

Wall, Ann-Marie (2011) *The influence of maternal attributions and personality on recommendations of, and outcome expectancies, for infant sleep interventions.*

D Clin Psy thesis.

<http://theses.gla.ac.uk/2899/>

Copyright and moral rights for this thesis are retained by the author

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge

This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the Author

The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the Author

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given

**The influence of maternal attributions and personality on
recommendations of, and outcome expectancies, for
infant sleep interventions***

& Clinical Research Portfolio

Ann-Marie Wall

BA (Hons), MSc

VOLUME ONE

(Volume Two bound separately)

*Submitted in partial fulfillment of the requirements for the degree of Doctorate in
Clinical Psychology (D. Clin Psy)*

Prepared in accordance with the guidelines for Behavioural Sleep Medicine (Appendix1)

Faculty of Medicine Graduate School

"Declaration of Originality Form"

You have a responsibility to the University, the Faculty, your classmates, and most of all to yourself, to act with integrity in your academic work. In particular, the work that you submit for assessment, other than for team exercises, *must be your own*. Just as cheating in examinations is a serious offence, so any form of collusion or plagiarism in assessed exercises is dishonest and unacceptable to the University.

The following is an extract from the University's Statement on Plagiarism. Please read it carefully and sign the declaration below.

Plagiarism is defined as the submission or presentation of work, in any form, which is not one's own, without acknowledgement of the sources. Plagiarism can also arise from one student copying another student's work or from inappropriate collaboration. Allowing someone else to copy your work is just as bad as copying someone else's work yourself. It is vital that you do not allow anyone else to copy your work. Take care when discarding work and do not leave copies of your own files on a hard disk where others can access them. If you have any doubt as to what level of discussion is acceptable, you should consult your lecturer or the Course Director.

**The incorporation of material without formal and proper acknowledgement
(even with no deliberate intent to cheat) can constitute plagiarism.**

With regard to essays, reports and dissertations, the rule is: if information or ideas are obtained from any source, that source must be acknowledged according to the appropriate convention in that discipline; and any direct quotation must be placed in quotation marks and the source cited. Any failure to acknowledge adequately or to properly cite sources of information in submitted work constitutes an act of plagiarism.

Plagiarism is considered to be an act of fraudulence and an offence against University discipline. Alleged plagiarism will be investigated and dealt with appropriately by the University.

The University Plagiarism statement is available from:
<http://senate.gla.ac.uk/academic/plagiarism.html>

Please complete the information below in BLOCK CAPITALS.

Name	ANN - MARIE WALL
Matriculation Number	08041402
Course Name	Doctorate in Clinical Psychology
Assignment Number/Name	CLINICAL RESEARCH PORTFOLIO

DECLARATION:

I am aware of the University's policy on plagiarism and certify that this assignment is my own work.

Signed Ann-Marie Wall Date 26/09/11

Acknowledgements

I would like to thank Dr Kenneth MacMahon for all his invaluable guidance and support while supervising this research. I am indebted to all the first time mothers who took the time to take part in this research. I would also like to thank my clinical supervisors Dr Gillian Swan, Dr Susan Connaghan, Dr Adele Pashley, Dr Lynne Bates, Dr Gillian Crawford and Dr Ulrich Fischer for their support and advice over this training programme.

A big thank you to my classmates, especially my study group for the invaluable support and help during exams and the final write up of this research.

On a personal note, thank you to my family and friends who have provided me with support, distraction and humour to help me through the past three years. A particular thank you to my mother and father who have encouraged me to reach my goals. Thank you for your support and for believing in me.

PORTFOLIO VOLUME 1

TABLE OF CONTENTS	Pages
CHAPTER 1: Systematic Literature Review <i>Behavioural Management of Infant Sleep Difficulties: Positive Benefits for Maternal Mental Health?</i>	8
Abstract	9
Introduction	10
Method	12
Results	17
Discussion	33
References	38
CHAPTER 2: Major Research Project <i>The influence of maternal attributions and personality on choice of and outcome expectancies of sleep interventions.</i>	39
Lay Summary	44
Abstract	46
Introduction	47
Hypotheses	53
Method	55
Results	63
Discussion	76
References	83
Tables and Figures	89
CHAPTER 3: Advanced Clinical Practice I Reflective Critical Account (abstract only) <i>Who does what and why? The importance of communication in clinical practice.</i>	95
CHAPTER 4: Advanced Clinical Practice II Reflective Critical Account (abstract only) <i>The impact of organisational change and staff stress on the provision of psychological services to inpatient wards.</i>	97

APPENDICES	Pages
Appendix 1: Guidelines for authors to Behavioural Sleep Medicine	88
Appendix 2: Systematic Literature Review Appendices	
<i>Behavioural Management of Infant Sleep Difficulties: Positive Benefits for Maternal Mental Health?</i>	
Appendix 2.1. Quality Rating Measure.	90
Appendix 2.2. Description of Behavioural Interventions.	95
Appendix 3: Major Research Project Appendices	
Appendix 3.1. Research Proposal	96
Appendix 3.2. Ethical Approval	121
Appendix 3.3. Research and Development Approval	123
Appendix 3.4. Demographics Questionnaire	125
Appendix 3.5. Hypothetical Vignettes and Amended Version of IPQ	126
Appendix 3.6. Participant Information Sheet.	138

PORTFOLIO VOLUME II
(Bound Separately)

TABLE OF CONTENTS	Pages
CHAPTER 3: Advanced Clinical Practice 1 Reflective Critical Account (abstract only)	
<i>Who does what and why? The importance of communication in clinical practice.</i>	5
Abstract	6
Introduction	7
Reflective Account	11
Reflective Review	18
References	20
CHAPTER 4: Advanced Clinical Practice 2 Reflective Critical Account (abstract only)	21
<i>The impact of organisational change and staff stress on the provision of psychological services to inpatient wards.</i>	
Abstract	22
Introduction	23
Reflective Account	27
Reflective Review	35
References	37

CHAPTER 1: SYSTEMATIC LITERATURE REVIEW

Behavioural Management of Infant Sleep Difficulties: Positive Benefits for Maternal Mental Health?

Short Title: Infant Sleep Interventions and Maternal Mental Health

Prepared in accordance with the guidelines for Behavioural Sleep Medicine
(Appendix 1)

Ann-Marie Wall*
Mental Health and Well Being,
Division of Community Based Sciences,
Academic Centre,
University of Glasgow,
Gartnavel Royal Hospital,
1055 Great Western Road,
Glasgow, G12 0XH
Email: ann-marie.wall@nhs.net

* Author for correspondence.

Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology (D.Clin.Psy).

1. Abstract

Background:

Research suggests that there is a strong association between infant sleep quality and maternal mental health. Although there is evidence that behavioural sleep interventions may lead to short term emotional distress for mothers, some studies have suggested that behavioural sleep interventions may actually benefit maternal mood. However, some studies have found an opposing effect.

Aim: This review examined the evidence that behavioural infant sleep interventions result in benefits for maternal mental health.

Methods:

Studies were identified by searching five electronic databases, hand searching key journals and reviewing reference sections of relevant articles. Studies that used validated measures of maternal mental health, and investigated the effectiveness of infant behavioural sleep interventions, were included.

Outcomes & Results:

Fourteen studies were retrieved from the search strategy and had a relatively high quality. The majority of studies found that behavioural infant sleep interventions led to reductions in maternal depression and anxiety. However, some methodological limitations may limit confidence in these findings.

Conclusion:

Behavioural infant sleep interventions may lead to improvements in maternal mental health. However, additional well-controlled, longitudinal trials are needed. Studies that explore what specific mechanisms (e.g., self-esteem, locus of control) are involved in changes in maternal mood would be of particular interest.

Keywords: Infant, sleep disturbance, behavioural interventions, maternal mental health.

2. Introduction

2.1. Prevalence and impact of infant and toddler sleep difficulties

Settling and waking difficulties are extremely common among infants and young children (Bramble, 1996; Johnson, 1991). Studies have demonstrated associations between infant sleep disturbance and maternal depression and anxiety (e.g., Armstrong, O' Donnell, McCallum and Dadds, 1998; Dennis and Ross, 2005; Fisher, Feekery and Rowe-Murray, 2002; Hiscock and Wake, 2001; Thunstrom, 1999).

At present, there is no overall consensus on the specific factors that may explain the association between infant sleep disturbance and maternal mental health. Although Armstrong et al. (1998) suggest a number of potential mechanisms, for example, a child who has less attention from their mother (as a result of their mother's depressive illness) may be more likely to develop sleep difficulties. However, it is also the case that chronic infant sleep disturbance and crying may, in itself, result in maternal sleep deprivation which acts as a precipitant to maternal mood difficulties (Armstrong et al., 1998; Dennis and Ross, 2005; Fischer, Feekery and Rowe, 2004; Hiscock and Wake, 2001, 2002).

2.2. Methods for managing infant and toddler sleep difficulties

Behavioural approaches to manage common infant and toddler sleep difficulties are the most common techniques recommended to parents by healthcare professionals (Johnson, 1991; Mindell, 1999; Ramos and Youngclarke, 2006). Behavioural approaches (Table 4, Appendix 2.2) for infant sleep management advocate self-soothing and removal of the reinforcer of parental attention to eliminate infants' paired response (waking and crying) over time (Kuhn and Weidinger, 2000). A review of the literature (Kuhn and Weidinger, 2000) suggests that there is a great deal of empirical support for such behavioural interventions particularly in

relation to reducing the prevalence of night waking in infants and toddlers. Horne (2010) reviewed the efficacy of behavioural interventions for infant sleep disturbance and concluded that graduated extinction techniques, in combination with other techniques such as family work, lead to improved infant sleep and positive effects on marital satisfaction, maternal depression and health. This suggests that behavioural sleep interventions do not have long-term detrimental effects on infant temperament or bedtime anxiety (Horne, 2010) and that healthcare professionals should continue to advocate behavioural approaches to manage infant and toddler sleep difficulties to mothers.

However, researchers have found some evidence that these approaches can be stressful for parents (Chadez and Nurius, 1987; Lawton, France and Blampied, 1991). The reasons for this may be manifold, but the process of behavioural interventions, requiring parents not to respond to the demands of their infant, may result in emotional distress for some parents and difficulty in coping with the emotions and anxiety arising from infants' distress (France, Henderson and Hudson, 1996; Sadeh, Flint-Ofir, Tirosh and Tikotzky, 2007). Parents are often concerned about the impact of systematic ignoring on the child's emotional development and fear that ignoring infant distress will lead to psychological damage (Sadeh et al., 2007). Hence, parents may refuse to engage in this treatment and view it as unacceptable and impractical and difficult to adhere to (Johnson, 1991; Rickert and Johnson, 1988).

2.3. Rationale for this review

Although research suggests that behavioural sleep interventions may have longer-term benefits for maternal mood (Hiscock and Wake, 2001; Hiscock et al., 2007; Hiscock, Bayer, Hampton, Ukoumunne and Wake, 2008), evidence also suggests that these interventions may

lead to short-term emotional distress for mothers (Rickert and Johnson, 1998; Sadeh et al., 2007), particularly when they are required not to respond to infant crying. Hence, there is a contrast, between short-term distress, and the potential, according to some authors, of longer-term benefits (for maternal mental health). On balance, if there is sufficient evidence of long-term benefits, then this may outweigh the adverse short-term consequences.

Research that investigates, primarily, the efficacy of behavioural sleep interventions on infant sleep will be reviewed to determine if such interventions have a secondary impact on maternal mental health. If there is an association between behavioural sleep interventions for common infant sleep difficulties and improvements in maternal mental health this would provide further support to continue recommending the use of such interventions and indeed, stressing the potentially longer-term benefits of such approaches.

3. Method

3.1. Search Strategy

3.1.1. Computerised Search

The following computerised databases were searched:

OVID

- EMBASE (from 1980 to May 2011)
- MEDLINE (from 1948 to May 2011)
- Maternal and Infant Care (from 1971 to May 2011)

EBSCOhost

- PsychInfo (from 1806 to May 2011)
- CINAHL (from 1983 to May 2011)

The following keywords were used: [Infant or (Toddler, young child, baby, paediat* newborn developing child)] and [Sleep or (Night adj waken*, Settl* adj diffic*, Sleep adj pattern*Bedtime adj refusal, Sleep adj disorder, Sleep adj difficult*, Sleep adj prob*Sleep adj concerns, Disturbed adj sleep, Sleep adj method*, Disorgani\$ed adj sleep, Unstable adj sleep)] and [Mental health or (Emotional health, Psychological well being, Quality of life, Stress, Distress, Psych*,Affective disorder, Major depression, Mood disorder*, Parent adj stress, Maternal adj stress, Mother* adj stress, Anxiety, Worry, Mental* adj ill*, Postnatal depression, Puerperal adj depression, Postpartum adj depression)] and [parent or (Mother, Mother Child Relations, Maternal)]. The search was limited to studies reported in English. The title and abstract of retrieved papers were studied to ascertain whether they appeared to meet inclusion criteria. If the article was considered to meet the inclusion criteria, the full article was obtained. Articles that were considered not to meet the inclusion criteria, following examination of the full article, were excluded at that point (Figure 1).

3.1.2. Additional search strategies

Additional search strategies were used to identify relevant studies that had not been identified via the computerised search. The following steps were taken:

1. The reference sections of papers that met inclusion criteria, retrieved through the computerised search, were examined for potentially relevant articles.
2. The following key journals were hand searched from January 2000 to May 2011, inclusive: Sleep, Behavioral Sleep Medicine, Child Development, Journal of Pediatric Child Health, Clinical Pediatrics, Pediatrics in Review, Child: Care, Health and Development, Journal of Child Health Care, Infant Mental Health Journal, Journal of Child Psychology and Psychiatry, Journal of Developmental and Behavioral

Pediatrics, Journal of Family Psychology, Pediatrics, Child and Family Behavioural Therapy.

3.2 Inclusion and Exclusion Criteria

Inclusion criteria:

Studies that investigated the effectiveness of infant behavioural sleep interventions (Table 4, Appendix 2.2) and included a validated measure of maternal mental health.

Exclusion criteria:

1. Unpublished dissertations, discussion papers, expert opinions, conference papers.
2. Studies that did not focus on infant behavioural sleep interventions, or contained mixed methods of interventions (e.g., a combination sleep and family interventions, medication, family inpatient interventions).
3. Case studies.
4. Articles in languages other than English.

Although the search terms used included key-words such as mental health, emotional health, psychological well-being and quality of life, inclusion criteria for the review stated that only studies using validated measures of mental health would be included. The vast majority of studies that were retrieved focused upon depression. Hence, although the aim of the review was to assess the effect of behavioural sleep interventions on the mental health of mothers, the actual scope of this review will be upon, in the main, depression in mothers, due to limitations in the existing literature in this area.

3.3. Assessment of the methodological quality of the included studies

The methodological quality of studies included in this review was assessed using a quality rating scale (Figure 2, Appendix 2.1). The rating scale was developed based on published guidelines: the Clinical Trial Assessment Measure (CTAM; Tarrier and Wykes, 2004), the Consolidated Standards of Reporting Trials Statement (Shultz, Altman and Moher, 2010) and the Scottish Intercollegiate Guidelines Network for assessing the quality of cohort studies (SIGN, 2004). The rating scale included criteria for description of study objectives, recruitment methods, assessment of participants and infant sleep difficulties, study design, sleep interventions, outcomes measures, statistical analyses and results. A total of 22 items were included in the rating scale and possible total scores ranged from 0-40. Some factors on the rating scale, for example: utilising a well controlled study design, providing a clear description of the sleep intervention, and using validated measures of maternal mental health all received weighted scores since these factors were considered to be of significant importance when considering studies in this area. Scores assigned to each study were described as a percentage of the maximum score.

In order to establish the reliability of the rating scale, each paper was allocated a number according to alphabetical order of author. An online random number generator (www.random.org) was used to generate a series of random numbers between one and fourteen, and the first seven of these studies (according to number) were reviewed by an independent assessor. This assessor was briefed on the aims of the review and given guidelines about how to complete the quality assessment scale. However, he was not told of the previous ratings given to each paper. There was 80% agreement between raters (Cronbach's alpha coefficient of 0.8).

3.4. Data Synthesis

Where data were available within studies, effect sizes (ES) were calculated using Cohen's d (Cohen, 1988) in order to indicate the magnitude of the association between behavioural infant sleep difficulties and changes in maternal mental health. ES were calculated based on group means and the pooled standard deviation for maternal mental health measures, in addition to the sample size for three studies (Table 1). Odds ratios were converted to Cohen's D for two studies (Hiscock et al., 2007, 2008) based on guidelines by Chinn (2000). In addition, correlational analysis was used to determine the strength of the association between improvement in infant sleep disturbance and maternal anxiety and depression where necessary data were available within articles

4. Results

4.1. Search Results

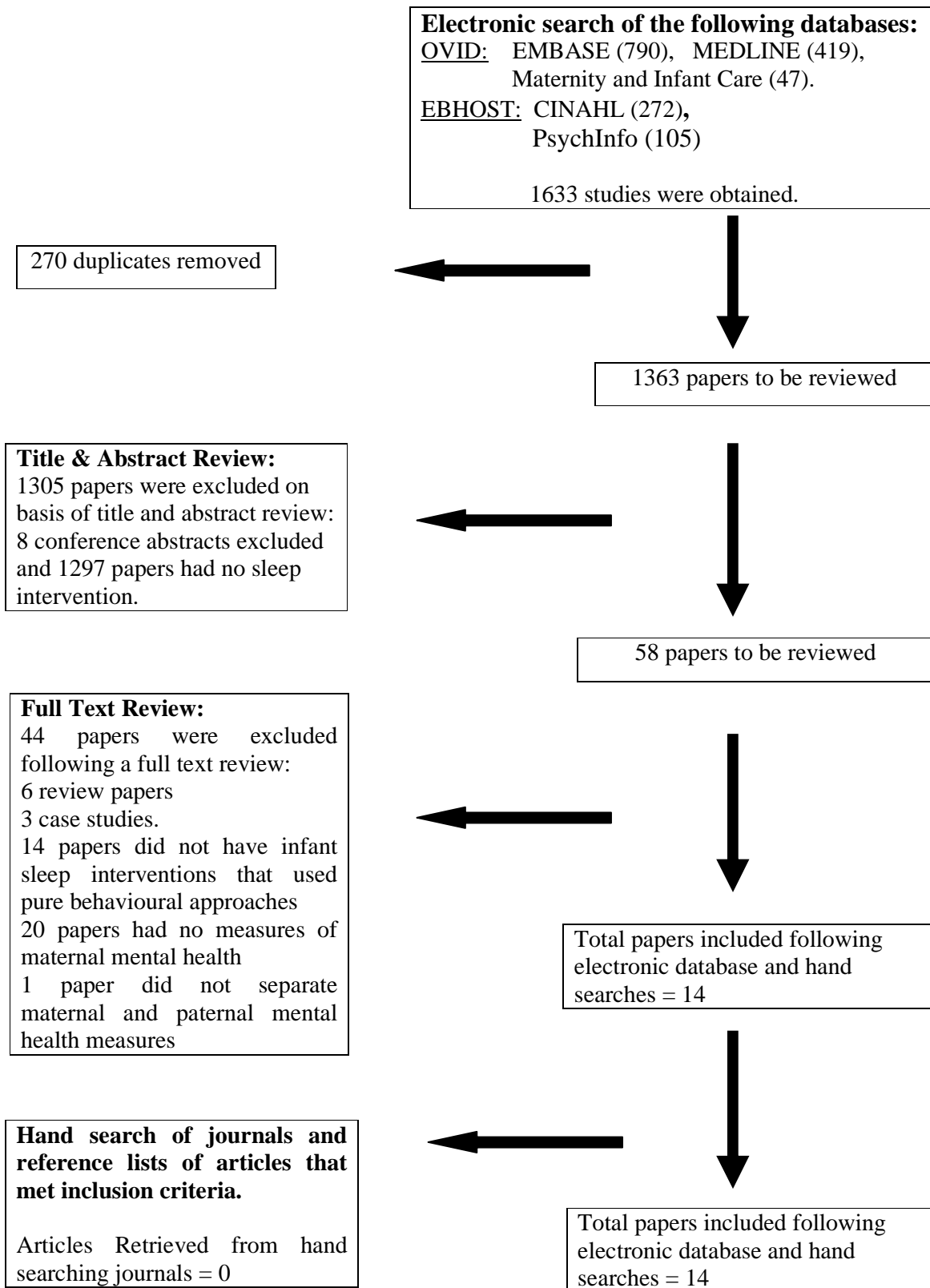
4.1.1. Electronic Database Search

The computerised search found 1633 articles. Of these, 270 were duplicates and were excluded. 1305 were excluded on the basis of title and abstract alone, as they did not meet inclusion criteria (Figure 1). From the remaining fifty-eight articles, six were review papers (Barrow and Parsons, 2007; Behaumont, 2000; France and Hudson 1993; Kerr and Jowett 1994; Morgenthaler et al., 2006; Sadeh, Tikotzky and Scher, 2010) and three were case study designs (Durand and Mindell, 1990; Mindell and Durand, 1993; Wade, Ortiz and Gorman, 2007). From the other forty-nine articles, thirty-five were excluded following retrieval of the full text of the paper. Thus from the computerised search, fourteen studies remained and were included in the review (Table 1).

4.1.2. Additional Search Strategies

No additional articles, that had not already been retrieved, were identified through hand searching of key journals.

Figure 1: Flow chart of search strategies and included and excluded studies.



4.2. Review of Findings

The quality ratings for the fourteen included studies were calculated using the quality rating tool described in Figure 2 (Appendix 2.1). Quality ratings ranged from 57.75% to 95.12% (mean= 81.8%, sd =13.4). The characteristics and main findings of the included studies can be found in Table 1. Six studies were randomised controlled trials, two of which were follow-up studies. Such trials are considered the ‘gold standard’ of outcome research (Armstrong et al., 2008, Evans, 2003) and are viewed as providing the most reliable research evidence (Muir Gray, 1997; Mulrow and Oxman, 1997; Sackett, Richardson, Rosenberg and Haynes, 1997), thus strengthening the credibility of conclusions drawn.

Eight studies were quasi-experimental uncontrolled designs and were given a lower quality rating for study design because non-randomized controlled trials, un-controlled trials have a greater risk of error (Dawson-Saunders and Trapp, 1994). Furthermore, it is more difficult to determine whether differences in outcomes (i.e., maternal mental health) are attributed to intervention (i.e., behavioural sleep interventions) or differences between groups/ extraneous variables (e.g., if infant sleep improved due to maturation and hence decrease in maternal mental health symptoms, marital satisfaction) for this study design (Elwood, 1998).

4.2.1. Randomised Controlled Trials

Hiscock et al. (2007) found a reduction in maternal depression following a behavioural intervention (i.e., either controlled crying or ‘camping out’) for infant sleep difficulties. However, effect sizes (Cohens d) calculated indicated that the infant sleep intervention only led to a small increase in maternal depression and sleep. Mothers reported being generally satisfied with and adhered to behavioural sleep intervention strategies.

A follow-up study (Hiscock et al., 2008) when the same group of children were aged two years old, found that mothers in the intervention group had lower depression scores than mothers in the control group, something that the authors suggest as evidence that there are long-term effects of a behavioural sleep intervention in reducing mothers' levels of depression. A medium effect size (Cohen, 1988) was found in terms of the magnitude of change in maternal depression and infant sleep. However, given the time elapsed between the original intervention and follow-up, it seems possible that life events occurring during this period may account for changes in maternal mood.

