family or social context.

Limitations

Prior to considering the significance of the current study, there are several limitations to note. A cross-sectional design study was used, and therefore, it is not possible to infer causality from the relationships between fatigue and parenting behaviours. A better understanding of the complex interrelationships and pathways between these variables could be achieved through the use of longitudinal data. Moreover, alternative models integrating other variables of interest not explored in this study are possible. For instance, child factors such as difficult temperament and sleep problems, as well as parent factors such as depressive symptoms, are worth exploring as these may exacerbate the relationships between fatigue, PSE and parenting behaviour. Additionally, future research could examine the relationship between fatigue and other parenting behaviours such as parenting involvement, consistency and monitoring, all of which have been associated with positive child outcomes (Deković 1999). The use of self-report measures in the current study in order to measure parenting behaviours may likely result in some form of self-report bias. Future research could examine these relationships using more objective or observational measures of parental–child interactions.

Although the current study utilized a large sample, another limitation concerns the representativeness of the sample who primarily responded to an online survey. Although online surveys are more convenient and accessible for participants, it is likely that parents who were more technologically competent and from a more advantaged social background participated in the survey. Furthermore, non-English speaking parents and single parents were under-represented in the study. Therefore, caution should be taken when generalizing these results to parents from these backgrounds. Finally, although the inclusion of fathers was a strength of the study, the sample size was small compared with mothers. Investigating the relationships between fatigue and parenting among a broader and more representative sample of fathers is warranted.

Implications and conclusions

Despite these limitations, the present study provided important new insights and understanding into the relationships between parental fatigue, warmth and hostility during parent–child interactions. Although commonly experienced by parents, fatigue is often overlooked in research and practice. Yet, our findings suggest that fatigue may have adverse consequences on PSE and parenting behaviour for both mothers and fathers in varying social and family contexts. These findings have important implications for health professionals working with parents of young children who are at risk of experiencing fatigue and exhaustion.

Psycho-education about fatigue and the impact it has on parent well-being, coping and interactions with children may be particularly helpful in mitigating the negative effects that fatigue may have on parents' sense of competence in their parenting role. Strategies to prevent and manage fatigue or to improve PSE may also help parents to respond better in stressful parenting situations. The importance of supporting parents to manage fatigue in the post-natal period has been recognized with the development of interventions such as the Wide Awake Parenting programme (Dunning *et al.* 2013; Giallo *et al.* 2012a; Giallo *et al.* 2014). This programme as well as others (i.e. Thome & Alder 1999) emphasize the importance of strategies such as engaging in self-care behaviours, reducing daily demands, engaging in a healthy sleep routine, improving the quality of diet and exercise, promoting realistic parenting expectations and improving social support and help-seeking behaviour. The findings of the present study suggest that both mothers and fathers in varying social and family contexts may benefit from such interventions beyond the first-year post-partum and well into the early parenting period. Continued research into parent fatigue and its impact on parenting and the potential of interventions to manage fatigue is important, not only for the benefit of parents themselves but also for the children who are in their care.

Key messages

- Fatigue is a common health issue for mothers and fathers of young children.
- High fatigue is associated with low confidence in the parenting role.
- Fatigue is also associated with increased hostility and low warmth in parent–child interactions.
- Interventions to manage fatigue in the early childhood period are needed.

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