The methodological quality of both these studies was rated as 95.12% on the quality rating tool. The particular strength of these studies lay in their design (i.e., a clustered randomised controlled trial across multiple settings), which Evans (2003) argues is “the best evidence for the effectiveness of an intervention because the results have been generated from a range of different populations, settings and circumstances” (pg. 80). Clear descriptors of how interventions were standardized and adhered to, sufficient power, low rates of attrition and use of a reliable and valid measure of mental health strengthened the methodological rigor of these studies. However, self reports bias due to nurses and mothers not been blinded to group allocation may have limited findings.

Hiscock and Wake (2002) found that mothers' levels of depression reduced following a behavioural sleep interventions for infant night waking, settling and co-sleeping difficulties. Mothers in the intervention group reported being satisfied with sleep strategies used and felt that they could cope better with infant sleep difficulties. Insufficient information was recorded for it to be possible to calculate the magnitude of change in depression scores post intervention for this study.

In a follow-up of the Hiscock and Wake (2002) study, (Lam, Hiscock and Wake, 2003) found that improvement in maternal mood was not maintained when infants were aged three to four years old. Although at face value this may suggest that behavioural sleep interventions have long-term benefits on maternal mental health, it appears likely that numerous life events would have taken place in the intervening years, hence making it impossible to conclude a direct association between the intervention and improved maternal mood.

A high quality rating was attributed to these studies (95%), reflecting their methodological strengths (i.e., using a validated depression measure, controlling for confounding variables that may have accounted for changes in depression scores, adequate sampling size and recruitment, adherence to treatment protocol and masking of group allocation at initial randomisation, data collection and analysis). However, a number of limitations, such as self-report bias of depression (due to the mothers in intervention group and investigator not being blinded to allocation), and the nature of the study sample (e. g., middle class mothers with mild depression) may have limited the generalisability of these findings to mothers in all socioeconomic groups and/or with more severe levels of depression.

Reid, Walter and O'Leary (1999) found no evidence that maternal mood improved following two behavioural sleep interventions (i.e., standard ignoring and graduated ignoring) for infant sleep difficulties. Mothers who were less distressed about parenting had better outcomes in the systematic ignoring group, which suggests that individual factors such as mood should be considered when recommending standard ignoring sleep interventions. The main strengths of this study (85% quality rating) included random allocation to intervention or control group, a clear description of the sleep intervention and qualification of those providing intervention to mothers and a valid and reliable measure of maternal mental health. However, a small sample

size, lack of a power calculation and concealment of allocation and the use of self-report measures may have limited the chance of finding significant difference in mood following interventions. Results are not generalisable to parents of older children and low socio-economic backgrounds which may be associated with more life stressors which may have impacted on compliance.

Scott and Richards (1990) found no significant differences in maternal distress or infant night-wakening between or within intervention groups that received different levels of advice. A relationship was found between night waking and maternal distress pre intervention, and this did not change over time. This indicated that the behavioural intervention alone may not have a positive impact on maternal mental status or night-wakening. However, the study design limited strong conclusions being made about the impact of infant sleep interventions on maternal mental health. There is no mention of how potential confounding variables were dealt with and the findings are not generalisable to mothers in various socio-economic backgrounds. The quality rating of this study was 77.5%, which was lower than other RCTs in this area. Furthermore, limited information is provided about what strategies were outlined in the advice booklet, and the intervention did not clearly advocate behavioural approaches to manage infant sleep, thus limiting the conclusions made.

Table 1: Data Extraction Form

Authors & Year	Quality Rating (%)	Recruitment method, location & sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Armstrong, Van Haeringen, Dadds & Cash (1998)	78.75%	Australian outpatient sleep clinic.	70 mothers (Mean age = 30.9 yrs). 61% male children (mean age 19.1 months). Night-waking and settling difficulties.	No record of whether mothers received treatment for low mood prior to or during study. Assumption that interventions for sleep already tried and have not worked for infant sleep difficulties.	Pre-post design-quasi expt	Controlled crying, cold turkey (i.e. extinction) or rewards. 12 of 70 families has short term sedative medication in conjunction with behavioural modification programme	EPDS* pre and post (two months) intervention	Paired, t-test (two tailed).	Significant reduction in depression scores pre (mean score 11.2, sd= 5) and post (mean score 5.8, sd = 4.1) intervention and in the proportion of mothers with EPDS > 12 (indicating depression in clinical samples); pre (40%) and post (4%) intervention.	Infant Sleep d= 2.19 Maternal Mood d= 1.18
Hall, Clauson, Carty, Janssen & Saunders (2006)	89.66%	Canadian Newborn Hotline.	70 mothers (mean age = 35.2 years). Infant with night-wakening difficulties (age range = six-12 months)	No record of whether mothers received treatment for low mood prior to or during study. Mother with diagnosed mental health problems excluded.	Pre-post design-quasi expt	Psychoeducation Controlled comforting (i.e. graduated extinction).	CESD* at baseline, six weeks and 16 weeks post intervention.	Paired t tests General linear modelling to measure changes in depression according to infant gender.	No pre and post scores reported for mothers. Significant improvement in mood between pre and six weeks post intervention (t= 2.9, df= 34, p<0.05) , but no significant improvement at 16 weeks (t= 0.14, df=34, p>0.05).	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Hiscock, Bayer, Gold, Hampton, Ukoumunne & Wake (2007)	95.12%	Sample recruited at four months by Australian maternal and child health nurses across six areas.	328 mothers. Infants with night waking problems, settling and co-sleeping (40% severe, 38% moderate and 38% mild). 89% male, age range = six-12 months; mean = 7.3)	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously.	RCT; treatment (n=174) and control group (n= 154)	Choice of two behavioural interventions: i) “controlled crying” ii) “camping out”. Psychoeducation and written intervention plan.	EPDS*	Random effects linear regression. Tests of interaction to assess impact of sleep intervention on maternal depression.	Reduced in infant sleep problems and EPDS scores between baseline (seven months; mean =8.4, sd= 5.3) and 10 month (mean = 6.8, sd= 5.1) and 12 month follow up (mean= 5.9, sd= 4.8).Reduction in the proportion of mothers with an EPDS > 9 (indicating clinical levels of depression in community) between baseline (42%) and 10 month (28%) and 12 month (25%) follow up.	10 Months: Infant Sleep d= 0.30 Maternal Mood d= 0.38 12 Months: Infant Sleep d= 0.31 Maternal Mood d= 0.4
Hiscock & Wake (2002)	95%	Sample recruited by Australian maternal and child health nurses across three areas.	156 mothers (mean age 33.7 years). Infants with night wakening difficulties (age range = 6- 12 months; mean = 8.9).37% mothers rated sleep problem as severe, 32% moderate.	Mothers receiving treatment for postnatal depression, and had infants with a major medical problem and receiving help for their sleep problem were excluded.	RCT: treatment (n= 78) and control group (n= 78)	Controlled crying. Psychoeducation and written intervention plan.	EPDS* at two and four months.	Multiple regression to assess factors associated with improved depression. Chi square to see if difference in depression scores over time points.	Significant reduction from baseline (mean = 9, sd= 0.44) and 2 month (change score - - 3.7) and 4 month follow up (change score = -3.6). The proportion of mothers with EPDS scores >10 (indicating clinical levels of depression in community) reduced pre (28%) and 2 months (21%) and 4 months (20%) post intervention.	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Hiscock, Bayer, Hampton, Ukoumunne & Wake (2008)	95.12%	Australian well- child centres across six areas.	328 mothers (mean age 33 years) of infants aged 24 months.	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously.	RCT; treatment (n=143) and control group (n=129)	Choice of two behavioural interventions: “controlled crying”, “camping out” Psycho-education and written intervention plan.	EPDS* at 16 months post intervention (i.e. when infant aged two years)	Random effects linear regression. Tests of interaction to assess impact of sleep intervention on maternal depression.	Reduced in infant sleep problems and EPDS scores between baseline (seven months; mean =8.4), sd= 5.3) and 16 months (i.e when child aged two years; mean = 7.7, sd= 4.23). Reduction in the proportion of mothers with an EPDS > 9 (indicating clinical levels of depression in community samples) between baseline (42%) 16 months (32.3%)	Infant Sleep d= 0.1 Maternal Mood d= 0.5
Lam, Hiscock & Wake (2003)	95%	Sample recruited by Australian maternal and child health nurses across three areas.	114 Mothers aged between 28-51 years (mean= 37) Children aged three-four years with night wakening difficulties.	Mothers receiving treatment for postnatal depression, were excluded at baseline. No record of whether mothers had additional interventions between baseline and follow up.	RCT: treatment (n= 53) and control group (n= 61)	Controlled crying. Psychoeducation and written intervention plan.	EPDS*	Chi squared analysis to compare the intervention and control group on EPDS scores.	No significant reduction in EPDS scores at baseline (children aged 6-12 months; median =9) and follow up (children aged 3-4 years; median =7) and in proportion of mothers with EPDS >10 (baseline; 28% and long term follow up; 27%).	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Messer, Lauder, Humphrey (1994)	62.5%	Recruited from sleep clinic.	Infants with night waking, (age range = 13- 15 months). Mean maternal age is 30.6 years.	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	Non-Random trial-treatment (n= 23) control group (n=14)	Behavioural Group intervention run by health visitors. Advice on reducing night feeding and scheduling sleep times.	5 questions from the EPDS*	Two tailed Mann Whitney U test to explore difference between 2 groups on 4 EPDS items	No clear pre and post scores reported for intervention group. No difference between control and intervention group on 4 EPDS scores pre intervention. Post-treatment mothers in the control group reported feeling better than those in the treatment group in terms of feeling anxious (mean = 1.4 vs. 2.0), feeling they can cope (3.1 vs. 3.6, feeling sad or miserable (3.1 vs 3.9)	
Minde,Popiel Leos, Falkner, parker & Handley-Derry (1993)	57.75%	Poor sleepers recruited from 6 community pediatricians and 2 family physicians. Control group from poster at above centres.	28 infants with night waking and 30 no sleep difficulties (control group). Infant age range = 12-36 months (mean = 20.6). Mean age of mothers was 30.1years.	Some mothers had contact with psychiatrist, psychiatric diagnoses (diagnostic Interview Schedule). However limited information, no difference between poor and good sleepers.	Pre and Post measures of malaise in treatment group-Quasi Expt	Dynamically-oriented behaviour approach to allow parents to effectively manage their night-time behaviour. 6 counselling session with social worker.	Malaise Inventory	Paired t tests.	No clear pre and post scores reported for intervention group. However, no significant changes on MI at three or six month post intervention were reported.	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Pritchard & Appelon (1988)	77.5%	Participants recruited from Health Visitors working in four areas around Wrexham, from two Paediatricians and one GP.	31 children (10 night-waking, five settling difficulties, 16 combination). Age Range nine-42 months (mean = 20.1) 12 females, 19 males. .	Families reported as having trauma, dysfunction excluded. No recording of whether mothers had treatment for mental health difficulties or for infant sleep difficulties prior to or during study	Quasi-Expt trial. Two quasi control group (i.e. parents had close or minimal support during the treatment)	Behavioural Intervention: settling and night waking difficulties assessed. Child encouraged to settle self independently.	GHQ* at baseline, three weeks and three months follow up	T- tests were used to analyses in difference in GHQ scores at baseline, three weeks and three month follow up.	Improvements in GHQ indicated improved emotional state of mothers. Improve emotional stated from baseline (mean = 37.5), three weeks post intervention (mean = 15.6) and between baseline and three month post intervention (mean = 16.3)	Night waking d= 2.52 Maternal mood d= 2.48
Reid, Walter & O'Leary (1999)	85%	Recruited through advertisements in local papers, paediatricians and mothers groups.	49 children with night-wakening or settling sleep, co sleeping, aged 16-48 months. Matched for gender and age. 20 female and 23 male infants. Mean maternal age= 32.6 years.	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	RCT-wait list control, two treatment groups.	Two behavioural interventions, systematic ignoring and graduated ignoring. Mothers provided with written intervention plan and received telephone support.	BDI*	Between group comparisons (ANCOVA). Two tailed t test were used to evaluate if significant differences in pre and post BDI for three groups.	No statistically significant differences in pre and post intervention scores; standard ignoring (mean = 9.8 vs 6.1.), graduated extinction (mean = 8.8 vs 7.5) and waiting list (mean = 10.1 vs 8.1). Reduction in reported infant sleep difficulties.	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Richman, Douglas, Hunt, Lansdown, & Levere, (1985)	61.84%	Sample recruited from health visitors, GPs and community physicians in Camden and Islington in London.	35 children aged 12-48 months (mean= 22 months). Majority male infants with night-waking, settling and co-sleeping difficulties.	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	un-controlled trial.	Positive reinforcement and shaping behaviour making a clear distinction between day and night-time and developing a bedtime ritual. Individualised programme.	MI*	Descriptive statistics for differences in MI scores between community sample and treatment. No descriptive s for changes in MI scores pre and post treatment.	Less distress reported by treatment sample (57% reported maternal distress, 31% had high scores on MI) compared to community sample 24% reported maternal distress, 21% had high scores on Malaise Inventory). Changes in MI scores for pre and post treatment were not reported, numbers too small to see if improved mood associated to improved sleep.	
Scott & Richards (1989)	77.5%	Community sample – referred from Health Visitors and GPs, mothers group.	Infants < 18 months (mean age 10.3 months). 90 mothers in interventions age range = 28.3-30.4. (mean age 29.2. years).	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	RCT- four groups; two treatment , one no treatment ,one control group with no sleep problems (n= 30).	Group one (n= 30): advice support group (i.e. information about sleep and impartial advice about behavioural strategies). Group two (n= 30); Booklet only. Group three (n= 30) No intervention.	GHQ done at pre intervention and post (three months) intervention.	Scheffe tests & repeated analysis of variance to see if difference in sleep and GHQ between groups. Correlations to explore association between GHQ & sleep	No significant difference between groups on sleep patterns. No difference on mean pre and post GHQ scores for advice group (25.6 vs 22.6) booklet group (18.8 vs 13.9), control group (21.8 vs 17.8). Positive correlation between pre and post night waking and GHQ scores.	

Authors & Year	Quality Rating (%)	Recruitment Method, location and sampling.	Sample: N, age range, gender, type of sleep problem	Treatment History	Study Design	Intervention	Outcome Measures	Statistics	Results Pre-post scores	Effect Sizes (Cohen's d)
Smart & Hiscock (2007)	79.5%	Infants attending unsettled babies clinic at a paediatric outpatient clinic in Melbourne, Australia. Convenience sampling.	Infants aged between two weeks and seven months (mean = 14.9). 63% male infants. 59 mothers (Mean age = 32.6 yrs; 90% of rated sleep as a problem).	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	Pre-post treatment pilot	One hour consultation with paediatric nurses. Psycho-education and written plan promoting self-soothing and social support.	EPDS*	Wilcoxon sign ranked test. Mc Nemar's test to see if difference in the percentage of mothers with EPDS scores >12 pre and post intervention.	Statistically significant decline in EDPS scores for mothers pre (median = 11) post intervention (median= 7) and in proportion of mothers with EPDS scores >12 (i.e. probable clinical depression) at pre (45%) and post (15%) intervention.	
Thome & Skuladottir (2005)	94.8%	All children hospitalized for sleep problems in Iceland.	33 infants (six–23 months of age; 60% male). 33 mothers, mean age is 30 years,	No record of whether mothers received treatment for low mood prior to or during study or whether previous sleep interventions tried previously	Pre- and post-test quasi-expt design.	Shaping Technique-gradual withdrawal. Psychotherapy exploring understanding of children's sleep. Psycho education.	State-trait anxiety inventory and EPDS*, pre intervention, one week post intervention and two months follow up.	Paired t tests to determine if significant decline in anxiety and depression two months post treatment and if difference in mothers' sleep and distress.	Statistically significant decline EPDS scores pre (mean= 11.2, sd= 6.3) and two months post (mean =6.9, sd= 5.3) intervention. Statistically significant decline EPDS scores pre (mean= 41.5, sd=10.7) and two months post (mean =36, sd= 10.5) intervention.	Infant Sleep d= 2.24 depression d= 0.74 Anxiety d= 0.52

* BDI= Beck Depression Inventory. CES-D = Centre for Epidemiological Studies Depression scale. EPDS = Edinburgh Postnatal Depression Scale. GHQ= General Health Questionnaire. MI- Malaise Inventory.

4.2.2. Non-randomised controlled trials/ Quasi-experimental studies

Messer, Lauder and Humphrey (1994) found no evidence that a group behavioural sleep intervention run by Health Visitors for night-wakening and settling difficulties improved maternal mood. This study received a quality rating of 62.5% on the quality rating tool, indicating that caution is needed when interpreting this finding. The difference in the size of the intervention and control groups may have reduced the power of the study thus increasing the likelihood of a Type II error. Furthermore, only five questions of the EPDS were used to assess mood. The process of completing questionnaires on infant sleep may have enabled the control group to review their infants' sleep which may have prompted them to change their approaches which may have limited the strength of conclusions drawn.

Hall, Clauson, Janssen and Saunders (2006) found that maternal depression reduced six weeks following a behavioural intervention (i.e., graduated extinction) for infant night-waking. However, no further significant improvement of mood was found between six-week and sixteen-week follow up. Although this study (89.66% quality rating) used a reliable and valid measure of depression and provided a clear description of the sleep intervention, a number of methodological weaknesses may have limited the strength of conclusions drawn. A lack of control group reduced the internal validity of this study, because there was no way of controlling for confounding variables that may have led to the improvement in maternal mood post intervention. Furthermore, a lack of standardised length of telephone support offered to parents, strict inclusion criteria and high rates of non-responders may have limited the generalizability of the final results.

Minde et al. (1993) found no evidence that a dynamically orientated behavioural intervention led to significant improvement in mothers' psychological health at three or six-month follow-

up. A lack of control for confounding variables and limited information about the intervention (i.e., a reference, in preparation and cited as providing more detail about the intervention was not readily accessible) limited the strength of the conclusions and quality of this study (i.e., 57.75%). Furthermore, mothers' mood was below the clinical cutoff, thus limiting the generalizability of findings.

Evidence that a behavioural intervention leads to significant improvements in maternal emotional state was however provided by Pritchard and Appleton (1988). They found that changes in maternal distress at three and six month follow-up coincided with mothers' perceived control over their infants' night time behaviour and improvements in infants' sleep. A large effect size (Cohen, 1988) was found in terms of the magnitude of change in GHQ scores and infant sleep between baseline and follow-up. The findings of this study (quality rating 77.5%) are limited due to a small sample size (n=31). The lack of a control group prevented the researchers determining if the intervention alone was effective in determining improvements in mothers' mental state or if this can be attributed to other factors (e.g., family functioning, perceived control).

Richman, Douglas, Hunt, Lansdowne and Levere (1985) explored whether there were improvements in mothers' mental state following behavioural sleep interventions (positive reinforcement and shaping behaviour to developing a bedtime ritual) for severe infant sleep difficulties. No significant trend was found using descriptive analysis at four-month follow-up limiting the conclusions about the impact of the intervention on maternal mood. The quality rating of this study was lower than other studies (i.e., 61.84%) as a lack of a control group, small sample that completed treatment (n=30), lack of standardised measures limited statistical analysis reducing the probability to finding any significant association between the behavioural sleep intervention and mothers' mental state.

Smart and Hiscock (2007) found evidence that a brief behavioural intervention led to decreases in mothers' rating of depression to the extent that some, who had met screening criteria for depression were no longer considered to fall within that category. The overall quality of the study was rated as 79.5% on the quality rating tool. However, the study design (a lack of control group) limited description of the nature of the infant sleep difficulties and self-report bias (depressed mothers may have over-stated the severity of infant sleep problems) may have limited the strengths of the conclusions drawn.

Thome and Skuladottir (2005) found that an inpatient behavioural sleep intervention led to a significant reduction in maternal depression and anxiety. Medium effect sizes (Cohen, 1988) were found in terms of maternal depression and anxiety post-intervention.

Although significant improvements in infant sleep (large effect size) were found post-intervention, there was no association between improvements in anxiety and depression and improved infant sleep. This suggests that maternal mood may improve following a behavioural sleep intervention, regardless of improvements in infant sleep. The overall quality of this study was high (94.8%), although a lack of control group and relatively small sample size ($n = 33$) prevented the researchers taking into account confounding factors that may have led to reductions in mothers' distress, independent of the infant sleep intervention. Furthermore, a lack of distinction between what aspects of interventions (i.e., shaping technique, psycho-education, support from professionals in the in-patient setting), high rates of attrition at follow-up and sampling bias limited the generalisability of findings.

Armstrong, Van Haeringen, Dadds and Cash (1998) found that an outpatient based behavioural intervention for children's night-wakening and settling difficulties led to

improved sleep and maternal mood two months post intervention. The study received a quality rating of 78.75% and there was a large effect size (Cohen, 1988) in terms of the efficacy of the intervention to reduce infant night waking and maternal mood.

The findings may be limited due to high rates of attrition (39%) at two month post intervention and a lack of control group. It may be that non-responders to the questionnaire at two months did not adhere to the interventions and there is no way of telling if interventions were successful or not for non-responders, thus biasing the final results. Twelve of the seventy infants received a combination of sedative medication and behavioural interventions. Although it is unlikely that this small number of infants would have significantly impacted on the final results, this should have been taken into account when analyzing the data.

4.3. Correlation between changes in infant sleep and maternal mood

It was possible to correlate the sleep quality improvement with improvements in maternal depression for five of the studies based on the available effect sizes. No significant positive correlation was found between changes in infant sleep and maternal mood (Spearman's $\rho = 0.8$, $n=5$, $p>0.05$). The high non-significant correlation found suggests that there is likely to be an association between changes in infant sleep and maternal mood; however, there was not enough studies entered into the correlation in this review to reach statistical significance.

5. Discussion

Existing research suggests that there is a strong association between infant sleep disturbance and maternal mental health difficulties. This review aimed at critically examining the evidence that behavioural infant sleep interventions may actually have benefits for maternal mental health. There are concerns in the literature that behavioural approaches that involve infant protests and crying may lead to distress for parents and compromise the parent-child attachment relationship (Sadeh, 2010). However, the majority (nine) of the studies included in this review found evidence that behavioural interventions aimed at improving infant sleep actually led to improvements in maternal depression and anxiety. Most of these studies had high quality ratings, strengthening support for these findings.

The majority of mothers who took part in the included studies were not clinically depressed (as would have been indicated by scores greater than the cut-offs for screening measures). However, six of the fourteen studies do suggest that the proportion of mothers with clinical levels of depression (EPDS scores >9) decreased following interventions targeted at their child's sleep. However, significant caution is needed when drawing conclusions regarding these findings as none of the included papers provided information regarding the chronicity of any depressive illness, or whether mothers had received previous psychiatric and/ or psychological interventions for low mood.

Although the overall literature in this review suggests that there may be some association between improvements in maternal mental health (in relation to mood and anxiety) and behavioural infant sleep interventions, there is no way of inferring the direction of association from the literature that is currently available. Indeed, other factors such as low perceived self-efficacy, doubt in parental self-competence, (Hutchings, Appleton, Smith, Lane and Nash,

2002; Morrell, 1999; Sarimski, 1993), feelings of guilt (Inglis, 1976; Szyndler and Bell, 1992) and feeling discouraged and hopeless about managing infant sleep disturbance (Chavin & Tinson, 1980; Eckerberg, 2004; Sarimski, 1993) may account for the association between maternal mood difficulties and infant sleep problems. Pritchard and Appleton (1998) found that changes in maternal well-being coincided with perceived control over infant night-time behaviour and Daws (1989) suggests mechanisms such as mothers' improved understanding of infants' individuality, better management of the sleep problem and feeling reassured by professionals may account for improvement in maternal mood following behavioural sleep interventions. This suggests that improvements in maternal mental health may be a by-product of behavioural interventions aimed at improving infant sleep and factors such as perceived control and self efficacy, which may be viewed as indicators of general mental well-being may account for improvements in maternal mood and anxiety. Overall, this suggests that it is important to take account of individual factors such as maternal mood when recommending behavioural interventions. For example, mothers who were less depressed and distressed about parenting appear to have better outcomes following systematic ignoring sleep interventions (Reid et al., 1999).

No significant correlation was found between changes in infant sleep and maternal mood for five of the studies; however, this finding is limited by the small number of studies entered into this analysis, which may have increased the chance of making a Type I error. Alternatively, it is also likely that a number of other life events and factors may have accounted for changes (either improvement or deterioration) in maternal mental health. For example, infant sleep disturbance may negatively impact on parents' ability to cope, family and marital relationships (Forsyth, Leventhal and McCarthy, 1985; Meijer & Van den

Wittenboer, 2007; Pinyerd, 1992; Weir and Dinnick, 1988) which may be in turn impact on maternal mental health.

5.1. Limitations

This review may be limited due to the variation in behavioural approaches used to manage infant sleep difficulties. In addition, this prevented clear conclusions been made about which of the behavioural approaches aimed at improving infant sleep may led to secondary improvements in maternal mental health.

Furthermore, limited information was available to calculate effect sizes for all studies included in this review, which may explain the lack of relationship found between maternal mental health and behavioural interventions following correlational analysis. Finally, results may not generalize to mothers who have severe or enduring depression because few extreme depression scores on the EPDS were recorded at any stage of the studies.

5.2. Clinical Implications and Future Research

There is some evidence that behavioural infant sleep interventions delivered by primary care professionals (i.e., paediatricians, child psychologists or health visitors) that lead to improved infant sleep also have benefits for maternal mental health and should be promoted in primary care services as a preventative approach to maternal depression and anxiety. However, particular issues raised in this review suggest that more well-controlled, longitudinal trials with adequate sampling are needed before more confidence could be made regarding this conclusion and to clarify what specific aspects of the behavioural sleep interventions led to improvements in maternal mental health. Finally, although it is outwith the scope of this

review, it may be beneficial for future research to focus on a comparative review of behavioural and co-sleeping approaches.

6. Conclusions

This review provides support for the suggestion that behavioural sleep interventions lead to significant improvements in maternal mental health. However, more well-controlled studies are needed to explore what specific individual factors and aspects of behavioural sleep interventions actually result in these improvements. Such research on the ‘mechanisms of action’ may also highlight means by which mothers could be supported to implement these, often difficult, interventions.

7. References

- Armstrong, K.L., O'Donnell, H., McCallum, R. & Dadds M. (1998). Childhood sleep problems: association with prenatal factors and maternal distress/ depression. *The Journal of Paediatrics and Child Health*, 34, 263–6.
- Armstrong, K.L., Van Haeringen, A.R., Dadds, M.R. & Cash, R. (1998). Sleep deprivation or postnatal depression in later infancy: separating the chicken from the egg. *The Journal of Paediatrics and Child Health*, 34, 260–262.
- Armstrong, R., Waters, E., & Doyle, J. (2008). Chapter 21: Reviews in health promotion and public health. In: J.P.T. Higgins & S. Green. (Eds.), *Cochrane Handbook for Systematic Reviews of Interventions Version 5.0.0 (updated February 2008)*. The Cochrane Collaboration. Available from: www.cochrane-handbook.org.
- Barrow, J. & Parsons, J. (2009). Group-based parent-training programmes for improving emotional and behavioural adjustment in 0-3 year old children (Review). *The Cochrane Collaboration*. Published by JohnWiley & Sons, Ltd.
- Benhamou, I. (2000). Sleep disorders of early childhood: a review. *Israelian Journal of Psychiatry Related Sciences*, 37, 3, 190-196.
- Bramble, D. (1996). Consumer opinion concerning the treatment of a common sleep problem. *Childcare, Health and Development*, 22, 355-366.
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences. Second Edition, Lawrence Erlbaum Associates Inc., Publishers.
- Chadez, L.H. & Nurius, P.S. (1987). Stopping bedtime crying: Treating the child and the parents. *Journal of Clinical Child Psychology*, 16, 212-217.
- Chavin, W., & Tinson, S. (1980). Children with sleep difficulties. *Health Visitor*, 53, 477-480.
- Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine*, 19, 3127-3131.
- Daws, D. (1989). *Throughout the Night, Helping Parents and Sleepless Infants*. Location: Free Association Books, London.
- Dawson-Saunders, B. & Trapp, R.G. (1994). *Basic and Clinical Biostatistics*. Location: Prentice Hall International, London.
- Dennis, C.L. & Ross, L. (2005). Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. *Birth*, 32, 187–93.
- Durand, V. M., & Mindell, J. A. (1990). Behavioral treatment of multiple childhood sleep disorders: Effects on child and family. *Behavior Modification*, 14, 37-49.
- Eckerberg, B. (2004). Treatment of sleep problems in families with young children: Effects of treatment on family well-being. *Acta Paediatrica*, 93, 126-134.

Elwood, M. (1998). *Critical appraisal of epidemiological studies and clinical trials*, 2nd edn. Location: Oxford University Press, Oxford.

Evans, D. (2003). Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions. *Journal of Clinical Nursing*, 12, 77–84.

Fisher, J.R.W., Feekery, C.J. & Rowe-Murray, H.J. (2002). Nature, severity and correlates of psychological distress in women admitted to a private mother-baby unit. *Journal of Paediatric Child Health*, 38, 140–5.

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.

Forsyth, B.W., Levethal, J.M. & McCarthy, P.L. (1985). Mothers' perceptions of problems of feeding and crying behaviors. *American journal of diseases of children*, 139, 269–72.

France, K.G., Henderson, J.M. & Hudson, S.M. (1996). Fact, act, and tact: a three-stage approach to treating the sleep problems of infants and young children. *Child and Adolescent Psychiatry Clinics of North America*, 5, 581–99.

France, K.G. & Hudson, S.M. (1993). Management of infant sleep disturbance: A review. *Clinical Psychology Review*, 13, 635-647.

Hall, W.A., Clauson, M., Carty, E.M., Janssen, P.A. & Saunders, R.A. (2006). Effects on parents of an intervention to resolve infant behavioral sleep problems. *Paediatric Nursing*, 32, 243-250.

Hiscock, H. & Wake, M. (2002). Does a behavioural infant sleep intervention improve infant sleep and maternal mood? *The British Medical Journal*, 324, 1062-1065.

Hiscock, H. & Wake, M. (2001). Infant sleep problems and postnatal depression: a community based study. *Pediatrics*, 107, 1317–1322.

Hiscock, H., Bayer, J., Gold, L., Hampton, A., Ukoumunne, O.C., & Wake, M. (2007). Improving infant sleep and maternal mental health: a cluster randomised trial. *Archives of Disease in Childhood*, 92, 952-958.

Hiscock, H., Bayer, J.K., Hampton, A., Ukoumunne, O.C., & Wake, M. (2008). Long-term mother and child mental health effects of a population-based infant sleep intervention: cluster-randomized, controlled trial. *Pediatrics*, 122, 621-627.

Horne, K. E. (2010). *The relationship between disturbed sleep and cognitive functioning during pregnancy: an exploratory study: & clinical research portfolio*. Unpublished thesis, submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology (D.Clin.Psy), University of Glasgow.

Hutchings, J., Appleton, P., Smith, M., Lane, E., & Nash, S. (2002). Evaluation of two treatments for children with severe behavior problems: Child behavior and maternal mental health outcomes. *Behavioral and Cognitive Psychotherapy*, 30, 279–295.

- Inglis, S. (1976). The nocturnal frustration of sleep disturbance. *Maternity and Child Nursing Journal*, 1, 280-287.
- Johnson, M. (1991). Infant and toddler sleep. *Journal of Developmental and Behavioral Pediatrics*, 12, 108– 114.
- Kerr, S. M. & Jowett, S. A. (1994). Sleep problems in pre-school children: a review of the literature. *Child: care, health and development*, 20, 379-391.
- Kuhn, B. R., & Weidinger, D. (2000). Interventions for infant and toddler sleep disturbance: A review. *Child & Family Behavior Therapy*, 22, 33-50.
- Lawton, C., France, K. G., & Blampied, N. M. (1991). Treatment of infant sleep disturbance by graduated extinction. *Child & Family Behavior Therapy*, 13, 39-56.
- Lam, P., Hiscock, H., & Wake M. (2003). Outcomes of infant sleep problems, a longitudinal study of sleep, behaviour, and maternal wellbeing. *Pediatrics*, 111, 203–207.
- Meijer, A.M. & Van den Wittenboer, G.L.H. (2007). Contribution of infants' sleep and crying to marital relationship of first-time parent couples in the 1st year after childbirth. *Journal of Family Psychology*, 21, 1, 49-57.
- Messer, D.J., Lauder, L. & Humphrey, S. (1994). The effectiveness of group therapy in treating children's sleeping problems. *Child: Care, Health & Development*, 20, 267-277.
- Minde, K., Popiel, K., Leos, N., Falkner, S., Parker, K. & Handley-Derry, M. (1993). The evaluation and treatment of sleep disturbances in young children. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 34, 521-533.
- Mindell, J. A. (1999). Empirically supported treatments in pediatric psychology: Bedtime refusal and night wakings in young children. *Journal of Pediatric Psychology*, 24, 465–481.
- Mindell, J. A. (1993). Sleep disorders in children. *Health Psychology*, 12, 151-162.
- Mindell, J.A. & Durand, V.M. (1993). Treatment of childhood sleep disorders: generalization across disorders and effects on family members. *Journal of pediatric psychology*, 18, 731-750.
- Morgenthaler, T.I., Owens, J., Alessi, C., Boehlecke, B., Brown, T.M., Coleman, J., Friedman, L., .Kapur, V.K., Lee-Chiong, T., Pancer, J. & Swick, T.J. (2006). Practice parameters for behavioral treatment of bedtime problems and night wakings in infants and young Children. *Sleep*, 29(10):1277-1281.
- Morrell, J.M. (1999). The role of maternal cognitions in infant sleep problems as assessed by a new instrument, the maternal cognitions about infant sleep questionnaire. *Journal of Child Psychology & Psychiatry*. 40, 247–258.
- Muir Gray J.A. (1997). *Evidence-Based Healthcare*. Location: Churchill Livingstone, New York.

- Mulrow, C.D. & Oxman, A.D. (1997). *Cochrane collaboration handbook* (database on disk and CDROM). The Cochrane Library, The Cochrane Collaboration, Oxford, Updated Software.
- Pinyerd, B. (1992). Strategies for consoling the infant with colic: fact or fiction. *Journal of Pediatric Nursing*, 7, 403–11.
- Pritchard, A., & Appleton, P. (1988). Management of sleep problems in pre-school children. *Early Child Development & Care*, 34, 227-240.
- Ramos, K. D., & Youngclarke, D. M. (2006). Parenting advice books about child sleep: Co-sleeping and crying-it-out. *Sleep*, 29, 12, 16-23.
- Reid, M. J., Walter, A. L., & O’Leary, S. G. (1999). Treatment of young children’s bedtime refusal and night time wakings: A comparison of “standard” and graduated ignoring procedures, *Journal of Abnormal Child Psychology*, 27, 5-16.
- Richman, N., Douglas, J., Hunt, H., Lansdown, R. & Levere, R. (1985). Behavioural methods in the treatment of sleep disorders—a pilot study. *Journal of Child Psychology and Psychiatry*, 26, 581 -590.
- Rickert, V.I. & Johnson, C.M. (1988). Reducing nocturnal awakening and crying episodes in infants and young children: A comparison between scheduled awakenings and systematic ignoring. *Pediatrics*, 81(2), 203-212.
- Sackett, D.L., Richardson, W.S., Rosenberg, W. & Haynes, R.B. (1997). *Evidence Based Medicine: How to Practice and Teach EBM*. Churchill Livingstone, New York.
- Sadeh, A., Tikotzky, L., & Scher, A. (2010). Parenting and infant sleep. *Sleep Medicine Reviews*, 14, 89–96
- Sadeh, A., Flint-Ofir, E., Tirosh, T., & Tikotzky, L. (2007). Infant sleep and parental sleep-related cognitions. *Journal of Family Psychology*, 21, 74–87.
- Sarimski, K. (1993). Aufrechterhaltung von Schlafstörungen im frühen Kindesalter, Entwicklungspsychopathologisches Modell und Pilot Studie. Praxis der Kinderpsychologie und Kinderpsychiatrie 42, 2–8. Cited in Thom, M & Skuladottir, A. (2005). Evaluating a family centred intervention for infant sleep problems. *Journal of Advance Nursing*, 50, 1, 5-11
- Scott, G. & Richards, M. P. M. (1990). Night waking in 1-year-old children in England. *Child Care Health and Development*, 16:283–302
- Schulz, K.F., Altman, D.G., & Moher, D. for the CONSORT Group (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomised trials. *British Medical Journal*, 340, 698-702.
- Scottish Intercollegiate Guidelines Network (SIGN; 2008). *SIGN 50: A guideline developers’ handbook*. Website (last accessed 01/03/2011) <http://www.sign.ac.uk/guidelines/fulltext/50/index.html>

Smart J. & Hiscock H. (2007). Early infant crying and sleeping problems: a pilot study of impact on parental well being and parent-endorsed strategies for management. *Journal of Paediatric Child Health*, 43, 284–90.

Szyndler, J. & Bell, G. (1992). Are groups for parents of children with sleep problems effective? *Health Visitor*, 111-219.

Tarrier, N., & Wykes, T. (2004). Is there evidence that cognitive behaviour therapy is an effective treatment for schizophrenia? A cautious or cautionary tale? *Behaviour Research and Therapy*, 42, 1377-1401.

Thome, M. & Skuladottir, A. (2005). Evaluating a family centred intervention for infant sleep problems. *Journal of Advance Nursing* 50, 1, 5-11.

Thunstrom, M. (1999). Severe sleep problems among infants in a normal population in Sweden, prevalence, severity and correlates. *Acta Paediatrica*, 88, 1356–1363.

Wade, C.M. Ortiz, C. & Gorman, B.S. (2007). Two- session group training for bedtime noncompliance in head start preschoolers. *Child & Family Behavioural Therapy*, 29, 3, 23-55

Weir, I. K. & Dinnick, S. (1988). Behaviour modification in the treatment of sleep problems occurring in young children: a controlled trial using health visitors as therapists. *Child: Care, Health and Development*, 14, 355-367.

CHAPTER 2: MAJOR RESEARCH PROJECT

The influence of maternal attributions and personality on recommendations of, and outcome expectancies, for infant sleep interventions*

Short Title: Maternal Attributions, Personality and Infant Sleep

Prepared in accordance with the guidelines for Behavioural Sleep Medicine (Appendix 1)

Ann-Marie Wall**
Mental Health and Well Being,
Division of Community Based Sciences,
Academic Centre,
University of Glasgow,
Gartnavel Royal Hospital,
1055 Great Western Road,
Glasgow, G12 0XH
Email: ann-marie.wall@nhs.net

* The original protocol submitted to, and passed, by the Doctorate in Clinical Psychology training course is included as Appendix 3.1. Changes to this protocol are detailed in bold.

** Author for correspondence.

Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology (D.Clin.Psy)

Lay Summary

Infant sleep difficulties are common and advice about managing such difficulties abounds from numerous sources. Despite evidence supporting behavioural sleep management (e.g., resisting the infant's crying to help them to learn to sleep alone), many parents experience difficulties in following these approaches. Alternative approaches, such as co-sleeping (e.g., sharing a bed with the infant), have a less well-developed evidence-base, and are less likely to be recommended by healthcare professionals, yet are often used by parents. This study explored whether a link exists between some psychological factors (aspects of mothers' personalities and underlying beliefs about infant sleep) and the type of sleep intervention a mother would recommend to others.

First-time mothers of infants aged between six and 36 months were recruited from mother and child groups in their local area and on-line. Mothers were asked to read three short descriptions of infants with sleep problems. They then answered some questionnaires to find out their beliefs regarding the sleep problems in the stories, which sleep management approach they would recommend to the mother of each child described, and how successful they thought different approaches would be. The mothers were also asked to complete questionnaires about their general levels of anxiety, and how they tended to cope with different situations in life.

We found that mothers who thought that infant sleep difficulties could be changed, that they would be detrimental to the child's well-being, and were caused by factors that were not about the infant themselves (e.g., the place where the child slept), were more likely to recommend 'behavioural' approaches. We also found some evidence that how the mothers in our study coped with general difficulties and their levels of anxiety were related to how successful they thought these 'behavioural' approaches would be.

We considered how future research could build on these findings. For example, it would be interesting to know if these findings would be the same were we to ask which approaches mothers actually choose to manage their own infant's sleep in real life. Future research should also examine the influence of psychological factors in fathers, or other care-givers, in these choices. Knowing more about what factors affect whether a parent would choose to use a 'behavioural' approach may help healthcare professionals to understand why some parents may find it particularly difficult to follow this approach.

Abstract

Background: Settling and waking difficulties are common among infants and children. Although there is robust evidence for behavioural approaches to sleep management, a significant number of parents find these difficult to adhere to. Furthermore, other parents will actively choose co-sleeping approaches. A number of psychological factors may be associated with recommendations of, and outcome expectancies for, such interventions.

Methods: First-time mothers of infants aged six to 36 months were recruited from support groups. A correlational design explored whether mothers' sleep attributions and personality (coping style and trait anxiety) related to, and predicted, recommendations of, and outcome expectancies for, differing sleep management methods. The Modified Illness Perception Questionnaire (IPQ) and fictional vignettes depicting infants with sleep difficulties were used to access these attributions. Trait anxiety and coping style were also measured.

Results: The Modified IPQ proved to be an adequate means to access maternal attributions about the infant sleep difficulties depicted in the fictional vignettes. Maternal attributions of controllability, external cause, negative consequences and stability were associated with participants recommending behavioural sleep management approaches. There was also some evidence that 'problem focused' coping and higher levels of trait-anxiety had some influence on participants' expectancies of positive outcome for 'behavioural' approaches.

Conclusion: Future research should examine the actual choices that mothers make in relation to their own infant's sleep. The influence of psychological factors in fathers, or other care-givers, should also be considered. Gaining further understanding about what factors affect whether a parent would choose to use a 'behavioural' approach, with an expectation of success, may help healthcare professionals understand why some parents may find adherence particularly difficult. This may allow them to support parents to use these approaches in clinical treatment.

Key words: Maternal attributions, infant sleep, coping, anxiety, behavioural interventions.

1. Introduction

Settling and waking difficulties and sleep phase disruptions (i.e., “when the time the parents assigns for sleep and the child's period of needing it are not synchronous”) are common among infants and young children (Blum and Carey, 1996; Bramble, 1996; Johnson, 1991; National Sleep Foundation, 2004). Indeed, concerns about infant sleep are amongst the most common reasons why parents consult healthcare professionals regarding their children (Lozoff, Wolf and Davis, 1985).

1.1. Methods of Managing Infant and Child Sleep

Advice for managing sleep can be divided into two broad categories: a co-sleeping approach (advocating parent-child interactions) and behavioural approaches (advocating extinction and delayed responding). Behavioural approaches are most commonly recommended to parents by healthcare professionals (Johnson, 1991; Mindell, 1999), although a significant minority of parenting advice books advocate co-sleeping and generally recommend long-term bed or room sharing (Ramos and Youngclarke, 2006).

1.1.1. Co-Sleeping

Although definitions within the literature are varied, the term ‘co-sleeping’ generally refers to children frequently sleeping in the same room, or bed, as their parents (Rath and Okum, 1995). Its proponents highlight research suggesting that co-sleeping positively influences parent-child attachments; lengthens the sleep period and supports breast-feeding through increased infant arousal (Mosko, Richards and McKenna, 1997a, 1997b; Sears et al., 2005). Research suggests that parents may adopt co-sleeping approaches for a number of reasons: the approach may satisfy parental desires for physical proximity; may facilitate monitoring of the infant and feeding; may reduce infant distress on settling; and may improve parental sleep quality and duration (Ball, Hooker and Kelly, 1999).

Although some studies have failed to find any causal relationship between co-sleeping and the development of sleep problems (Forbes, Weiss and Folen, 1992; Rath and Okum 1995; Weimer et al., 2002), others have suggested that infants who fall asleep with significant parental involvement (i.e., whilst being held, fed or rocked, for example) are more likely to have an increased number of night awakenings and greater difficulties falling asleep (Burnham, Goodlin-Jones, Gaylor and Anders, 2002; Mao, Burnham, Goodlin-Jones, Gaylor and Anders, 2004; Mindell, Kuhn, Lewin, Meltzer and Sadeh, 2010). It has been suggested that high levels of parental involvement and soothing lead to the child continuing to rely on parent-child interactions to facilitate sleep onset and maintenance. Consequently, children may not have the opportunity to develop the self-soothing skills necessary for successful, and independent, sleep onset. Thus, healthcare professionals, in the majority of cases, recommend a behavioural approach to managing sleep during the early years of a child's life (Johnson, 1991; Mindell, 1999).

1.1.2. Behavioural Approaches

In contrast, the behavioural approach advocates self-soothing and the use of a behavioural extinction paradigm (i.e., removal of the reinforcer of parental attention) to eliminate infants' paired response (waking and crying) over time (Kuhn and Weidinger, 2000). However, advocates of co-sleeping maintain that focusing solely on behavioural approaches ignores the 'social' nature of sleep and disregards infant autonomy in favour of a universal approach (Funkquist, Carlsson and Nyqvist, 2005; Rowe 2003).

There is a great deal of empirical support for behavioural interventions, such as extinction and its variants, positive bedtime routines, scheduled awakenings, "controlled crying", "modified extinction" and disassociating feeding from sleep-wake transitions (Eckerberg, 2004; Hiscock and Wake, 2002; Kuhn and Weidinger, 2000). Furthermore, it has been suggested that such interventions may result in reductions in maternal depression and anxiety (Armstrong, Van Haeringen, Dadds and Cash, 1998; Hall, Clauson, Carty, Janssen and

Saunders, 2006; Hiscock et al., 2007; Hiscock and Wake, 2002; Thome and Skuladottir, 2005).

1.2. Mothers' Experiences and Expectations of Behavioural Sleep Interventions

Despite the scientific evidence base that supports behavioural approaches for sleep management, significant numbers of parents experience difficulties in complying with such interventions and fail to consistently adhere to these strategies (Johnson, 1991; Walters, 1993). The reasons for this may be manifold, but the process of behavioural interventions, requiring parents not to respond to the demands of their infant, may result in emotional distress for some parents (Sadeh, Flint-Ofir, Tirosh and Tikitzky, 2007). Parents are often concerned about the impact of systematic ignoring of infant crying on the child's emotional development. Hence, they may refuse to engage in this treatment and view it as unacceptable, impractical and difficult to carry out (Johnson, 1991; Rickert and Johnson, 1988). They also may believe it does not match their 'parenting values' as well as co-sleeping might (Gordon, 2008).

These findings suggest that parents' expectations, driven by underlying beliefs, may be important mediators of the approaches they choose to use in relation to infant sleep. In other areas, it has been shown that response effectiveness (i.e., changing behaviour would lead to positive change), and outcome expectancies (i.e., how successful interventions are predicted to be) impact on health behaviour change (Rippeto and Rodgers, 1987; Schwarzer 1992). Indeed, lower outcome expectancies have been shown to be associated with poor treatment outcomes (Peterson, Larson and Jacobsen, 2007).

1.3. Psychological Factors and Sleep Management Approaches

1.3.1. Parental Attributions

Attributions that parents make about their children also appear likely to influence their actions in relation to sleep. Weiner's (1980; 1985) attribution theory suggests that attributions about cause, stability and controllability influence individuals' emotional reactions and expectations for future success. Parents who attribute behaviour to intrinsic genetic or medical causes may view interventions that rely upon changes to the environment as less likely to be effective, and hence implement these strategies with less effort (Morrissey- Kane and Prinz, 1995; Reimers, Wacker, Derby and Cooper, 1995). Previous research has demonstrated that a mother's perception of a child's behaviour as being uncontrollable and unchangeable may negatively predict their willingness to implement or accept behaviour management techniques (Johnston and Freeman, 1997).

Keenan, Wild, McArthur and Espie (2007) found that parents of children with a developmental disability and sleep problems, who held internal causal attributions (e.g., personality and disability) for their child's sleep difficulties, and viewed their child's sleeping problem as chronic, did not view behavioural interventions to be as acceptable as their pharmacological counterparts. This suggests that parental attributions affect treatment choice in much the same manner as interventions for other difficulties. Although this research was conducted in a population with developmental disabilities, such findings may hold true in relation to typically developing children.

1.3.2. Personality (Coping Style and Trait Anxiety)

Differences in parental coping style may theoretically influence the type of sleep management approach (i.e., behavioural or co-sleeping) that mothers choose to manage sleep in young children. Coping may also be linked to outcome expectancies and ability to adhere to behavioural sleep interventions. Coping is generally classified as 'problem-focused' and 'emotion-focused' and Folkman and Lazarus (1980) suggested that individuals are more

likely to engage in problem-focused coping if they believe that their difficulty is more amenable to change, but emotion-focused coping is more likely to be used when an individual perceives that nothing could alter a particular difficulty.

McDougall, Kerr and Espie (2005) found that emotion-focused coping was the most prevalent style utilised by parents managing sleep disturbance of infants with Rett's disorder. Emotion- focused coping was associated with parents engaging in prescribed checking, regular responding to night waking and often involved taking the child out of bed and co-sleeping. Although the evidence in this area is sparse, it does give rise to the suggestion that parents who use emotion-focused or dysfunctional coping styles may struggle to adhere to behavioural sleep management strategies. In contrast, the use of behavioural approaches may be associated with those who employ problem-solving coping styles.

In addition, it is possible that parental anxiety may also have a role to play in relation to the sleep approaches used to manage infant sleep disturbance. For example, high trait-anxiety may be associated with 'over-protective' parental attitudes (Parker, 1983). It therefore seems feasible to suggest that high levels of underlying anxiety may result in frequent checking behaviour (as suggested in McDougall et al.'s 2005 study) and, hence, leading to a preference for co-sleeping as a means to ensure infant safety.

In summary, although there is only limited research on the factors that may lead to a particular choice of sleep intervention, there are some hints in the literature. As described previously, attributions about cause, stability and 'treatability', anxiety and coping-style may be involved. Indeed, McDougall et al. (2005) made a tentative suggestion that highlighted some of these issues when they suggested that: 'beliefs about sleep problems, coping and emotions may influence and be influenced by each other' (pg. 11). However, as yet, this model has not been examined. Furthermore, McDougall et al. (2005) were describing parents

of children with developmental disabilities where there may be unique influences on parental beliefs. Thus, findings for parents of typically developing children may differ.

Hence, this study aimed at critically examining whether a mother's beliefs about infant sleep difficulties, coping style and trait-anxiety, were associated with a particular sleep management approach ('behavioural' or 'co-sleeping'). In addition, this study aimed at evaluating whether these factors predicted success for behavioural approaches.

The study focused on mothers (as they have been identified as the primary caregivers in relation to infant sleep; e.g., Morrell and Cortina-Borja 2002; National Sleep Foundation, 2004), with children aged between six and 36 months (as entrenchment of sleep difficulties may become more obvious at this point – and hence support from professionals be requested; Bramble, 1996; Johnson, 1991; National Sleep Foundation, 2010) and who are first-time parents (as this group may experience increased levels of anxiety and be less confident than mothers who have already had children; e.g., Force 2000; McKellar, Pincombe and Henderson, 2002; Sweet 1997).

Written, fictional vignettes are frequently used in research examining underlying attributions, and research has demonstrated them to be an effective means of identifying these (Tikotzky and Sadeh, 2009). Such 'third-party' vignettes may be particularly relevant in the proposed study as they do not relate to individual participants. Thus, they would minimise, as far as possible, the influence of numerous, specific factors (such as work patterns or child health) that might affect beliefs about sleep difficulties, and expectations of outcome, were mothers to be questioned about their own children. Hence, vignettes make it possible to 'assess the basic underlying beliefs mothers have about the issue of infant sleep problems' (pg 870; Tikotzky and Sadeh, 2009).

2. Hypotheses

2.1. Primary Hypotheses

Hypothesis One

- 1.1 Participants who believe that a sleep problem is caused by factors external to the child will recommend behavioural sleep management approaches for infant sleep difficulties.
- 1.2 Participants who believe that a sleep problem is controllable will recommend behavioural sleep management approaches for infant sleep difficulties.
- 1.3 Participants who believe that a sleep problem will have a negative impact on the child will recommend behavioural sleep management approaches for infant sleep difficulties.
- 1.4 Participants who believe that a sleep problem is not stable will recommend behavioural sleep management approaches for infant sleep difficulties.

Hypothesis Two

- 2.1 Participants with higher levels of 'problem-focused' coping styles will recommend behavioural sleep management approaches for infant sleep difficulties.
- 2.2 Participants with lower levels of 'trait-anxiety' will recommend behavioural sleep management approaches for infant sleep difficulties.

Hypothesis Three

3.1 Participants who believe that a sleep problem is caused by factors external to the child will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

3.2 Participants who believe that a sleep problem is controllable will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

3.3 Participants who believe that a sleep problem will have a negative impact on the child will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

3.4 Participants who believe that a sleep problem is not stable will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

Hypothesis Four

4.1 Participants with higher levels of 'problem-focused' coping styles will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

4.2 Participants with lower levels of 'trait-anxiety' will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

3. Method

3.1. Ethical Approval

Ethical approval was granted by the West of Scotland Research Ethics Committee 4 (see Appendix 3.2).

3.2. Power Calculation

A power calculation using Peduzzi, Concato, Kemper, Holford and Feinstein (1996) equation to calculate the number of events per variable needed for logistic regression indicated that 135 participants were needed to address the primary hypotheses.

3.3. Participants

One-hundred-and-thirty-seven first-time mothers of children aged between six and 36 months completed the study. Eighty-three participants completed the questionnaire on-line, and 54 by paper questionnaire. Forty-seven on-line participants were excluded due to failing to complete all questionnaires, or not meeting inclusion criteria. Sixteen participants who returned paper questionnaires did not meet inclusion criteria and their responses were therefore excluded.

Response-rate for paper questionnaires was 16%. It was not possible to calculate response-rate for on-line questionnaires, because no measure of persons viewing the study information could be kept.

3.4. Recruitment

Participants were recruited from numerous support groups for mothers, infants and toddlers in Glasgow. Initial telephone contact was made with professionals who led voluntary support groups and health clinics to seek permission to distribute participant information sheets and questionnaires to any interested mothers. Participants were provided with a Freepost envelope to return completed questionnaires and a list of 'helpline' numbers for mothers who may have concerns about their infant's well-being. Potential participants were also recruited from advertisements displayed at support groups in Glasgow and on numerous online support and advice groups for mothers. Mothers recruited from online sites were able to access an electronic version of the participant information sheet and questionnaires via an online link to a confidential internet survey site.

3.5. Measures and Materials

Brief Demographics Questionnaire: Information about participants' demographics were gathered through this questionnaire in order to characterise the sample of mothers recruited in this study (See Appendix 3.4).

The Brief Infant Sleep Questionnaire (BISQ; Sadeh, 2004) was used to measure the sleep quality of the child of each participant. This is a validated measure with high test-retest reliability ($r > 0.82$). This questionnaire was used to characterise the sample, and identify specific associations in terms of recommended sleep interventions and anticipated success of behavioural sleep interventions that might emerge for mothers of children with and without sleep difficulties.

The Illness Perception Questionnaire (IPQ; Weinman, Petrie, Moss-Morris and Horne, 1996), amended for sleep difficulties, was used to examine participants' attributions about cause, stability, consequences and controllability of infant's sleep difficulties for each of the three vignettes.

The original IPQ is a well-established scale with high internal consistency and acceptable validity and test-retest reliability and can be utilised and adapted for a number of disorders (Weinman et al., 1996). More specifically, the IPQ has been used in numerous studies examining carers' attributions toward specific health difficulties such as schizophrenia (Barrowclough, Lobban, Hatton and Quinn 2001; Fortune, Smith and Garvey, 2005; Lobban Barrowclough and Jones, 2005), rheumatoid arthritis (Sterba Sterba and DeVellis, 2009), diabetes (Olsen, Berg and Dj, 2008), eating disorders (Whitney, Haigh, Weinman, and Treasure, 2007) and alcohol dependency (Bamford, Barrowclough and Booth, 2007) with no known adverse effects, upon the individual completing this. Given that the IPQ has been used to assess attributions about others, it was thought that it would be a good measure for exploring mothers' attributions about common infant sleep difficulties depicted in hypothetical vignettes. The original internal consistency rating for subscales ranged from 0.73-0.82 and it has acceptable validity and test-retest reliability (Weinmann et al. 1996).

The IPQ was chosen as a measure in this study because it can be adapted to explore mothers' beliefs about sleep. For example, the IPQ has been used to explore sleep difficulties in children with developmental disabilities (Keenan et al., 2007; Mac Quarrie, 2009). Good internal consistency (i.e. Cronbach's Alpha 0.54, 0.69, 0.65, 0.67) has been found for the domains of stability, consequences, cure/ controllability and external cause respectively when

used with parents of children with sleep difficulties and developmental disabilities (Keenan et al. 2007). This suggests that the IPQ may be a good measure of maternal attributions about common infant sleep difficulties depicted in hypothetical vignettes. Furthermore, although previous research has explored mothers' beliefs about infant sleep (Morrell, 1999; Morrell and Cortina-Borja, 2002; Sadeh and Anders 1993; Sadeh et al., 2007), this research did not investigate the specific attributions of stability, consequences, cure/ controllability and external cause that are explored in the modified IPQ.

In this study, infant sleep difficulties were conceptualised as a particular health 'condition' to identify mothers' attributions regarding infant sleep. The domain of *identity* was removed since participants would be presented with three fictional vignettes that make the presenting sleep difficulty explicit. The *causal domain* was adapted to explore mothers' attributions about the causes of infant sleep difficulties presented in the fictional vignettes. Indeed, Weinmann et al. (2006) acknowledged that potential causes will vary between each illness group, and hence suggested that items could be amended as required.

Adaptations to the IPQ and the development of vignettes were based on previous research exploring mothers' beliefs about infant sleep (Keenan et al., 2007; Mc Dougall et al., 2005; Morrell, 1999; Morrell and Cortina-Borja, 2002; Sadeh and Anders 1993; Sadeh et al., 2007). Permission was given by Keenan et al., (2007) to utilise the amendments they made to the Modified IPQ in relation to infant sleep. In addition, the scale included an open-ended question to identify any further causal beliefs that might not have been identified in previous research.

As the modified IPQ was being applied to a new setting (i.e., to explore mothers' attributions about common infant sleep difficulties depicted in hypothetical vignettes), a Principal Component Analysis (PCA) and reliability analysis (i.e., Cronbach's alpha) was conducted to ensure the modified IPQ was a reliable measure of maternal sleep attributions.

The Brief COPE questionnaire (Carver, 1997) was used to measure emotion focused, problem focused and dysfunctional coping style. This is a validated questionnaire; Cooper, Katona and Livingston (2008) found good internal consistency and adequate test-retest reliability of the Brief COPE, when operationalised as three subscales, measuring emotion-focused, problem-focused, and dysfunctional coping ($r = 0.58$, $r = 0.72$, $r = 0.68$). Given that these subscales have good reliability, they were used to measure mothers' coping styles for this study.

State-Trait Anxiety Inventory (Spielberger, Gorsuch and Lushene, 1970): the trait sub-scale of this measure was used to assess participants' levels of trait anxiety. The State-Trait Anxiety Inventory (STAI) is a validated questionnaire and has been frequently used in research and is one of the most long-standing measures of anxiety, appearing in over 3000 studies (Spielberger, 1989). The STAI has high discriminant and convergent validity with other measures of anxiety (Spielberger, Gorsuch, Lushene, Vagg and Jacobs 1983). Hence, it was chosen as a measure of mothers' trait anxiety in this study.

Fictional Vignettes and Questionnaire

Fictional vignettes were used to explore mothers' attributions about common infant sleep difficulties because vignettes have been found to be a good method for eliciting individuals' knowledge, beliefs and values on a given subject matter (Gould, 1996). More specifically, hypothetical vignettes have been used to elicits participants' attributions on a range of personally or socially sensitive topics including illness caution and health inequalities (Hodgins, Millar and Barry, 2006), mental illness (Link, Phelan, Bresnahan et al. 1999), older adults' care experiences (Gott, Seymour, Bellamy et al. 2004), health-related attitudes, behaviours and decision making

about alcohol and drug use (Dalton, Bernhardt, Gibson, et al. 2005; Wyvill and Ives, 2000) and attributions about the behaviour of others (Wanless and Jahoda, 2002; Dagnan, Trower and Smith, 1998).

Given that infant sleep can be a sensitive topic for mothers, and there is evidence that vignettes are a good measure of attributions about others behaviour, it was decided that this would be a good method to elicit maternal attributions about common infant sleep difficulties. Furthermore, vignettes can help to distance participants from the topics being explored, making them less threatening (Finch, 1987; Hughes, 1998; Hughes and Huby, 2002) and information in vignettes can be standardised to control for extraneous variables (Gould, 1996). This is particularly pertinent in this study, because the use of hypothetical vignettes can minimise, as far as possible, the influence of factors such as work patterns or child health. Finally, vignettes have been found to be an effective measure of mothers' beliefs about infant sleep in previous research (Tikotsky & Sadeh, 2009).

Three brief fictional vignettes describing infant sleep difficulties (*Vignette 1: Night Waking; Vignette 2: Settling Difficulties; Vignette 3: Sleep Phase Disruption*; See Appendix 3.5) were developed. The age of the infant in each vignette remained constant, with the child described as being aged twelve months. As sleep difficulties are not a unitary phenomenon, the decision was made to include three different difficulties. Although no direct evidence exists on this issue, it was thought possible that the emotional reactions, and underlying beliefs of participants, might differ according to the difficulty presented.

The vignettes themselves were intended to be ambiguous and therefore allow the sleep difficulty to be attributed to differing factors (such as inherent 'temperament' or environmental factors) depending on the underlying beliefs of the participant. It was hoped

that this would make it possible to elicit underlying attributions that were directly related to the behaviour at issue, in this case sleep.

A questionnaire asked participants which of two sleep management strategies (behavioural or co-sleeping) they would recommend to manage the sleep difficulties depicted in each of the fictional vignettes. A ten-point Likert scale was used to measure participants' outcome expectancy for each sleep management approach.

3.6. Procedure

All participants completed the study anonymously, either through an on-line internet site (www.survey-monkey.com) or on paper questionnaires which were returned through a Freepost envelope. Participants were initially asked to read the Participant Information Sheet (See Appendix 3.6) and then complete the Brief Demographics Questionnaire. They were then asked to read each vignette in turn, completing a copy of the Modified IPQ for each vignette. Finally, participants were asked to complete the Brief Infant Sleep Questionnaire, the trait sub-scale of the State-Trait Anxiety Inventory and the BriefCOPE.

3.7. Pilot Studies

Two pilot studies were completed. The first involved five clinicians (two Consultant Paediatricians, two Clinical Psychologists and one General Practitioner) who were asked to review the vignettes for their face validity, and the Modified IPQ to ensure that all potential beliefs relating to infant sleep (of which they were aware) and to provide opinions on its likely 'readability' for participants. Minor amendments to the vignettes (removing geographical information) and questionnaires (simplifying language) were made.

A second pilot stage involved twenty first-time mothers of infants aged between six and 36 months. Mothers were asked to complete the study questionnaires alongside another to gather their opinions on the vignettes and questionnaires. This stage was also used to ensure that a range of responses were used on questionnaires in order to modify questionnaire structure, if necessary. No modifications, aside from further minor simplification of wording, were made during this stage.

3.8. Data Analysis Strategy

Initial Analyses

Several stages of analysis were planned: (i) initial descriptive statistics to characterize the sample; (ii) exploration of the associations between participant demographics and recommendations of, and outcome expectancies for behavioural interventions; (iii) Principal Components Analysis (PCA) to establish whether the original subscales of the Modified IPQ are maintained in this sample (any items that did not relate strongly to emergent factors being removed); (iv) comparison between the three vignettes to establish whether participants respond identically (on the Modified IPQ) to vignettes, regardless of the sleep difficulty depicted.

Analysis of Hypotheses

It was planned that non-parametric correlational analysis would be used to explore the associations between maternal sleep attributions, coping and trait anxiety and the type of sleep management approach chosen by participants for the protagonist in each vignette, and the expectations of success for this approach. It was planned that logistic regression analysis would, subsequently, be utilised to establish the relative predictive utility of variables that correlated with participants' recommendations, and expectations, for sleep management.

4. Results

4.1. Demographics

4.1.1. Infants' Characteristics

Infant demographic and sleep characteristics are outlined in Table 1. The majority of infants (72.3%) slept in a separate room from their parents and fell asleep in their own bed (27.7%). The majority of mothers who participated in the study did not rate their infants sleep as a problem (77.4%).

(INSERT TABLE 1 HERE)

4.1.2. Mothers' Characteristics

Participants' characteristics are outlined in Table 2. There was a relatively wide age-range (17-49 years; mean age 31.6) and a large proportion (72.3%) of the sample was Scottish. The majority of participants were educated to degree level (80.3%) and around a fifth worked full-time (21.2%). The mean trait-anxiety score among participants was above 40, a threshold that some have suggested is indicative of high trait-anxiety among mothers (Barnett, Schaafsma, Guzman and Parker, 1991; McMahon, Barnett, Kowalenko, Tennant and Don, 2002).

(INSERT TABLE 2 HERE)

4.1.3. Associations between Participant Demographics and Recommendations of and Outcome Expectancies for Behavioural Interventions

There was no significant associations between infants' age, mothers' age and recommended sleep intervention (co-sleeping or behavioural) for each of the three infant sleep difficulties depicted in hypothetical vignettes (all $p > .05$) using Spearman's rho correlation co-efficient.

Chi-square test of independence was used to identify whether there were any associations between infant gender, whether mothers rated their own infant's sleep as a problem or not and recommended sleep intervention (co-sleeping or behavioural) for each of the three infant sleep difficulties depicted in hypothetical vignettes. No significant associations were found between these variables and recommended sleep interventions for the three infant sleep difficulties (all $p > .05$).

No significant associations were found between infants' age, mothers' age, and anticipated success of behavioural interventions for each of the three infant sleep difficulties depicted in hypothetical vignettes (all $p > .05$) using Kendall's tau correlation co-efficient.

No significant associations were found between infant's gender, whether mothers rated their own infant's sleep as a problem or not and anticipated success of behavioural interventions for each of the three infant sleep difficulties depicted in hypothetical vignettes (all $p > .05$) using Spearman's rho correlation co-efficient.

4.2. The Modified Illness Perception Questionnaire

As the IPQ was being applied in a new setting, a Principal Component Analysis (PCA) was conducted on the 26 items of the Modified IPQ (Appendix 3.5) with orthogonal rotation (Varimax). This was to ensure that its original factor structure was maintained in this population. Although participants provided some additional causes for the sleep difficulties, it was considered that these matched the existing item responses of the Modified IPQ and, in the majority of cases, it was difficult to interpret the extent to which participants endorsed these responses. Hence, the decision was taken to exclude these responses from PCA.

All assumptions for PCA were established prior to analysis. Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO= 0.72), exceeding the recommended value of 0.6 (Kaiser, 1970, 1974). Bartlett's test of sphericity ($\chi^2 (135) = 1390.55, p < 0.001$), indicated that correlations between items were sufficiently large for PCA.

An initial analysis revealed eight eigenvalues exceeding 1 explaining 68.64% of the variance. Using Catell's (1966) scree test, it was decided to retain four components. This was further supported by the results of Parallel Analysis, which showed only four components exceeding the corresponding criterion values for a randomly generated data matrix of the same size. Inspection of the rotated component matrix (Table 3) showed the final factor loadings after rotation. All loadings greater than 0.5 or less than -0.5 were used to interpret each factor.

The items that clustered on the same components suggested that Component One represented the mothers' attributions about the '*controllability*' of infant sleep difficulties, Component Two represented mothers' attributions about the '*consequences*' of infant sleep difficulties, Component Three represented mothers' attributions about the '*external causes*' of infant sleep difficulties and Component Four represented mothers' attributions about the '*timeline*'

and '*internal causes*' of infant sleep difficulties. Items 16 and 19 were removed from the original '*consequences*' subscale of the Modified IPQ because they did not have a loading greater than 0.5. Items 2 and 6 were removed from the original '*external causes*' subscale of the Modified IPQ, and items 1 and 5 were removed from the '*internal causes*' subscale of the Modified IPQ as they did not load onto the four components already identified, and did not appear to form a coherent factor in themselves.

(INSERT TABLE 3 HERE)

Reliability of the subscales identified from PCA was calculated using Cronbach's alpha. Good internal consistency was reported for the '*control*' subscale ($\alpha = 0.84$), the '*consequences*' subscale ($\alpha = 0.75$) and the '*external causes*' subscale ($\alpha = 0.84$). However, the combined '*timeline and internal causes*' subscales had low internal consistency ($\alpha = 0.33$). When this subscale was reduced to the '*timeline*' items only, an acceptable level of consistency emerged ($\alpha = 0.72$). It was considered that using the timeline items only would provide a more reliable measure and hence these were adopted.

4.3. Comparison Between Responses on the Modified IPQ Between Vignettes

In order to establish whether each participant's response to the three vignettes was uniform, non-parametric analyses (Wilcoxon signed rank tests) were conducted for each established factor on the Modified IPQ between each vignette. Bonferroni corrections were used to account for the number of comparisons made. Significant differences were found between participants' attributions about '*controllability*' and '*cause*' for each of the different sleep difficulties presented ($p < 0.01$; Table 4). No differences were found between participants' attributions about the '*consequences*' and '*timeline*' of each of the sleep difficulties ($p > 0.05$;

Table 4). Given these differences, detailed analysis for each vignette was conducted separately. However, they are reported, below, with the overall hypotheses for the study, for clarity.

(INSERT TABLE 4 HERE)

4.4. Analyses for Primary Hypotheses

4.4.1. Correlational Analyses

The relationship between maternal sleep attributions, coping and trait anxiety and the recommended sleep intervention (co-sleeping or behavioural) for each of the three infant sleep difficulties depicted in hypothetical vignettes was investigated using Spearman's rho correlation coefficient.

Hypothesis One:

1.1 Participants who believe that a sleep problem is caused by factors external to the child will recommend behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to recommend behavioural sleep interventions if they believed that sleep difficulties were *caused by factors external to the child*. This was the case for each sleep disorder described in the three vignettes (Night Waking: $\rho = 0.3$, $n = 134$, $p < 0.01$, one-tailed; Settling Difficulties: $\rho = 0.3$, $n = 133$, $p < 0.01$, one-tailed; Sleep Phase Disruptions: $\rho = 0.2$, $n = 132$, $p < 0.01$, one-tailed).

1.2 Participants who believe that a sleep problem is controllable will recommend behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to recommend behavioural sleep interventions if they believed that sleep difficulties were *controllable*. This was the case for each sleep disorder described in the three vignettes (Night Waking: $\rho = 0.4$, $n = 132$, $p < 0.01$, one-tailed; Settling Difficulties: $\rho = 0.4$, $n = 133$, $p < 0.01$, one-tailed; Sleep Phase Disruptions: $\rho = 0.3$, $n = 130$, $p < 0.01$, one-tailed).

1.3 Participants who believe that a sleep problem will have a negative impact on the child will recommend behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to recommend behavioural sleep interventions if they believed that sleep difficulties have *negative consequences*. This was the case for each sleep disorder described in the three vignettes (Night Waking: $\rho = 0.3$, $n = 134$, $p < 0.01$, one-tailed; Settling Difficulties: $\rho = 0.2$, $n = 132$, $p < 0.05$, one-tailed; Sleep Phase Disruptions: $\rho = 0.2$, $n = 130$, $p < 0.05$, one-tailed).

1.4 Participants who believe that a sleep problem is not stable will recommend behavioural sleep management approaches for infant sleep difficulties.

Contrary to predictions, mothers were more likely to recommend behavioural sleep interventions if they believed that Night Waking difficulties (Vignette One: $\rho = 0.2$, $n = 134$, $p < 0.01$, one-tailed) and Settling Difficulties (Vignette Two: $\rho = 0.2$, $n = 131$, $p < 0.05$, one-

tailed) were stable. There was no significant association between mothers' beliefs that Sleep Phase Disruptions were stable and recommending behavioural sleep interventions (Vignette Three: $\rho = 0.1$, $n = 128$, $p > 0.05$, one-tailed).

Hypothesis Two

2.1 Participants with higher levels of 'problem-focused' coping styles will recommend behavioural sleep management approaches for infant sleep difficulties.

Contrary to predictions, no significant correlations (all $p > 0.05$) emerged between participants' coping styles (*emotion-focused, problem-focused or dysfunctional*) and the type of sleep intervention that participants would recommend to manage any of the sleep difficulties depicted in vignettes.

2.2 Participants with lower levels of 'trait-anxiety' will recommend behavioural sleep management approaches for infant sleep difficulties.

Contrary to predictions, no significant correlations (all $p > 0.05$) emerged between participants' levels of *trait-anxiety* and the type of sleep intervention that participants would recommend to manage any of the sleep difficulties depicted in vignettes.

4.4.2. Regression Analyses

Binary logistic regression analysis was conducted to assess the relative influence of those maternal attributions that significantly correlated with recommendation of a particular sleep management strategy. This analysis was conducted for each of the sleep difficulties depicted in the three vignettes (see 4.4.1 above). Trait-anxiety and coping styles were not entered into

the analyses as there was no significant correlation with recommended sleep intervention (see 4.4.1 above).

The regression model for Night Waking (Vignette One) and Settling Difficulties (Vignette Two) contained four predictor variables (attributions about *external cause*, *controllability*, *stability and consequences*) and were able to distinguish between participants who recommended ‘behavioural’ from ‘co-sleeping’ interventions for Night Waking ($\chi^2(4) = 35.56$, $df=4$, $p<0.001$) and Settling Difficulties ($\chi^2(4) = 30.26$, $df= 8$, $p<0.001$). As outlined in Table 5, *controllability* was the only significant predictor for recommending behavioural approaches for either Night Waking (OR= 1.34: $p<0.01$) or Settling Difficulties (OR= 1.33: $p<0.01$).

The regression model for Sleep Phase Disruption (Vignette Three) contained three predictor variables (attributions about *external cause*, *controllability and consequences*) and was able to distinguish between participants who recommended behavioural from co-sleeping interventions ($\chi^2(3) = 14.07$, $df=3$, $p<0.01$). Again, *controllability* was the only significant predictor for recommending behavioural interventions for this difficulty (OR= 1.27: $p<0.01$)

(INSERT TABLE 5 HERE)

4.5. Analyses for Secondary Hypotheses

4.5.1. Correlational Analyses

The relationship between maternal sleep attributions, coping and trait anxiety and anticipated success of ‘behavioural’ sleep management approaches for sleep difficulties depicted in the

fictional vignettes was investigated using Kendall's tau, non parametric correlation coefficient.

“Hypothesis Three

3.1 Participants who believe that a sleep problem is caused by factors external to the child will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to expect a greater probability of success for behavioural sleep management if they believed that sleep difficulties were *caused by factors external to the child*. This was the case for each sleep disorder (Night Waking Difficulties, Settling Difficulties and Sleep Phase Disruptions) described in the three vignettes ($p < 0.01$; Table 6).

3.2 Participants who believe that a sleep problem is controllable will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to expect a greater probability of success for behavioural sleep management if they believed that sleep difficulties were *controllable*. This was the case for each sleep disorder (Night Waking Difficulties, Settling Difficulties and Sleep Phase Disruptions) described in the three vignettes ($p < 0.01$; Table 6).

3.3 Participants who believe that a sleep problem will have a negative impact on the child will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers were more likely to expect a greater probability of success for behavioural sleep management if they believed that Night Waking Difficulties (Vignette One) and Sleep Phase Disruptions (Vignette Three) have *negative consequences* ($p < 0.05$; Table 6). However, contrary to expectations there was no significant association between mothers' beliefs that Settling Difficulties (Vignette Two) have negative consequences and anticipated success of behavioural interventions ($p > 0.05$; Table 6).

3.4 Participants who believe that a sleep problem is not stable will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

Contrary to predictions, mothers were more likely to expect a greater probability of success for behavioural sleep management if they believed that Night Waking Difficulties (Vignette One) and Settling Difficulties (Vignette Two) were stable ($p < 0.05$; Table 6). There was no significant association between mothers' beliefs that Sleep Phase Disruptions (Vignette Three) were stable and anticipated success of behavioural interventions ($p > 0.05$; Table 6).

(INSERT TABLE 6 HERE)

Hypothesis Four

4.1 Participants with higher levels of 'problem-focused' coping styles will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

As predicted, mothers who adopted 'problem-focused' coping styles were likely to anticipate that behavioural sleep interventions would be successful for all three sleep difficulties depicted in vignettes (Night Waking, Settling Difficulties and Sleep Phase Disruptions; all $p < .05$, see Table 6). However, contrary to predictions, there were no significant correlations found between 'emotion-focused' or 'dysfunctional' coping ($p > .05$; see Table 6).

4.2 Participants with lower levels of 'trait-anxiety' will expect a greater probability of success for behavioural sleep management approaches for infant sleep difficulties.

There were no significant association found between trait-anxiety and predicted success of behavioural interventions on any vignette (Night Waking, Settling Difficulties or Sleep Phase Disruptions (all $p > 0.05$; Table 6).

4.5.2. Regression Analyses

Multiple regression analysis was conducted to assess the relative influence of problem-focused coping and those maternal attributions that significantly correlated with anticipated success of 'behavioural' interventions. This analysis was conducted for each of the sleep difficulties depicted in the three vignettes (see 4.5.1 above). Trait-anxiety, emotion-focused and dysfunctional coping styles were not entered into the analyses as there was no significant correlation with anticipated success of 'behavioural' interventions (see 4.5.1 above).

Preliminary data examination, completed for data produced in relation to each vignette indicated that there were no violations of the assumptions of multi-collinearity, linearity or normality. However, the assumption of homoscedasticity was violated; hence, this may limit the generalisability of findings beyond this particular sample (Field, 2009).

The regression model for Night Waking (Vignette One) contained five predictor variables (attributions about *external cause*, *controllability*, *stability and consequences*, and *problem-focused coping*). These variables explained 26% of the variance for perceived success of ‘behavioural’ interventions (adjusted R^2).

The regression model of Settling Difficulties (Vignette Two) contained four predictor variables (attributions about *external cause*, *controllability*, *stability and problem-focused coping*) and explained 28% of the variance in perceived success of ‘behavioural’ interventions (adjusted R^2) for Settling Difficulties.

The regression model of Sleep Phase Disruptions (Vignette Three) contained four predictor variables (attributions about *external cause*, *controllability*, *consequences and problem-focused coping*) and explained 21% of the variance in perceived success of ‘behavioural’ interventions (adjusted R^2) for Sleep Phase Disruptions.

For all regression analyses, the attribution of *control* was the only variable that made a statistically significant contribution for predicted success of behavioural approaches for any of the three vignettes ($p < 0.001$; see Table 7).

(INSERT TABLE 7 HERE)

4.6. Subgroup Analyses: Division of ‘High’ and ‘Low’ Anticipations of Success for Behavioural Interventions

As a subsidiary analysis, it was decided to categorise (for each vignette) participants into those who anticipated a ‘high’ probability of success from those who anticipated a ‘low’ probability of success. It was thought that this might highlight influences of variables that might otherwise have been masked by the general ‘spread’ of responses across participants. Following inspection of the distributions of perceived success ratings, it was decided that ‘low’ anticipated success would apply to a score below three, and ‘high’ anticipated success would apply to score above eight.

All prior analyses on these data were repeated using Spearman’s rho correlation co-efficient to identify any associations between attributional variables, trait-anxiety or coping style. No differences in significant findings were evident to that detailed in the original analyses provided above, aside from trait-anxiety being identified as significantly negatively correlated with anticipated success of behavioural interventions for sleep phase disruptions ($p < .05$; see Table 8 for all correlations).

(INSERT TABLE 8 HERE).

5. Discussion

This study aimed at exploring whether any associations existed between several psychological factors (maternal attributions about common infant sleep difficulties, coping style and trait-anxiety) and choice of, and outcome expectancies for, behavioural sleep interventions. In order to examine these associations, fictional vignettes were used to illustrate sleep difficulties and the Modified Illness Perception Questionnaire (IPQ) was employed to uncover attributions. First-time mothers were recruited with the belief that these factors may be more pertinent in this group, given previous research that suggests this group may be subject to greater levels of anxiety and doubt regarding parenting than mothers who have had more than one child (e.g. Force 2000; McKellar, et al., 2002; Sweet 1997).

Within the sample group, the majority of participants reported that they would recommend behavioural approaches to manage the sleep difficulties described in vignettes. Participants also tended to rate these interventions as being likely to be a success. In terms of their own children, the majority of mothers reported that their own infants did not have a significant sleep problem and slept in a separate bed alone.

The modified IPQ appeared to be a broadly appropriate tool for examining underlying attributions regarding sleep in this sample. All items of the ‘*controllability*’ and ‘*timeline*’ subscales of Keenan et al.’s (2007) amended IPQ were maintained, although some items from the ‘*consequences*’ and ‘*external causes*’ subscales were removed following Principal Components Analysis and reliability analysis. However, the ‘*internal*’ subscale was not maintained. Nonetheless, it was considered that this scale could be considered a reliable measure in this context.

Recommendations for Sleep Intervention

Predictions for this study were made following consideration of previous research (e.g., Johnson and Freeman, 1997; Weiner et al., 1980; 1985). There was partial support for the suggestion that maternal attributions would be associated with recommendation of behavioural interventions for infant sleep. There was evidence to support the contention that mothers who attributed sleep difficulties to be *caused by factors external to the child* (*hypothesis 1.1*) and *controllable* (*hypothesis 1.2*) were related to recommending behavioural interventions for all three sleep problems described. However, contrary to suggestions from previous research (Keenan et al., 2007) there was no support for the prediction that a belief that a sleep problem would be likely to change (i.e., be *unstable*; *hypothesis 1.4*) would lead to a recommendation for a ‘behavioural’ sleep management approach. It should, however, be noted that the only significant predictor variable to emerge from regression analysis was that of the attribution of *controllability*. This might, perhaps, suggest that additional power, in the form of further participants, might be required for these factors to clearly emerge.

There was no support for the suggestions, from previous literature (e.g., McDougall et al., 2005; Moore and Ucko, 1957; Parker, 1983), that recommendations for behavioural sleep interventions would be associated with a ‘problem-focused’ coping style (Hypothesis 2.1) and high trait-anxiety (Hypothesis 2.2). There were no significant associations between infants’ and mothers’ demographic characteristics and recommended sleep approach for infant sleeping difficulties.

Anticipation of Success for Behavioural Sleep Interventions

Initial correlational analyses found that attributions about sleep difficulties being *caused by factors external to the child* (hypothesis 3.1) and *controllable* (hypothesis 3.2) were significantly associated with the anticipated success of behavioural interventions for all three sleep difficulties. However, there was only partial support for the suggestion that attributions about *negative consequences* (hypothesis 3.3) would be associated with predicted success of behavioural interventions. More specifically, attributions about negative consequences were significantly associated with the anticipated success of behavioural interventions for Night Waking (Vignette One) and Sleep Phase Disruptions (Vignette Three) but not for Settling Difficulties (Vignette Two). There was no support for the prediction that a belief that a sleep problem would be likely to change (i.e., be *unstable*; hypothesis 3.4) would be associated with anticipated success of behavioural interventions for all three sleep difficulties.

An association was found between a '*problem-focused*' coping style and anticipated success of behavioural interventions (hypothesis 4.1), but no association between '*trait-anxiety*' and this intervention (hypothesis 4.2). Whilst this provides some support for suggestions in the literature (e.g., McDougall et al., 2005; Moore and Ucko, 1957; Parker, 1983), it should be noted that when regression analysis was undertaken, the only significant predictor variable of anticipated success that emerged was that of *controllability*. When participants who had scored 'high' or 'low' on anticipated success were compared, there was some evidence that *trait-anxiety* was associated with group (i.e., higher levels of trait-anxiety being associated with lower expectations of success for sleep phase disruptions).

There were no significant associations between infants' and mothers' demographic characteristics and anticipated success of behavioural interventions for infant sleeping difficulties. Thus, the findings of this study provide some limited support for the suggestions

that have been made in the literature for the importance of psychological factors in the type of sleep intervention strategy that parents may choose. However, it is acknowledged that these associations are not ‘strong’ in degree, possibly due to the interplay of other factors that were outwith the scope of this study, or due to the experimental design utilized.

5.1. Study Limitations and Recommendations for Future Research

There are several specific factors that are limits to this study. Firstly, although significant efforts were made to recruit from numerous mother and baby groups throughout Glasgow (with varying levels of social deprivation and ethnic mix), the majority of mothers were educated to degree level and the sample itself was relatively homogenous. With this type of study, there is an inevitable self-selecting bias toward participation from those with greater levels of literacy, and, in the case of online sampling, access to the Internet. In addition, the majority of participants reported that their own infants did not have a sleep problem and they would recommend behavioural interventions. Hence, it is possible that results may have differed with a sample of mothers whose children had difficulty sleeping and/or specifically favored co-sleeping approaches. Clearly, due to the exploratory nature of the study, the results cannot be generalized to other care-givers (such as fathers), nor to mothers with more than one child.

In addition, although there was broad support (from Principal Components Analysis) for the use of the IPQ, some items were excluded and the *internal* causes sub-scale was not maintained. This prevents conclusions from being drawn around the influence of attributions about internal causes of sleep difficulties depicted in this study. In addition, although participants did provide some additional causes for the sleep difficulties, it was considered that these matched the existing item responses and, in the majority of cases, it was difficult to

interpret the extent to which participants endorsed these responses. Hence, the decision was taken to exclude these responses.

As noted previously, the study sample was considered relatively homogeneous and tended toward a more educated group of participants. Future research could, perhaps, focus on mothers who are from more socially deprived backgrounds and from various different cultures. The relative beliefs of other care-givers (perhaps fathers in particular) would also be of interest.

Thirdly, the use of hypothetical vignettes may have limited the ‘strength’ of the experimental manipulation in this study. Although such vignettes have been widely used to assess underlying beliefs regarding infant sleep (Tikotsky and Sadeh, 2009), previous research has found that vignettes do not always elicit the realistic emotional response that would be found in a ‘real-life’ situation (Wanless and Jahoda, 2002). It might be the case that situations focused upon the individual’s own experience might result in stronger associations emerging in comparison to those that were uncovered by the fictional vignette design employed in this case.

Perhaps the most interesting direction for future research would be to examine the actual choices that parents make for their own children, and how these factors (and others) may influence these. This would be of particular relevance in healthcare clinics where parents are actively seeking support for difficulties. Clearly, as noted previously, there are many individual factors that affect what parents actually do (or are able to do), such as the number of children, agreement with partner or/ or level of social support. Nonetheless, this study does provide some hints of the psychological factors that may play a role in mothers’ (in this case) choices.

5.2. Clinical Applications

It is hoped that this research will add to the literature in this important area. Clearly, if there are specific psychological factors such as underlying beliefs, coping style and anxiety that will influence parents' choice of, and adherence to, behavioural sleep interventions, healthcare professionals should take notice of these when recommending such strategies. This particularly relates to beliefs about how 'controllable' infant sleep is and the style of dealing with difficulties that a parent may naturally adopt. If a parent does not believe that it is possible to change a child's difficulty, and may not approach such a difficulty in a 'problem-solving' manner, it appears, on the face of it, that there will be a greater struggle to adhere to a specific intervention that requires significant effort and, in many cases, distress (Johnson and Freeman, 1997; Sadeh et al., 1997). Clinicians might consider a greater focus upon psycho-education regarding infant sleep difficulties and add additional sessions on general problem-solving for those parents who may present in this manner.

In essence, this study suggests that clinicians should take particular note of individual psychological factors in care-givers when working to address infant sleep problems. Tailoring interventions more closely to the specific needs of a care-giver may increase the probability of interventions being effective. This may, in turn, build on a care-giver's levels of hope about change and self-efficacy. This is particularly salient given the association between maternal mental health and infant sleep difficulties (Armstrong et al., 1998; Hiscock and Wake, 2002).

6. Conclusion

This study found evidence to support the use of the IPQ as a measure of maternal attributions about infant sleep difficulties. Some support, albeit limited, was found for the prediction that mothers who believed that sleep difficulties could be overcome, that they were external to the child and that they would have negative consequences for the child would be more likely to endorse behavioural approaches. There were also some indications that a 'problem-focused' coping style was associated with support for these methods of sleep management. It is suggested that future research should seek to recruit a more heterogeneous sample, consider other care-givers (such as fathers) and, ultimately, examine the actual choices that mothers make with regard to their own infant's sleep.

7. References

- Armstrong, K.L., Van Haeringen, A.R., Dadds, M.R. & Cash, R. (1998). Sleep deprivation or postnatal depression in later infancy: separating the chicken from the egg. *The Journal of Paediatrics and Child Health*, 34,260–262.
- Ball, H.L., Hooker, E. & Kelly, P.J. (1999). Where will the baby sleep? Attitudes and practices of new and experienced parents regarding co-sleeping with their newborn infants. *American Anthropology*, 101, 143-51.
- Bamford, Z., Barrowclough, C., & Booth, P. (2007). Dissimilar representations of alcohol problems, patient-significant other relationship quality, distress and treatment attendance. *Addiction Research & Theory*, 15, 1, 47-62.
- Barrowclough, C., Lobban, F., Hatton, C., & Quinn, J. (2001). An investigation of models of illness in carers of schizophrenia patients using the illness perception questionnaire, *British Journal of Clinical Psychology*, 40,4, 371-385.
- Barnett, B., Schaafsma, M.F., Guzman, A.M. , & Parker, G. (1991). Maternal anxiety. A 5 year review of an intervention study. *Journal of Child Psychology and Psychiatry*, 32, 423–438.
- Blum, N.J. & Carey, W.B. (1996). Sleep problems among infants and young children. *Pediatrics in Review*, 17, 87-92.
- Bramble, D. (1996). Consumer opinion concerning the treatment of a common sleep problem. *Childcare, health and development*, 22(6), 355-366.
- Burnham, M.M., Goodlin-Jones, B.L., Gaylor, E.E. & Anders, T.F. (2002). Nighttime sleep-wake patterns and self-soothing from birth to one year of age: a longitudinal intervention study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 43, 6, 713–25.
- Carver C.S. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioural Medicine*, 4, 92–100.
- Catell, R.B. (1966). The scree test for number of factors. *Multivariate Behavioural Research*, 1, 245-276, as cited in Pallant, J. (2007). *SPSS Survival Manual*, 3rd Edition, Open University Press.
- Cooper, C., Katona, C. & Livingston, G. (2008). Validity and reliability of the brief COPE in carers of people with Dementia. The LASER-AD study. *The Journal of Nervous and Mental Disease*, 196, 11, 838-843.
- Dagnan, D., Trower, P. & Smith, R. (1998). Care staff responses to people with intellectual disabilities and CB. *British Journal of Clinical Psychology*. 37, 59-68.

- Dalton, M. A., Bernhardt, A. M., Gibson, J. J., Sargent, J. D., Beach, M. L., Adachi-Mejia, A. M., Titus-Ernstoff, L. T. and Heatherton, T. F. (2005). Use of cigarettes and alcohol by preschoolers while role-playing as adults. *Archives of Pediatric and Adolescent Medicine*, 159, 854-859.
- Eckerberg, B. (2004). Treatment of sleep problems in families with young children: Effects of treatment on family well-being. *Acta Paediatrica*, 93, 126-134.
- Field, A. (2009). *Discovering Statistics Using SPSS*. 3rd Edition. SAGE Publications Ltd.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behaviour*, 21, 219-239.
- Forbes, J. F., Weiss, D. S. & Folen, R.A. (1992). The co-sleeping habits of military children. *Military Medicine*, 154. 196-200.
- Force, S. (2000). Establishing effective parenting midwife's role? *MIDIRS Midwifery Digest*, 10, 2, 232-234.
- Fortune, D. G., Smith, J. V., & Garvey, K. (2005). Perceptions of psychosis, coping, appraisals, and psychological distress in the relatives of patients with schizophrenia: An exploration using self-regulation theory. *British Journal of Clinical Psychology*, 44, 3, 319-331.
- Funkquist, E.L., Carlsson, M., & Nyqvist, K.H. (2005). Consulting on feeding and sleeping problems in child health care: what is at the bottom of advice to parents? *Journal of Child Health Care*, 9, 137-152.
- Gordon, M.D. (2008). To cry? Or not to cry? Relations between science and culture in management of infant sleep. *Unpublished thesis*, Antioch University.
- Gott, M., Seymour, J., Bellamy, G., Clark, D. and Ahmedzai, S. (2004). Older people's views about home as a place of care at the end of life. *Palliative Medicine*, 18, 460-7.
- Gould, D. (1996). Using vignettes to collect data for nursing research studies: how valid are the findings? *Journal of Clinical Nursing*, 5, 207-212.
- Hall, W.A., Clauson, M., Carty, E.M., Janssen, P.A. & Saunders, R.A. (2006). Effects on parents of an intervention to resolve infant behavioral sleep problems. *Paediatric Nursing*, 32, 243-250.
- Hiscock, H. & Wake, M. (2002). Does a behavioural infant sleep intervention improve infant sleep and maternal mood? *The British Medical Journal*, 324, 1062-1065.
- Hiscock, H., Bayer, J., Gold, L., Hampton, A., Ukoumunne, O.C., & Wake, M. (2007). Improving infant sleep and maternal mental health: a cluster randomised trial. *Archives of Disease in Childhood*, 92, 952-958.

- Hodgins, M., Millar, M. and Barry, M. (2006). "...it's all the same no matter how much fruit or vegetables or fresh air we get": traveller women's perceptions of illness causation and health inequalities. *Social Science and Medicine*, 62, 1978-1990.
- Johnson, M. (1991). Infant and toddler sleep. *Journal of Developmental and Behavioral Pediatrics*, 12, 108– 114.
- Johnston, C., & Freeman, W. (1997). Attributions for child behaviour in parents of children without behaviour disorders and children with attention deficit hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, 65, 636–645.
- Kaiser, H. (1970). A second generation little jiffy. *Psychometrika*, 35, 401-415, as cited in Pallant, J. (2007). *SPSS Survival Manual*, 3rd Edition, Location: Open University Press.
- Kaiser, H. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36, as cited in Pallant, J. (2007). *SPSS Survival Manual*, 3rd Edition, Location: Open University Press.
- Keenan, R., Wild, M., McArthur, I. & Espie, C. (2007). Children with developmental disabilities and sleep problems: parental beliefs and treatment acceptability. *Journal of Applied Research in Intellectual Disabilities*, 20, 455-465.
- Kuhn, B. R., & Weidinger, D. (2000). Interventions for infant and toddler sleep disturbance: A review. *Child & Family Behavior Therapy*, 22(2), 33-50.
- Link, B. G., Phelan, J. C., Bresnahan, M., Stueve, A. and Pescosolido, B. A. (1999). Public conceptions of mental illness: labels, causes, dangerousness, and social distance. *American Journal of Public Health*, 89, 1328-1333.
- Lobban, F., Barrowclough, C., & Jones, S. (2005). Assessing cognitive representations of mental health problems. II. the illness perception questionnaire for schizophrenia: Relatives' version. *British Journal of Clinical Psychology*, 44, 2, 163-179.
- Lozoff, B., Wolf, A.W. & Davis, N. (1985). Sleep problems in pediatric practice. *Pediatrics*, 75, 477-483.
- Mao, A., Burnham, M.M., Goodlin-Jones, B.L., Gaylor, E.F. & Anders, T.F. (2004). A comparison of the sleep-wake patterns of co-sleeping and solitary-sleeping infants. *Child Psychiatry and Human Development*, 35, 95–105.
- MacQuarrie, J. (2009). Parental attributions regarding sleep problems of children with an Autism Spectrum Disorder or Down Syndrome, *Unpublished thesis*, submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology (D.Clin.Psy), University of Glasgow.
- McDougall, A., Kerr, A. M., & Espie, C. A. (2005). Sleep disturbance in children with Rett Syndrome: A qualitative investigation of the parental experience. *Journal of Applied Research in Intellectual Disabilities*, 18, 201-215.

- McKellar, L.V., Pincombe, J. & Henderson, A.M. (2002). Congratulations you're a mother: A strategy for enhancing postnatal education for first-time mothers investigated through an action research cycle. *The Australian Journal of Midwifery*, 15, 3, 24-31.
- McMahon, C., Barnett, B., Kowalenko, N., Tennant, C. & Don, N. (2002). Postnatal depression, anxiety and unsettled infant behaviour. *Australian and New Zealand Journal of Psychiatry*, 35, 581–588.
- Mindell, J. A. (1999). Empirically supported treatments in pediatric psychology: Bedtime refusal and night wakings in young children. *Journal of Pediatric Psychology*, 24, 465–481.
- Mindell, J.A., Kuhn, B., Lewin, D.S., Meltzer, L.J. & Sadeh, A. (2010). Behavioral treatment of bedtime problems and night wakings in infants and young children – an American academy of sleep medicine review. *Sleep*, 29, 1263–1276.
- Moore T. & Ucko, L. E. (1957). Night waking in early infancy. Part 1. *Archives of Diseases in Childhood*, 32, 333-342.
- Morrell, J. (1999). The role of maternal cognitions in infant sleep problems as assessed by a new instrument, the maternal cognitions about infant sleep questionnaire. *Journal of Child Psychology and Psychiatry*, 40, 247–258
- Morrell, J. & Cortina-Borja M. (2002). The developmental change in strategies parents employ to settle young children to sleep, and their relationship to infant sleeping problems, as assessed by a new questionnaire: the parental interactive bedtime behaviour scale. *Infant Child Development*, 11, 17–41.
- Morrissey-Kane, E. & Prinz, R. J. (1999). Engagement in children and adolescent treatment: The role of parental cognition and attributions. *Clinical Child and Family Psychology Review*, 2, 3, 183-198.
- Mosko S., Richard C., McKenna J. (1997a). Infant arousals during mother–infant bed sharing: implications for infant sleep and sudden infant death syndrome research. *Pediatrics*, 100, 841–849.
- Mosko S., Richard C., McKenna J. (1997b). Maternal sleep and arousals during bed sharing with infants. *Sleep*, 20, 142-150.
- National Sleep Foundation (2010). <http://www.sleepfoundation.org/article/sleeptopics/children-and-sleep>. Retrieved July 6th, 2010.
- National Sleep Foundation (2004). *Sleep in America poll*. Retrieved April 26th, 2010 from <http://www.sleepfoundation.org>.
- Olsen, B., Berg, C. A., & Dj, W. (2008). Dissimilarity in mother and adolescent illness representations of type 1 diabetes and negative emotional adjustment. *Psychology & Health*, 23, 1, 113-129.
- Parker, G. (1983). *Parental overprotection. A risk factor in psychosocial development*. Sydney: Grune & Stratton.

- Peduzzi, P., Concato, J., Kemper, E., Holford, T.R. & Feinstein, A.R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology*, 49, 12, 1373-1379.
- Peterson, T., Larsen, K., Jacobsen, S. (2007). One-year follow-up comparison of the effectiveness of McKenzie treatment and strengthening training for patients with chronic low back pain. Outcome and prognostic factors. *Spine*, 32, 26, 2948–2956.
- Ramos, K. D., & Youngclarke, D. M. (2006). Parenting advice books about child sleep: co-sleeping and crying-it-out. *Sleep*, 29 (12), 1616-23.
- Rath, F.H. & Okum, M.E. (1995). Parents and children sleeping together: co-sleeping prevalence and concerns. *American Journal of Orthopsychiatry*, 65(3), 411-418.
- Reimers, T., Wacker, D., Derby, K. M., & Cooper, L. (1995). Relationship between parental attributions and the acceptability of behavioral treatments for children's behavior problems. *Behavioral Disorders*, 20, 171-178.
- Rickert, V.I. & Johnson, C.M. (1988). Reducing nocturnal awakening and crying episodes in infants and young children: A comparison between scheduled awakenings and systematic ignoring. *Pediatrics*, 81, 2, 203-212.
- Rippetoe, P.A. & Rodgers, R.W. (1987). Effects of components of protection-motivation theory on adaptive and maladaptive coping with a health threat. *Journal of Personality and Social Psychology*, 52, 596-604.
- Rowe, J. (2003). A room of their own: the social landscape of infant sleep. *Nursing Inquiry*, 10, 184-92.
- Sadeh, A. & Anders, T.F (1993). Infant sleep problems: origins, assessment, interventions. *Infant Mental Health Journal*, 14, 17–34.
- Sadeh, A., Flint-Ofir, E., Tirosh, T., & Tikotzky, L. (2007). Infant sleep and parental sleep-related cognitions. *Journal of Family Psychology*, 21, 74–87.
- Sadeh A. (2004). A brief screening questionnaire for infant sleep problems: validation and findings for an internet sample. *Pediatrics*, 113, 570–577.
- Schwarzer, R. (1992). Self efficacy in the adoption and maintenance of health behaviours: Theoretical approaches and a new model, in R. Schwazer (ed.), *Self Efficacy: Thought Control of Action*, pp 217-43. Washington, DC: Hemisphere.
- Sears, W., Sears, M., Sears, R. & Sears, J. (2005). *The baby sleep book: The complete guide to a good night's rest for the whole family*. Boston: Little-Brown.
- Spielberger, C. D., Gorsuch, R.L., and Lushene. R.E. (1970). *Manual for the State-Trait Anxiety Inventory*. Location: Palo Alto, CA: Consulting Psychologists Press
- Spielberger, CD, Gorsuch, RC, Lushene, RE, Vagg, PR, Jacobs, GA (1983). *Manual for the State-Trait Anxiety Inventory*. Location: Palo Alto: Consulting Psychologists Press.

Spielberger, C. D. (1989). *State-Trait Anxiety Inventory: a comprehensive bibliography*. Location: Palo Alto, CA: Consulting Psychologists Press.

Sterba, K. R., & DeVellis, R. F. (2009). Developing a spouse version of the illness perception questionnaire-revised (IPQ-R) for husbands of women with rheumatoid arthritis. *Psychology & Health*, 24, 4, 473-487.

Sweet, B. (ed) (1997). *Mayas' midwifery: A textbook for midwives*, 12th Edinburgh. Bailliere Tindall, London: Ch 37.

Thome, M. & Skuladottir, A. (2005). Evaluating a family centred intervention for infant sleep problems. *Journal of Advance Nursing*, 50, 1, 5-11.

Tikotzky, L. & Sadeh, A. (2009). Maternal sleep-related cognitions and infant sleep: A longitudinal study from pregnancy through the 1st year. *Child Development*, 80, 3, 860-874.

Walters, J. (1993). Sleep management- the hidden agenda. *Child: Care, Health and Development*, 19, 197-208.

Wanless, L.K. & Jahoda, A. (2002). Responses of staff towards people with mild to moderate intellectual disability who behave aggressively: a cognitive emotional analysis. *Journal of Intellectual Disability Research*, 46, 6, 507-516.

Weiner, B. (1980). A cognitive (attribution)-emotion-action model of motivated behavior: An analysis of judgments of help giving. *Journal of Personality and Social Psychology*, 39, 186-200.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548-573.

Weimer, S.M., Dise, T.L., Evers, P.B., Ortiz, M.A., Welldaregay, W. & Steinmann, W.C. (2002). Prevalence, predictors, and attitudes toward co-sleeping in an urban pediatric center. *Clinical Pediatrics Philadelphia*, 41:433-8.

Weinman, J. Petrie, K.J., Moss-Morris, R., & Horne, R. (1996). The illness perception questionnaire: A new method for assessing illness perceptions. *Psychology and Health*, 11, 431-446.

Whitney, J., Haigh, R., Weinman, J., & Treasure, J. (2007). Caring for people with eating disorders: Factors associated with psychological distress and negative caregiving appraisals in carers of people with eating disorders. *British Journal of Clinical Psychology*, 46, 4, 413-428.

www.surveymonkey.com

Wyvill, B. & Ives, R. (2000). Finding out about young people's ideas on drugs and drug use, application and limitations. *Drugs: Education, Prevention and Policy*, 7, 139-146.

8. Tables and Figures

Table 1: Infant Demographic and Sleep Characteristics

Infant Age	Mean (sd) Range (months)	15.7 6-36	(7.8)
Infant Gender % (totals)	Male Female	48.2% 51.8%	(66) (71)
Location of infant sleep % (totals)	In separate room In parents' bed Crib in parents' room Infant crib in room with sibling Missing data	72.3% 13.9% 10.2% 2.9% 0.7%	(99) (19) (13) (4) (1)
Sleeping position % (totals)	On belly On back On side	40.9% 35% 24.1%	(56) (48) (33)
How infant falls asleep % (totals)	In bed alone While feeding Being held In bed near parent(s) While being rocked	66.4% 16.1% 8% 8% 1.5%	(91) (22) (11) (11) (2)
Time infant goes to sleep % (totals)	5pm 7-8pm 8.30-9.30pm 10-11pm Not stated	0.7% 82% 11.6% 2.3% 2.2%	(1) (113) (16) (10) (3)
Extent of infant sleep difficulties % (totals)	Not a problem A small problem A serious problem	77.4% 21.1% 1.5%	(103) (28) (2)
Time spent asleep at night	Mean (sd) Range (hours)	10.96 5.5-14	(1.15)
Time spent asleep during the day	Mean (sd) Range (hours)	2 0-5	(0.9)
Number of night wakings	Mean (sd) Range (hours)	1 0-5	(1.3)
Number of minutes awake per night	Mean (sd) Range (hours)	18 0-3	(41)
Sleep onset time	Mean (sd) Range (hours)	8 5-11	(0.78)

Table 2: Mothers' Characteristics

Mothers' Age	Mean (sd) Range (years)	31.6 17-49	(5.03)
Employment Status % (totals)	Working Part Time Working Full Time Full Time Parent Maternity Leave Studying and Working Unemployed Studying Full Time Full Time Carer Self Employed	39.4% 21.2% 19% 8.8% 5.1% 3.6% 1.5% 0.7% 0.7%	(54) (29) (26) (12) (7) (5) (2) (1) (1)
Education % (totals)	University College High School (Standard Grades) High School (Higher Grades)	80.3% 10.9% 6.6% 2.2%	(109) (15) (9) (3)
Trait Anxiety	Mean (sd) Range	46.95 ⁺ 21-62	(10.6)
Problem Focused Coping	Mean (sd) Range	13.91 ⁺⁺ 15-34	(3.48)
Emotional Coping	Mean (sd) Range	16.86* 9-24	(3.45)
Dysfunctional Coping	Mean (sd) Range	25.02** 13-34	(4.38)
Choice of sleep strategy for Infant Night Waking	Co-Sleeping Behavioural Not stated	28.5% 70.1% 0.7%	(39) (96) (1)
Choice of sleep strategy for Infant Settling Difficulties	Co-Sleeping Behavioural Not stated	29.2% 67.9% 2.9%	(40) (93) (4)
Choice of sleep strategy for Infant Sleep Phase Disruptions	Co-Sleeping Behavioural Not stated	22.6% 73.7% 3.6%	(31) (101) (5)
Predicted success of behavioural strategies for night waking.	Mean (sd) Range	7.04 1-10	(2.57)
Predicted success of behavioural strategies for settling difficulties.	Mean (sd) Range	6.7 1-10	(2.61)
Predicted success of behavioural sleep strategies for sleep phase disruptions.	Mean (sd) Range	7.19 1-10	(2.6)

Higher scores indicate higher levels of coping and anxiety.

+ Scale ranges from 20-80. ++ Scale ranges from 10-40.

* Scales ranges from 6-24. ** Scale ranges from 12-48.

Table 3: Principal Component Analysis on Mothers' Attributions about Sleep Difficulties using Varimax Rotation

Rotated Component Matrix ^a				
	Component			
	1	2	3	4
Question 20	.723	.252	.208	.264
Question 18	.720	.046	-.011	.194
Question 15	.720	.224	.239	.034
Question 13	.667	.232	.286	.007
Question 11	.608	-.090	.219	.338
Question 7	.589	.139	.570	-.026
Question 5	-.544	.342	.208	-.087
Question 21	.424	.150	-.115	-.219
Question 1	-.390	.309	.277	-.042
Question 26	.086	.726	.049	.127
Question 23	.107	.674	.195	.275
Question 25	.225	.660	.142	-.188
Question 14	.044	.601	.236	.014
Question 16	.317	.428	.114	-.356
Question 19	.365	.425	-.038	.167
Question 8	.194	.159	.844	-.035
Question 4	.075	.082	.794	-.030
Question 9	-.038	.267	.770	.115
Question 2	.072	-.044	.369	-.113
Question 6	-.052	.209	.324	-.074
Question 24	.127	.216	-.063	.717
Question 22	.064	.071	-.027	.604
Question 3	-.236	.027	.156	-.558
Question 10	-.118	.334	.077	-.544
Question 12	-.006	.473	-.006	.541
Question 17	-.110	.492	.118	.505

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

Table 4: Wilcoxon signed- rank test of maternal sleep attributions about difference infant sleep difficulties

Maternal Sleep Attributions	Median	T	P (Monte Carlo Sig, 2 tailed)	Effect Size r
Control of Night Waking vs. Settling Difficulties	4.2 vs 4.2	45.5	0.120	
Control of Night Waking vs. Sleep Phase Disruptions	4.2 vs 4.4	37.12	0.000 **	-0.3
Control of Settling Difficulties vs. Sleep Phase Disruptions	4.2 vs 4.4	10	0.000 **	-0.6
External causes of Night Waking vs. Settling Difficulties	3.3 vs 3	51.7	0.000 **	0.3
External causes of Night Waking vs. Sleep Phase Disruptions	3.3 vs 2.7	41.1	0.000**	0.4
External causes of Settling Difficulties vs. Sleep Phase Disruptions	3 vs 2.7	43.7	0.000 **	0.3
Consequences of Night Waking vs. Settling Difficulties	2.3 vs 2.3	49.3	0.36	
Consequences of Night Waking vs. Sleep Phase Disruptions	2.3 vs 2.1	48.1	0.68	
Consequences of Settling Difficulties vs. Sleep Phase Disruptions	2.3 vs 2.1	38.8	0.17	
Timeline of Night Waking vs. Settling Difficulties	2.5 vs 2.3	45.8	0.4	
Timeline of Night Waking vs. Sleep Phase Disruptions	2.5 vs 2.3	47.2	0.45	
Timeline of Settling Difficulties vs. Sleep Phase Disruptions	2.3 vs 2.3	56.3	0.95	

** Correlation is significant at the 0.01 level, one tailed

* Correlation is significant at the 0.05 level, one tailed

Table 5: Binary logistic regression predicting likelihood of choosing behavioural sleep intervention for each infant sleep difficulty

Predictor	Cox & Snell R^2	Nagelkerke R^2	B	S.E.	Wald	Odds Ratio	95% CI for odds ratio
Controllability							Lower Upper
Night waking	0.24	0.35	0.29	0.09	11.76	1.34	1.13 1.59
Controllability							Lower Upper
Infant Settling	0.21	0.29	0.29	0.8	13.14	1.33	1.14 1.56
Controllability							Lower Upper
Sleep Phase Disruptions	0.11	0.17	0.24	0.08	7.37	1.27	1.07 1.50

** p<0.01

Table 6: Kendaul's tau correlations between perceived success of behavioural interventions for Infant Sleep Difficulties and (i) Maternal Sleep Attributions, (ii) Coping Style and (iii) Trait Anxiety

	Night waking	Settling Difficulties	Sleep Phase Disruptions
Maternal Sleep Attributions			
External Cause	0.2**	0.2**	0.2**
Control	0.4**	0.5**	0.4**
Negative Consequences	0.2**	0.1	0.1*
Timeline	0.2**	0.1*	0.1
Coping Style			
Problem Solving Coping	0.2**	0.2*	0.2**
Emotional Focused Coping	- 0.03	-0.03	0.1
Dysfunctional Coping	-0.05	-0.03	-0.01
Trait Anxiety	-0.03	-0.03	-0.05

** p<0.01, one tailed

* p <0.05, one tailed

Table 7: Multiple regression predicting likelihood of perceiving success of behavioural sleep interventions

			Unstandardised Coefficients.		Standardised Coefficients.
Predictor	R ²	Adjusted R ²	B	SE B	β
Controllability Night waking	0.29	0.26	1.68	0.34	0.46
Controllability Infant Settling	0.31	0.28	2.07	0.35	0.51
Controllability Sleep Phase Disruptions	0.24	0.21	2.17	0.42	0.45

** p<0.01

Table 8: Spearman's rho correlations between “High” and Low” Anticipations of Success for Behavioural Interventions

	Night waking	Settling Difficulties	Sleep Phase Disruptions
Maternal Sleep Attributions			
External Cause	0.2*	0.3*	0.1
Control	0.4**	0.5**	0.5**
Negative Consequences	0.3*	0.3**	0.4**
Timeline	0.2*	0.3**	0.3**
Coping Style			
Problem Solving Coping	0.2*	0.2*	0.2*
Emotional Focused Coping	0.04	0.04	0.1
Dysfunctional Coping	-0.08	-0.1	-0.2
Trait Anxiety	-0.02	-0.2	-0.2*

** p<0.01, one tailed

* p <0.05, one tailed

CHAPTER 3: Advanced Clinical Practice I Reflective Critical Account (abstract only)

*Who does what and why? The importance of
communication in clinical practice*

Ann-Marie Wall*
Mental Health and Well Being,
Division of Community Based Sciences,
Academic Centre,
University of Glasgow,
Gartnavel Royal Hospital,
1055 Great Western Road,
Glasgow, G12 0XH
Email: ann-marie.wall@nhs.net

*Author for correspondence

*Submitted in partial requirement for the degree of Doctorate in Clinical Psychology
(D.Clin.Psy.)*

Abstract

My experience of working in an inpatient service for young people helped me to consider how the roles and responsibilities of Clinical Psychologists relate to effective communication and ethical practice within organisational systems. Pedlar, Burgoyne and Boydell's (2001) model of reflective learning and Atkins and Murphy's (1993) model which outlines the reflective processes and skills required for reflection helped shaped my account. The New Ways of Working for Applied Psychologists in Health and Social Care – Working Psychologically in Teams paper (Onyett, 2007) helped me reflect on how Clinical Psychologists' skills as reflective practitioners, knowledge of formulation and problem solving skills can be used to encourage teams to think psychologically about a patient's difficulties. Working with a young person with a mild learning disability, Obsessive Compulsive Disorder (OCD) and a high risk of suicide alerted me to the challenges of effectively communicating both within and out with a multidisciplinary team. Reflecting on working systemically with this young person helped me to realise my role as a Trainee Clinical Psychologist in helping to promote a psychological understanding of a patient's difficulties. I learned the value of applying the skills I have developed in my training to help guide intervention and effective communication in both organisational and family systems. The experience of reflecting alerted me to the need to allocate time for reflection during clinical practice. I learned the value of reflecting on my thoughts and feelings about difficult situations in order to develop a new perspective about how to support patients and overcome the challenges of working in busy mental health services.

CHAPTER 4: Advanced Clinical Practice II

Reflective Critical Account (abstract only)

The impact of organisational change and staff stress on the provision of psychological services to inpatient wards

Ann-Marie Wall*
Mental Health and Well Being,
Division of Community Based Sciences,
Academic Centre,
University of Glasgow,
Gartnavel Royal Hospital,
1055 Great Western Road,
Glasgow, G12 0XH
Email: ann-marie.wall@nhs.net

*Author for correspondence

*Submitted in partial requirement for the degree of Doctorate in Clinical Psychology
(D.Clin.Psy.)*

Abstract

Working in an inpatient service for adults with severe and enduring mental health difficulties at a time of organisational change has advanced my understanding of the role of Clinical Psychologists as managers, leaders and advocates of reflection and learning in clinical practice. I have drawn on Kolb's (1984) experiential learning cycle to guide my reflections of key experiences that prompted me to consider how organisational changes impact on the provision of psychological services. A number of key chapters in "Enabling Recovery: The principles and practices of rehabilitation psychiatry" (Roberts, Davenport, Holloway and Tattam, 2006) and "Cognitive Behaviour Therapy for Acute Patient Mental Health Units (Clarke and Wilson, 2009) guided my consideration of the importance of promoting a learning environment and reflection to facilitate patient-centred care and recovery. Working in recently restructured in-patient wards provided me with the opportunity to reflect on how organisational factors (e.g., staff stress, attributions, limited resources, time constraints and ward milieu) impact on the provision of psychological services (e.g., training, reflective groups) and patient-centred care. I learned the value of having a flexible approach and being integrated into the ward environment to help facilitate and promote reflective practice and learning. Furthermore, I was alerted to the importance of consulting with senior management (e.g., ward managers, team leaders) and exploring staffs learning needs when planning the introduction of reflective groups and staff training. The experience of reflecting inspired me to apply my reflective, consultancy, research and leadership skills and alerted me to the important role that Clinical Psychologists have in the development, management and organisation of healthcare systems and in facilitating recovery and rehabilitation (Wells, 2010).

Appendix 1. Guidelines for Authors to Behavioral Sleep Medicine

Instructions for authors

SCHOLARONE MANUSCRIPTS™

This journal uses ScholarOne Manuscripts (previously Manuscript Central) to peer review manuscript submissions. Please read the [guide for ScholarOne authors](#) before making a submission. Complete guidelines for preparing and submitting your manuscript to this journal are provided below.

Editorial Scope:

Behavioral Sleep Medicine (BSM) addresses behavioral dimensions of normal and abnormal sleep mechanisms and the prevention, assessment, and treatment of sleep disorders and associated behavioral and emotional problems. Standards for interventions acceptable to this journal are guided by established principles of behavior change. Intending to serve as the intellectual home for the application of behavioral/cognitive science to the study of normal and disordered sleep, the journal paints a broad stroke across the behavioral sleep medicine landscape. Its content includes scholarly investigation of such areas as normal sleep experience, insomnia, the relation of daytime functioning to sleep, parasomnias, circadian rhythm disorders, treatment adherence, pediatrics, and geriatrics. Multidisciplinary approaches are particularly welcome. The journal's domain encompasses human basic, applied, and clinical outcome research. BSM also embraces methodological diversity, spanning innovative case studies, quasi-experimentation, randomized trials, epidemiology, and critical reviews.

Audience:

Psychologists, physicians, nurses, and other health care researchers and clinicians who prize knowledge of normal and disordered sleep from the perspective of behavioral/cognitive science.

Manuscript Preparation:

All manuscripts submitted must contain material that has not been published and is not being considered for publication elsewhere. Manuscripts should be prepared in accordance with the *Publication Manual of the American Psychological Association* (APA; 5th ed.). The manual sets forth guidelines for referencing, preparation of abstracts (maximum 120 words), bias-free language, margins (1 in., 2.54 cm, on four sides), formatting tables and figures, etc. Double space all text and number all pages consecutively. On the first page, indicate the title of the article; a short form of the title (less than 50 characters); and the author(s) name(s), affiliation(s), and complete mailing address(es). Define acronyms and abbreviations used in the manuscript when first mentioned. Print each figure and table on a separate page. To briefly summarize APA format for references, sources are cited in the text by author and year (e.g., Loomis,

Harvey, & Hobart, 1937), and the reference list is arranged alphabetically. Examples of reference format for articles, chapters, and books are as follows:

Loomis, A. L., Harvey, E. N., & Hobart, G. A., III. (1937). Cerebral states during sleep, as studied by human brain potentials. *Journal of Experimental Psychology*, 21, 127–144.

Webb, W. B. (1970). Individual differences in sleep length. In E. Hartmann (Ed.), *Sleep and dreaming* (pp. 44–47). Boston: Little, Brown.

Kleitman, N. (1939). *Sleep and wakefulness*. Chicago: University of Chicago Press.

Manuscript Submission:

Behavioral Sleep Medicine receives all manuscript submissions electronically via their ScholarOne Manuscripts website located at: <http://mc.manuscriptcentral.com/HBSM>. ScholarOne Manuscripts allows for rapid submission of original and revised manuscripts, as well as facilitating the review process and internal communication between authors, editors and reviewers via a web-based platform. ScholarOne Manuscripts technical support can be accessed via <http://scholarone.com/services/support/>. If you have any other requests please contact the journal's editor at lichstein@ua.edu.

Early Career Distinguished Research Award:

The editorial leadership of *BSM* periodically encounters a particularly outstanding article from an early career investigator. Such articles are characterized by a level of methodological maturity and importance of findings more commonly associated with accomplished senior scientists. *BSM* will honor research that satisfies these standards with the *Early Career Distinguished Research Award*. The award comprises featured recognition in the journal and invited commentary by a distinguished scholar on the merits of the research. This award reflects the Journal's interest in honoring outstanding early career scientists, encouraging high quality research, and elevating the visibility of particularly important research for the readership. To be eligible, the first author must be 5 years or less post Ph.D. (or post residency for physicians) at the time of submission and should indicate in the submission cover letter that he/she wishes to be considered for this award.

Permissions:

Authors are responsible for all statements made in their work, for obtaining permission from copyright owners for reprinting or adapting a table or figure, and also for reprinting a quotation of more than 500 words. Copies of all permission must be provided prior to publication. Figures must be provided in camera-ready form.

Production Notes:

After a manuscript has been accepted for publication, authors are requested to send to the Editor: (a) two paper copies of the final version, (b) an electronic file of the final version on diskette, (c) a statement of verification that the paper and electronic copies are replications of the same final version, (d) the signed publication and copyright transfer agreement form, and (e) figures in camera-ready form. Copyedited page proofs are sent to the designated author using Taylor & Francis' Central Article Tracking System (CATS). They must be carefully checked and returned within 48 hours of receipt. Reprints of individual articles are available for order at the time authors review page proofs. A discount on reprints is available to authors who order before print publication.



Visit our [Author Services website](#) for further resources and guides to the complete publication process and beyond.

Appendix 2.1. Quality Rating Measure

Figure 2: Quality Rating Measurement

Author and Year:		
Checklist completed by:		
1. Objectives		Rating
1.1	<p>The study addresses an appropriate and clearly focused question/hypothesis.</p> <p>The objectives and hypotheses of the study are clearly stated. (1)</p> <p>The objectives and hypotheses are poorly described/ not described (0)</p>	
2. Recruitment of Participants		
2.1	<p>The study provides a good description of settings and location that participants are recruited from.</p> <p>The study provided a clear description of what type of setting participants were recruited from and the location of this setting (2)</p> <p>The study provided a description of either the type of research setting or the location, not both (1)</p> <p>The study does not provide information about the setting and location of where participants were recruited from (0)</p>	
2.2	<p>The study has adequate sampling methods</p> <p>Participants are recruited using geographic sampling i.e. all participants in a particular setting or area or using convenience sampling i.e. clinic sample, inpatient sample, referred patients (1)</p> <p>Participants were highly selective e.g. volunteers (0)</p>	
3. Description of the sample		
3.1	<p>The study indicated how many people were asked to participate and rates of attrition rates are provided if applicable. If there are 2 groups in the study, this information should be provided for each of the groups being studied.</p> <p>The study provides a clear description of how many people were asked to take part in this study, opt in rate and drop out rate, if applicable (1)</p> <p>The study does not provide a clear description of all of the following: how many people were asked to take part in this study, opt in rate and drop out rate, if applicable (0)</p>	

3.2	<p>Inclusion and Exclusion Criteria stated:</p> <p>Both inclusion and exclusion criteria are well stated. (2)</p> <p>Inclusion and exclusion criteria are not stated. Some aspects of inclusion or exclusion criteria are clear from reading the paper (1)</p> <p>No inclusion and/or exclusion criteria are stated (0)</p>	
3.3	<p>Participants' demographics should be clearly recorded in the study</p> <p>Detailed demographic information about mothers and infant recruited for this study, this should record information about the age of infants, whether it is a first time mother, number of other children in the family, marital status etc. (2)</p> <p>Limited demographic information recorded, one or two items only (1)</p> <p>No demographic information recorded about infants or mothers (0)</p>	
3.4.	<p>The infant/toddler sleep difficulty is clearly described.</p> <p>A clear description of the nature and/or the duration of the infant/toddler sleep difficulty is given (1)</p> <p>No clear description of the type, nature and/or duration of the infant/toddler sleep difficulty is given (0)</p>	
4. Study Design		
4.1	<p>The study is well designed to address the primary objectives/hypotheses**</p> <p>The study is a randomised controlled trial (2)</p> <p>The study is a non-randomised controlled trial, quasi-experimental study (i.e. pre and post measures used) or a well-designed single, multiple subject design (1)</p> <p>The study is an uncontrolled trial (0)</p>	
4.2	<p>If the study has two or more groups the assignment to each group should be randomised.</p> <p>Assignment to each group is randomised and adequate concealment of randomization is well described, or the reader is directed to other paper which provides further information about randomisation methods used (1)</p> <p>No information provided about how participants are allocated to each</p>	

	group (0)	
	Not applicable (N/A)*	
4.3	<p>For quasi experimental studies/ single case studies there should be a good description of the type and number of participants analysed pre and post intervention.</p> <p>There is a clear description of the type and number of both mothers and infants recruited and the outcomes analysed pre and post intervention (2)</p> <p>There is a clear description of the type and number of either mothers or infants recruited and the outcomes analysed pre and post intervention (1)</p> <p>There is no clear description of the type and number of participants, outcomes analysed pre and post intervention (0)</p> <p>Not applicable (N/A)*</p>	
4.4	<p>Baseline data was recorded</p> <p>There is a clear description of the nature of baseline data recorded (1)</p> <p>No baseline data was recorded or this was not clearly described (0)</p>	
4.5	<p>Follow up assessment was completed</p> <p>There is a clear description of the time of follow-up assessment completed (1)</p> <p>No follow-up assessment was completed (0)</p>	
5. Intervention		
5.1	<p>A clear description should be given of the sleep intervention(s) in this study.**</p> <p>The behavioural sleep intervention(s) were clearly described in this study, for example the length of time, sequences of steps and approaches are clearly explained (2)</p> <p>The behavioural sleep interventions(s) were partially explained in this study, one or two descriptors of intervention (1)</p> <p>The nature of the behavioural sleep interventions(s) were not described in this study (0)</p>	
5.2	<p>The study should give a clear description of how the behavioural intervention delivered to mothers was standardised and who did this.**</p> <p>A clear description is given about who delivered the intervention and</p>	

	<p>their qualifications/ experience to do this. It should be clear that the behavioural intervention was standardised across participants. If a treatment manual or protocol was used, there should be a clear description of how adherence to this protocol was measured (2)</p> <p>Adequate description of one of the following (i) how behavioural sleep intervention delivered to mothers was standardised or (ii) the experience/qualifications of those delivering the intervention to mothers (1)</p> <p>No description of how the behavioural sleep intervention delivered to mothers was standardised or the experience/qualifications of those delivering the intervention to mothers (0)</p>	
6. Assessment of outcomes		
6.1	<p>A validated measure was used to assess mothers' anxiety and depression**</p> <p>The level of reliability, validity and internal consistency was clearly reported for the measure(s) used to assess mothers' anxiety and/or depression. The author should explain why the particular measures have been reported and offer reference to support their choice (3)</p> <p>The reader was directed to where to find information about the reliability, validity and internal consistency are reported for this measure. (2)</p> <p>At least one of the following; reliability, validity and internal consistency was reported for the measure(s) used to assess mothers' anxiety and/or depression. (1)</p> <p>No reliability and/or validity, internal consistency was reported for measures used to assess mothers' anxiety and/or depression (0)</p>	
6.2	<p>The target outcome was clearly defined and measured consistently.</p> <p>The type of maternal mental health (i.e. depression and/or anxiety) measured is clearly stated and measured in a consistent manner to ensure that the study is replicable (1)</p> <p>The type of maternal mental health (i.e. depression and/or anxiety) measured is not clearly stated and is not measured in a consistent manner to ensure that the study is replicable (0)</p>	

7. Statistical Analyses		
7.1	<p>Confounding variables should be adequately addressed in the study if applicable.</p> <p>The report of the study should indicate which potential confounders have been considered, and how they have been assessed or allowed for in the analysis (1)</p> <p>Confounding variables are not addressed in the study (0)</p> <p>Not applicable (N/A)*</p>	
7.2	<p>The analyses used are appropriate to the design and type of outcome measure and are clearly described</p> <p>The analyses used are clearly described and appropriate to the design and type of outcome measure (1)</p> <p>The analyses used are not clearly described and not appropriate to the design and type of outcome measure (0)</p>	
8. Results		
8.1	<p>Statistical results of the difference between groups, or time intervals are clearly stated and presented (1)</p> <p>Statistical results of the difference between groups, or time intervals are not clearly stated and presented (0)</p>	
8.2	<p>The effect sizes are clearly stated (2)</p> <p>Effect sizes can be calculated from the data provided (1)</p> <p>The effect sizes are not clearly stated (0)</p> <p>Not applicable (N/A)</p>	
8.3	<p>Confidence intervals are stated (1)</p> <p>Confidence intervals are not stated (0)</p> <p>Not applicable (N/A)</p>	
8.4	<p>The results are correctly interpreted and discussion and conclusions are in keeping with the results (1)</p> <p>The results are correctly interpreted and discussion and conclusions are in keeping with the results (0)</p>	
<p>Total Score</p> <p>Total Maximum score = 40</p> <p>0 represent where the criteria is not met for any of the above questions</p>		/40

* For scores that get a not applicable (N/A) rating, calculate an average of the total scores.

** Items 4.1, 5.1, 5.2, 6.1 are weighted and received double scores.

Appendix 2.2. Description of Behavioural Interventions

Table 4: Description of Behavioural Interventions for infant and toddler sleep disturbances (Adapted from Horne, K., 2010)

- **Unmodified Extinction:** Parents put their child to bed at a set bedtime and do not enter their bedroom until morning unless they are ill or in danger
- **Graduated Extinction:**
 - **Controlled crying/controlled comforting/minimal parental check:** Parents enter bedroom for a brief period when infant cries, provide reassurance (in neutral tone of voice), check for signs of illness or danger then leave the room. Wait progressively longer periods of time between checks (e.g. 5, 10, 15 minutes).
 - **Systematic ignoring:** Parents told to check the infant briefly during crying on settling or awakening at fixed pre-set intervals (e.g. every 5 minutes) in order to reassure/restore sleeping position.
 - **Camping out:** Parents instructed to sit with the infant until he/she falls asleep and gradually remove their presence (over a pre-determined period of time).
 - **Scheduled Awakenings:** Parents are instructed to wake their infant at pre-set intervals prior to the time they usually wake spontaneously and resettle infant to sleep in usual manner. Number and timings of awakenings are modified over certain period, depending on infants sleep pattern over previous few nights.
 - **Stimulus control:** Parents are instructed to have a clear distinction between day- and night-time and a bedtime ritual such as same place, time, routine.

Appendix 3.1. Major Research Project Proposal

The influence of maternal attributions and personality on recommendations of, and outcome expectancies, for infant sleep interventions

Ann-Marie Wall

Research Supervisor: Dr Kenneth MacMahon

Version 4*

*A number of changes were made following ethical review of the study. These changes are highlighted in bold.

2. Abstract

Background: Settling and waking difficulties are common among infants and children, resulting in a plethora of sleep advice. This advice can, broadly, be divided into ‘co-sleeping’ and ‘behavioural’ approaches. Despite robust evidence for behavioural approaches for sleep management, significant numbers of parents still choose co sleeping approaches. A number of psychological factors may be associated with choice of and outcome expectancies of such interventions.

Aims: This exploratory study aims to investigate mothers sleep attributions and personality (coping style and trait anxiety) in relation to the choice of and outcome expectancies of differing sleep management methods.

Methods: A correlational design will investigate whether mothers’ sleep attributions and personality (coping style and trait anxiety) are associated with mothers’ sleep management approaches and outcome expectancies. Further regression analysis will examine the relative predictive influences of these variables on recommendations of sleep management approaches and outcome expectancy. Mothers of infants will be asked to complete questionnaires regarding their sleep attributions, coping styles and trait anxiety.

Applications: Knowing more about mothers’ sleep related attributions and personality may help psychologists promote behavioural sleep management approaches. This may also help address any potential difficulties pre treatment to help improve outcome expectancy of behavioural approaches and hence improve treatment outcome.

3. Introduction

Settling and waking difficulties are extremely common among infants and young children (Bramble, 1996; Johnson, 1991) and are a major source of stress for parents (Carr, 2006). Approximately 20% of children aged between 1-3 years have been found to have difficulties settling to sleep and night-waking problems (Richman, 1981a, b; Zuckerman, Stevenson and Bailey, 1987). Furthermore, the National Sleep Foundation (2004) found that infants were more likely to have night-waking than toddlers, pre-school children and school aged children, although night-waking was common across all four of these age groups. **In addition, sleep phase disruptions (i.e. “when the time the parents assigns for sleep and the child's period of needing it are not synchronous”) are also common among infants and young children (Blum and Carey, 1996).**

3.1. Methods of Managing Infant and Child Sleep

Advice for managing sleep abounds in both scientific and the broader media. This advice can be divided into two broad categories: a co-sleeping approach (advocating parent-child interactions) and behavioural approaches (advocating extinction and delayed responding). Behavioural approaches are most commonly recommended to parents by healthcare professionals, although a significant minority of parenting advice books advocate co-sleeping and generally recommend long term bed or room sharing (Ramos and Youngclarke, 2006).

3.1.1. Co-Sleeping

Although definitions within the literature are varied, the term ‘co-sleeping’ is generally assumed to refer to children frequently sleeping in the same room or bed as their parents (Rath and Okum, 1995). Its proponents highlight research suggesting that co-sleeping positively influences parent-child attachments, lengthens the sleep period and supports breast-feeding through increased infant arousal (Mosko, Richards and McKenna, 1997a, 1997b; Sears et al., 2005). Furthermore, some authors suggest that focusing solely on behavioural approaches ignores the ‘social’ nature of sleep and disregards infant autonomy and dignity in favour of a universal approach (Funkquist, Carlson and Nyqvist, 2005; Rowe 2003). Parents may adopt co-sleeping approaches for a number of reasons: the approach may satisfy parental desires for physical proximity; may facilitate monitoring of the infant; may facilitate infant feeding; may reduce infant distress on settling; and may improve parental sleep quality and duration (Ball, Hooker and Kelly, 1999).

Although some studies have failed to find any causal relationship between co-sleeping and the development of sleep problems (Forbes, Weiss and Folen, 1992; Rath and Okum 1995; Weimer et al., 2002), other studies have suggested that infants who fall asleep with significant parental involvement (i.e., whilst being held, fed or rocked, for example) are more likely to have an increased number of night awakenings and difficulties falling asleep (Burnham, Goodlin-Jones, Gaylor and Anders, 2002; Latz, Wolf and Lozoff, 1999; Mao, Burnham, Goodlin-Jones, Gaylor and Anders, 2004; Mindell, Kuhn, Lewin, Meltzer and Sadeh, 2010). It is suggested that high levels of parental involvement and soothing lead to the child’s continued reliance on parent-child interactions to facilitate

sleep onset and maintenance. Consequently, children may not have the opportunity to develop self-soothing skills necessary for successful, and independent, sleep onset. Thus healthcare professionals, in the majority of cases, recommend a behavioural approach to managing sleep during the early years of a child's life (Johnson, 1991; Mindell, 1999).

3.1.2. Behavioural Approaches

The behavioural approach to infant sleep management advocates self-soothing and the use of a behavioural extinction paradigm (i.e., removal of the reinforcer of parental attention) to eliminate infants' paired response (waking and crying) over time. This method is often referred to as "controlled crying" or "modified extinction" in populist sleep advice.

Studies have suggested that these methods are known to the vast majority of parents (Johnson, 1991). There is a great deal of empirical support for behavioural interventions such as extinction and its variants, positive bedtime routines, scheduled awakenings and disassociating feeding from sleep-wake transitions (Kuhn and Weidinger, 2000). A number of researchers have found support for the efficacy of behavioural sleep-training interventions, in relation to reducing the prevalence of night-waking in infants and toddlers (Eckerberg, 2004; Durand and Mindell, 1990; Hiscock and Wake, 2002; Rickert and Johnson, 1988).

3.2. Mothers' Experiences and Expectations of Behavioural Sleep Interventions

Despite the scientific evidence base that supports behavioural approaches for sleep management; significant numbers of parents experience difficulties complying with such

interventions and fail to consistently adhere to these strategies (Johnson, 1991; Walters, 1993). The reasons for this may be manifold, but the process of behavioural interventions, requiring parents not to respond to the demands of their infant, may result in emotional distress for some parents (Sadeh, Flint-Ofir, Tirosh and Tikotzky, 2007). Parents are often concerned about the impact of systematic ignoring of infant crying on the child's emotional development. Hence, parents may refuse to engage in this treatment and view it as unacceptable and impractical (Rickert and Johnson, 1988) and difficult to carry out (Johnson, 1991). Indeed, some parents following this approach have reported that it did not match their 'parenting values' as well as co-sleeping might (Gordon, 2008).

3.3. Psychological Factors and Sleep Management approaches

Although behavioural approaches may offer the most effective methods for managing infant sleep, it is clear that many parents do not utilise such an approach, either through specific choice, or through difficulties in adhering to these methods. As these methods have empirical evidence to support their efficacy, it seems important to investigate potential factors that may influence mothers' preference and expectations of such methods.

3.3.1. Parental Attributions

One factor that appears likely to influence parental actions in relation to sleep is the attributions they make regarding their children. Weiner (1980; 1985) attribution theory suggests that attributions about cause, stability and controllability influence individuals' emotional reactions and expectations for future success. Reimers, Wacker, Derby and Cooper (1995) suggested that parents who attribute behaviour to intrinsic genetic or

medical causes may view interventions that rely upon changes to the environment as less acceptable, and hence implement these strategies with less effort. For example, Johnston and Freeman (1997) found that parents of children with attention deficit hyperactivity disorder (ADHD) held internal, stable and uncontrollable attributions about their child's behaviour; the authors suggested that this appeared to relieve the parents of responsibility for this behaviour. Johnston and Freeman (1997) concluded that a perception of a child's behaviour as being uncontrollable and unchangeable may negatively predict mothers' willingness to implement or accept behaviour management techniques that are based on assumptions of changeable, operant behaviours (Borden and Brown, 1989).

In addition, literature suggests that parental attributions and expectations in themselves influence help seeking, engagement and outcome (Morrissey- Kane and Prinz, 1999). Specifically, parents with an external locus-of-control perceived behavioural management strategies as less relevant and acceptable and to have poorer anticipated treatment outcomes. In addition, child referent attributions were found to influence parental emotional and behavioural reactions; for example, Dix et al., (1986, 1989) found that mothers who perceived their child's behaviour to be intentional, experienced more distress and tended to show a preference for strict disciplinary style of parenting (Morrissey- Kane and Prinz, 1999).

With regard to sleep difficulties, Cahn et al., (2005) found that adults attributions about sleep problems i.e. consequences (perceived adverse consequences of sleep disturbance to functioning), causes (attributing one's insomnia to bad sleeping habits), and emotion

(concern about one's sleep problem) predicted interest in CBT for insomnia. Furthermore, Keenan, Wild, McArthur and Espie (2007) investigated the relationships between illness beliefs and treatment acceptability amongst parents of children with a developmental disability who had sleep onset or maintenance problems. Keenan et al., found that certain causal beliefs about children's sleep difficulties were related to treatment acceptability. Parents who held internal causal attributions e.g. personality and disability for their child's sleep difficulties and viewed their child's sleeping problem as chronic did not view behavioural interventions to be as acceptable as their pharmacological counterparts. Thus it appears that parental attributions to sleep may impact on choice and outcome expectancies of sleep interventions.

3.3.2. Personality (Coping Style and Trait Anxiety)

Differences in parental coping style may also, theoretically, influence the choice of sleep intervention used by parents and coping may also be linked to adherence to behavioural sleep interventions. Coping refers to cognitive and behavioural strategies used to manage external and internal demands that are appraised as 'stressful and exceeding an individual's resources' (Lazarus and Folkman, 1984). In general, there are considered to be two broad types of coping strategies: 'problem-focused' and 'emotion-focused'. Folkman and Lazarus (1980) found that individuals were more likely to engage in problem-focused coping if they believed that their difficulty was more amenable to change, but emotion-focused coping was more likely to be used when an individual perceived that nothing could alter a particular difficulty.

With regard to sleep difficulties, McDougall, Kerr and Espie (2005) carried out a qualitative study with parents of children with Rett's disorder and sleep disturbance and found that emotion focused coping was the most prevalent style utilised by parents managing their infants' sleep. Emotion focused coping was associated with parents engaging in prescribed checking, regular responding to night waking and taking the child out of bed and co-sleeping. **This suggests that more emotion focused coping styles and dysfunctional coping styles, which rely less on problem solving skills** may be associated with co-sleeping, whilst behavioural approaches may be more associated with parents employing problem-solving coping styles.

In addition, Mc Dougall et al. (2005) proposed an interactional model of parental experience of sleep problems. More specifically, they proposed that "beliefs about sleep problems, coping and emotions may influence and be influenced by each other." They found that some parents reported feeling overwhelmed by their emotions and reported feeling anxious and unable to relax in relation to their infant's sleep. Indeed, it is suggested that one of the causes of children's sleep difficulties is parent over anxiety; mothers may react strongly to children's reactions and engage in co-sleeping behaviours such as picking the child up at the first sound, rocking child to sleep or taking child into bed (Illingworth, 1996; Moore and Ucko, 1957). One suggested source of parental over anxiety maybe parents' personalities (Battle, 1970). This suggests that there may be a link between beliefs about sleep, emotions such as anxiety and coping. Dougall et al. suggested that further research into the interactions between coping, emotions and beliefs about sleep is needed and that parents' beliefs and emotions may play a part in acceptability of the behavioural management of sleep. This suggests that parents' coping

style and emotion in addition to their attributions about sleep may influence the sleep approaches they choose to manage infant sleep and their outcome expectancies of such approaches. It is suggested that sleep interventions are perceived by parents as being less acceptable if they perceive these to have poor outcomes. Given that the evidence base supports behavioural approaches towards sleep, it appears necessary to look at how attributions, coping and anxiety may influence the acceptance of such approaches.

It is hypothesised that the psychological factors outlined above may influence the choice of sleep strategy (co-sleeping or behavioural) that parents recommend to manage children's sleep difficulties. As behavioural interventions are the methods most commonly recommended in psychological interventions, it appears important to investigate mothers' expectations of such methods compared to their expectations of co-sleeping approaches. This study will also investigate if there are any differences in mothers' sleep approaches for the most common sleep difficulties experiences by children. Hypothetical vignettes representing night-waking, sleep onset **and disrupted sleep phase difficulties** will be used to assess what sleep management approaches mothers would recommend to parents. Mothers' attributions about each sleep difficulty will be measured. Mothers coping and trait anxiety, which represent personality characteristics that are stable across events/ presenting difficulties will also be measured. As hypothetical vignettes will be used to assess mothers' attributions about sleep, trait anxiety which is stable across situations will represent emotions that may interact with choice of sleep management approach as suggested by Dougall et al. **It is suggested that trait anxiety is associated with overprotective parent attitudes (Parker, 1983) which**

suggests that high levels of trait anxiety may be associated with co-sleeping approaches towards infant sleep difficulties.

This study will focus on mothers' beliefs as studies have demonstrated that mothers are most likely to be the parent who attends to their child's night time waking (National Sleep Foundation, 2004).

In summary, this study will investigate the association between mothers' sleep attributions and personality (coping style and trait anxiety) and their sleep management approaches. As a secondary area of investigation, the association between the above variables and outcome expectancies for both behavioural and co sleeping approaches will also be explored.

4. Aims and hypotheses

Aim of Research Study

To examine mothers' attributions, coping style and trait anxiety in relation to recommendation of sleep management strategies to improve infant sleep, and outcome expectancies of each sleep strategy.

Primary Hypotheses

Maternal attributions, coping styles and levels of trait anxiety will be associated with choice of sleep management strategies. It is predicted that unstable, controllable and external (to the child) causal attributions in addition to attributions about the negative

consequence of sleep difficulties will be positively associated with mothers' recommendation of behavioural sleep management approaches. Higher levels of problem focused coping style and trait anxiety is also predicted to be positively associated with mothers' recommendation of behavioural sleep management approaches

Secondary Hypotheses

Maternal attributions, coping styles and levels of trait anxiety will be associated with outcome expectancy of sleep management strategies. It is predicted that unstable, controllable and external (to the child) causal attributions in addition to attributions about the negative consequence of sleep difficulties will be positively associated with mothers' **predicted success of behavioural approaches** to sleep management. Higher levels of problem focused coping style and trait anxiety is also predicted to be positively associated with mothers' **predicted success of the behavioural management of sleep**.

5. Plan of Investigation

5.1. Participants

Inclusion Criteria

Settling and waking difficulties are extremely common among infants and young children (Bramble, 1996; Johnson, 1991). Therefore, first time mothers of children aged between 6 and 36 months will be included.

5.2. Recruitment Procedures

Participants will be recruited from the numerous baby and toddler groups that take place throughout Glasgow. Links will be made with both voluntary (e.g., church) and professional (e.g., Health Visitors, group leaders) in order to facilitate this. It is expected that a large sample of mothers will be available to take part in this study given that it is estimated that there are approximately 16,000 births per year within the Glasgow and Clyde Health Board (Maternity Strategy, 2006)

5.3. Measures

Demographics

Information about parent characteristics will be gathered through demographics questionnaire.

Infant Sleep

The Brief Infant Sleep Questionnaire (BISQ; Sadeh, 2004) will be used to provide a measure of the sleep quality of the child of each participant. The BISQ is a validated measure with high test-retest correlations ($r > 0.82$).

Vignettes

Three vignettes- based scenarios will be developed to represent the most common sleep difficulties in children aged six-36 months. One of these vignettes will portray infants with night-waking difficulties. The second vignette will portray an infant with settling difficulties. **The third vignette will represent a disrupted sleep phase in which the mother's assigned time for sleep does not match the infants.** The age of the infant in

each vignette will be the same given that most infants between the above ages experience these difficulties.

These vignettes will be presented to participants and they will be asked what sleep strategies they would use to help improve the infant's sleep. The participant will be given a choice of two sleep strategies that parents used based on the relevant sleep literature. These sleep strategies will be classified into behavioural approaches and co-sleeping approaches. The participants will be asked which of these approaches they would recommend to parents of the infants in each vignette. A ten point Likert scale will be used to assess mothers' outcome expectancy of each sleep management strategy above.

Maternal Sleep Attributions

A modified version of the Illness Perception Questionnaire (IIPQ), (Weinmann, Petrie, Moss-Morris and Horne, 1996) will be used to assess mothers' attributions about cause, stability, consequences and controllability of infant's sleep difficulties for each of the **three** vignettes.

Coping Style

Three subscales of the Brief COPE questionnaire (Carver, 1997) will be used to measure emotion focused, problem focused and **dysfunctional coping** styles.

Trait Anxiety

The State-Trait Anxiety Inventory (Spielberger, Gorsuch and Lushene, 1970) will be used to assess mother's levels of trait anxiety.

All proposed questionnaires will be thoroughly piloted with mothers of various ages and levels of education. Piloting will ensure that the measures are clear and accessible for participants, with acceptable levels of readability. A number of different typefaces and fonts will be used when piloting the questionnaires to ensure optimum presentation style.

Information gathered during the piloting process will be used to inform amendments to the questionnaire battery prior to the main study.

5.4. Design

An explorative correlational design will be utilised to investigate whether mothers' attributions about sleep and personality (coping and trait anxiety) are associated with recommendations and outcome expectancies of sleep management strategies.

5.5. Research Procedures

The primary researcher will attend baby and toddler groups throughout Glasgow and will ask group leader and professionals (e.g., Health Visitors) to distribute questionnaires to potential participants. A stamped-addressed envelope will allow participants to return completed questionnaires and the researcher will also offer to collect questionnaire from group leaders or professionals, if necessary. In addition, participants may leave completed

questionnaires in boxes provided to each support group. These boxes will be stored securely by each group leader and will be collected by the primary researcher. Advertisements will be posted on various on-line advice and support groups and potential participants will be able to access these questionnaires via an online link to an anonymous and confidential internet site (www.surveymonkey.com). In addition, links to survey monkey will be provided via emails to members of support groups via their group leader.

5.6. Justification of sample size

Gordon (2008) found that 63.7% of first time parents whose infants had difficulty sleeping used behavioural strategies such as extinction compared to co-sleeping approaches (37.5%). This suggests that the probability of mothers in this study recommending behavioural interventions is 0.6. A power calculation was performed using Peduzzi, Concato, Kemper, Holford and Feinstein (1996) equation to calculate the number of events per variable needed for logistic regression. Using this equation, 135 participants will be need to assess whether 9 variables (5 types of attributions, 3 coping styles and trait anxiety) predict choice of sleep management strategy.

5.7. Settings and Equipment

Paper for questionnaires, vignettes and reply-paid envelopes will be required. Stationary, access to printing and photocopying facilities, statistical packages and computing equipment will be needed. The State-Trait Anxiety Inventory (Spielberger et al., 1970) will also need to be ordered.

5.8. Data Analysis

Descriptive Analysis

Data analysis will be carried out using SPSS for Windows. Initial descriptive statistics will be used to characterise the sample in terms of age, socio-economic status etc. Descriptive analysis will also be used to present mothers' attributions about infant sleep in each vignette. Intercorrelational analysis will be used to explore any relationships between the various subscales of the maternal attributions scale, hence indicating the overall validity of each subscale.

Wilcoxon signed rank tests (Wilcoxon, 1945) tests will be used to explore whether there are any significant differences between maternal attributions (i.e. causes, consequence, controllability and stability) according to the type of sleep difficulties presented (i.e. settling difficulties, night waking and **disrupted sleep phase**). Bonferroni corrections will be used to account for the number of **Wilcoxon signed rank tests calculated**.

If no significant differences are found between maternal attributions and type of sleep difficulty, the overall mean level of maternal attributions for the **three** vignettes presented will be calculated in order to explore how maternal attributions are associated with recommendations of sleep strategy and outcome expectancy.

If a significant difference is found between maternal attributions and type of sleep difficulty, separate regression analyses will be calculated for each type of sleep problem presented.

Primary Hypothesis

Non-parametric correlational analysis will be used to explore the nature of the associations between maternal sleep attributions, coping and trait anxiety and recommendation of sleep strategy. The relative predictive utility of the variables that are found to correlate with recommendation of sleep management strategy will be established using logistic regression analysis. **Three** separate regression analyses will be calculated if no significant differences in attributions are found for each types of sleep difficulty.

Secondary Hypothesis

Outcome expectancies.

Non-parametric correlational analysis will be used to explore the nature of the associations between maternal sleep attributions, coping and trait anxiety and outcome expectancies for the behavioural sleep management strategy. The relative predictive utility of the variables that are found to correlate with outcome expectancy of the behavioural sleep management strategy will be established using logistic regression analysis. **Three** separate regression analyses will be calculated if significant differences in attributions are found for each types of sleep difficulty.

6. Health and Safety Issues

6.1. Researcher Safety Issues

There will be minimal risk to the researcher as this study does not require home visits. The researcher will visit baby and toddler groups during working hours with staff present to ensure her safety.

6.2. Participant Safety Issues

There is little risk to participants associated with completion of the questionnaires used in this study. Participants will not be asked to travel to take part in this study and there are no anticipated safety issues for participants completing these measures.

7. Ethical Issues

Ethical approval will be sought from NHS Greater Glasgow and Clyde.

This research will be submitted to the University of Glasgow as part of the requirements for the Doctorate in Clinical Psychology. The BPS Code of Ethics (2009) and the Data Protection Act (1998) will be adhered to. This study will involve reading vignettes about infant sleep problems and completion of a number of self-report questionnaires. Confidentiality and anonymity of all research participants will be ensured through the anonymous nature of the questionnaires.

It is recognised that answering questions about hypothetical infant sleep difficulties may raise mothers' anxiety about their own infants sleep. Therefore, a list of sources of support

and helpline number will be provided to participants to ensure that participants who are potentially depressed or significantly anxious have the opportunity to seek help and support if needed.

8. Financial Issues

Financial support for the printing and photocopying costs, travel expenses for the researcher will be required. It is anticipated that the response rate for questionnaires will be around 60%. **A previous study using questionnaires about sleep with parents had a response rate of 63.2% (Morrell, 1999).**

9. Timetable

Sept- October 2010: Application for Ethics approval

October 2010 – March 2011: Recruitment and data collection.

March 2011 – April 2011: Data analysis

May 2011 – July 2011: Write-up

10. Practical Applications

This study will provide a greater understanding of the associations between maternal attributions and personality (coping and trait anxiety) and recommendation of sleep management interventions. These findings may help improve our knowledge of how to promote behavioural approaches to sleep management. For example, greater provision of psycho-education about the causes of sleep disturbance and cognitive restructuring to challenge dysfunctional beliefs about infant sleep and the behavioural management of

sleep may promote the behavioural strategies which have greater empirical support than co sleeping approaches. Effective early-intervention may further prevent children developing chronic sleep difficulties into pre-school and school age years.

In addition, learning about mothers' personality characteristics may also provide useful information about how best to encourage and support parents to try behavioural sleep strategies. For example, advice on problem-solving and anxiety management may help parents who have high levels of trait anxiety and emotion focused coping explore the use of behavioural strategies.

11. References

Ball, H.L., Hooker, E., & Kelly, P.J. (1999). Where will the baby sleep? Attitudes and practices of new and experienced parents regarding co-sleeping with their newborn infants. *American Anthropology*, 101, 143-51.

Battle, C.U. (1970). Understanding sleep and sleep disturbances in young children: Sensible management depends upon understanding. *Clinical Pediatrics*, 9, 675.

Berry, J.O. & Jones, W.H. (1995). The parental stress scale: Initial psychometric evidence. *Journal of Social and Personal Relationships*, 12, 463- 472.

Blum, N.J. & Carey, W.B. (1996). Sleep problems among infants and young children. *Pediatrics in Review*, 17, 87-92.

Borden, K., & Brown, R. (1989). Attributional outcomes: The subtle messages of treatments for attention deficit disorder. *Cognitive Therapy and Research*, 13, 147-160.

British Psychological Society; BPS (2009). Ethical Principles for Conducting Research with Human Participants, downloaded from [http://www.bps.org.uk//document-download-area/document-download\\$.cfm?restart=true&file_uuid=F1C8E142-E935-EC00-75FD-519F1FDDEA5D](http://www.bps.org.uk//document-download-area/document-download$.cfm?restart=true&file_uuid=F1C8E142-E935-EC00-75FD-519F1FDDEA5D). Retrieved 8th December 2010

Bramble, D. (1996). Consumer opinion concerning the treatment of a common sleep problem, *Childcare, health and development*. 22, 6, 355-366

Burnham, M.M., Goodlin-Jones, B.L., Gaylor, E.E. & Anders T.F. (2002). Nighttime sleep-wake patterns and self-soothing from birth to one year of age: A longitudinal intervention study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 43, 6, 713–25.

Cahn, S.C., Langenbucher, J.W., Friedman, M.A., Reavey, P., Falco, T. & Pallay, R.M (2005). Predictors of interest in psychological treatment for insomnia among older primary care patients with disturbed sleep. *Behavioral Sleep Medicine*, 3, 2, 87-98.

Carr, A. (2006). *The Handbook of Child and Adolescent Clinical Psychology: A Contextual Approach*, 2nd Edition.

Carver, C.S. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioural Medicine*, 4, 92–100.

Data Protection Act (1998). Downloaded from [http://www.bps.org.uk//document-download-area/document-download\\$.cfm?restart=true&file_uid=F1C8E142-E935-EC00-75FD-519F1FDDEA5D](http://www.bps.org.uk//document-download-area/document-download$.cfm?restart=true&file_uid=F1C8E142-E935-EC00-75FD-519F1FDDEA5D). Retrieved 8th December 2010.

Dix, T., Ruble, D., Grusec, J. E., & Nixon, S. (1986). Social cognition in parents: Inferential and affective reactions to children of three age levels. *Child Development*, 57, 879-894.

Dix, T., Ruble, D., & Zambarano, R. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. *Child Development*, 60, 1373-1391.

Durand, V.M., & Mindell, J.A. (1990). Behavioral treatment of multiple childhood sleep disorders: Effects on child and family. *Behavior Modification*, 14, 37-49

Eckerberg, B. (2004). Treatment of sleep problems in families with young children: Effects of treatment on family well-being. *Acta Paediatrica*, 93, 126-134.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behaviour*, 21, 219-239.

Forbes, J. F., Weiss, D. S. & Folen, R.A. (1992). The co-sleeping habits of military children. *Military Medicine*, 154. 196-200.

Funkquist, E.L., Carlsson, M. & Nyqvist, K.H. (2005). Consulting on feeding and sleeping problems in child health care: What is at the bottom of advice to parents? *Journal of Child Health Care*, 9, 137-52.

Gordon, M.D. (2008). To cry? Or not to cry? Relations between science and culture in management of infant sleep. Location: *Unpublished thesis*, Antioch University.

Hiscock, H. & Wake, M. (2002). Does a behavioural infant sleep intervention improve infant sleep and maternal mood? *The British Medical Journal*, 324, 1062-1065.

Illingworth, R. S. (1966). Sleep problems of children. *Clinical Pediatrics*, 5, 45.

Johnson, M. (1991). Infant and toddler sleep. *Journal of Developmental and Behavioral Pediatrics*, 12, 108– 114.

Johnston, C. & Freeman, W. (1997). Attributions for child behaviour in parents of children without behaviour disorders and children with attention deficit hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, 65, 636–645.

Keenan, R., Wild, M., McArthur, I. & Espie, C. (2007). Children with developmental disabilities and sleep problems: parental beliefs and treatment acceptability. *Journal of Applied Research in Intellectual Disabilities*, 20, 455-465

Kuhn, B. R., & Weidinger, D. (2000). Interventions for infant and toddler sleep disturbance: A review. *Child & Family Behavior Therapy*, 22, 2, 33-50.

Latz, S., Wolf, A.W. & Lozoff, B. (1999). Co-sleeping in context: sleep practices and problems in young children in Japan and the United States. *Archives of Pediatric and Adolescent Medicine*, 153, 4, 339–346.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Location: New York: Springer.

Mao A., Burnham M.M., Goodlin-Jones B.L., Gaylor E.F. & Anders T.F. (2004). A comparison of the sleep-wake patterns of co-sleeping and solitary-sleeping infants. *Child Psychiatry and Human Development*, 35, 95–105.

Maternity Strategy (2006). NHS Greater Glasgow and Clyde, Maternity Strategy, 2006-2011, retrieved on 26th April 2010 from http://library.nhsggc.org.uk/mediaAssets/library/nhsggc_strategy_maternity_2006-2001.pdf

McDougall, A., Kerr, A. M., & Espie, C. A. (2004). Sleep disturbance in children with Rett Syndrome: A qualitative investigation of the parental experience. *Journal of Applied Research in Intellectual Disabilities*, 17, 1-15

Mindell J.A., Kuhn B., Lewin D.S., Meltzer L.J., Sadeh A. (2010). Behavioral treatment of bedtime problems and night wakings in infants and young children – an American Academy of Sleep Medicine review. *Sleep*, 29, 1263–1276.

Mindell, J. A. (1999). Empirically supported treatments in pediatric psychology: Bedtime refusal and night wakings in young children. *Journal of Pediatric Psychology*, 24, 465–481.

Moore, T. & Ucko L. E. (1957). Night waking in early infancy. Part 1. *Archives of Diseases in Childhood*, 32:333-42.

Morrell, J. (1999). The role of maternal cognitions in infant sleep problems as assessed by a new instrument, the Maternal Cognitions about Infant Sleep Questionnaire., *Journal of Child Psychology and Psychiatry*, 40, 247–258.

Morrissey-Kane, E. & Prinz, R. J. (1999). Engagement in children and adolescent treatment: The role of parental cognition and attributions. *Clinical Child and Family Psychology Review*, 2(3), 183

Mosko, S., Richard, C. & McKenna, J. (1997a). Infant arousals during mother–infant bed sharing: implications for infant sleep and sudden infant death syndrome research. *Pediatrics*, 100, 841–849.

Mosko, S., Richard, C. & McKenna, J. (1997b). Maternal sleep and arousals during bedsharing with infants. *Sleep*, 20, 142-150.

National Sleep Foundation. (2004). *Sleep in America poll*. Retrieved April 26th, 2010 from <http://www.sleepfoundation.org>

Parker, G. (1983). *Parental overprotection. A Risk factor in Psychosocial Development*. Location: Sydney: Grune & Stratton.

Peduzzi, P., Concato, J., Kemper, E., Holford, T.R. & Feinstein, A.R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology*, 49(12), 1373-1379.

Ramos, K. D., & Youngclarke, D. M. (2006). Parenting advice books about child sleep: Co-sleeping and crying-it-out. *Sleep*, 29, 12, 1616-23.

Rath, F.H. & Okum, M.E. (1995). Parents and children sleeping together: Co-sleeping prevalence and concerns. *American Journal of Orthopsychiatry*, 65, 3, 411-418.

Reimers, T., Wacker, D., Derby, K. M., & Cooper, L. (1995). Relationship between parental attributions and the acceptability of behavioral treatments for children's behavior problems. *Behavioral Disorders*, 20, 171-178.

Richman, N. (1981a). A community survey of characteristics of one-to-two-year-olds with sleep disruptions. *Journal of the American Academy of Child Psychiatry*, 20, 281-291.

Richman, N. (1981b). Sleep problems in young children. *Archives of Diseases in Childhood*, 56, 491-493.

Rickert, V.I. & Johnson, C.M. (1988). Reducing nocturnal awakening and crying episodes in infants and young children: A comparison between scheduled awakenings and systematic ignoring. *Pediatrics*, 81, 2, 203-212.

Rowe. J. (2003). A room of their own: the social landscape of infant sleep. *Nursing Inquiry*, 10, 184-192.

Sadeh, A., Flint-Ofir, E., Tirosh, T., & Tikotzky, L. (2007). Infant sleep and parental sleep-related cognitions. *Journal of Family Psychology*, 21, 74–87.

Sadeh A. (2004). A brief screening questionnaire for infant sleep problems: validation and findings for an internet sample. *Pediatrics*, 113, 570–577.

Sears, W., Sears, M., Sears, R., & Sears, J. (2005). *The baby sleep book: The complete guide to a good night's rest for the whole family*. Location: Boston: Little-Brown.

Spielberger, C. D., Gorsuch, R.L., and Lushene. R.E. (1970). *Manual for the State-Trait Anxiety Inventory*. Location: Palo Alto, CA: Consulting Psychologists Press

www.surveymonkey.com

Walters, J. (1993). Sleep management- the hidden agenda. *Child: Care, Health and Development*, 19, 197-208.

Weiner, B. (1980). A cognitive (attribution)-emotion-action model of motivated behavior: An analysis of judgments of help giving. *Journal of Personality and Social Psychology*, 39, 186-200.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548-573.

Weimer, S.M., Dise, T.L., Evers, P.B., Ortiz ,M.A., Welldaregay ,W., Steinmann, W.C. (2002). Prevalence, predictors, and attitudes toward co-sleeping in an urban pediatric center. *Clinical Pediatrics Philadelphia*, 41, 433-438.


Weinman, J. Petrie, K.J., Moss-Morris, R., & Horne, R. (1996). The Illness Perception Questionnaire: A new method for assessing illness perceptions. *Psychology and Health*, 11, 431-446.

Wilcoxon, F. (1945). Individual comparisons by ranking methods. *Biometrics*, 1, 80-83 as cited in, Field, A. (2009). *Discovering Statistics Using SPSS*. 3rd Edition. Location: SAGE Publications Ltd.

Zuckerman, B., Stevenson, J. & Bailey, V. (1987) Sleep Problems in Early Childhood: Continuities, Predictive Factors, and Behavioral Correlates, *Pediatrics*, 80, 664-671.

Appendix 3.2. Ethical Approval

WoSRES
West of Scotland Research Ethics Service



West of Scotland REC 2
Western Infirmary
Ground floor, Tennent Building
38 Church Street
Glasgow
G11 6NT
e-mail: evelyn.jackson@ggc.scot.nhs.uk
Telephone: 0141-211-1722
Facsimile: 0141-211-1847

4 March 2011

Miss Ann-Marie Wall
Flat 2F1
1088 Argyle Street
Glasgow
G3 8LY

Dear Miss Wall

Study Title:	The influence of maternal attributions and personality on choice, and outcome expectancies, of sleep interventions.
REC reference number:	11/S0709/2
Protocol number:	

Thank you for your letter of 02 February 2011, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered, in correspondence, by a sub-committee of the REC. A list of the sub-committee members is attached.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation, as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Delivering better health

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

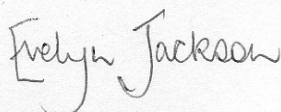
We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

11/S0709/2

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project.

Yours sincerely



**Dr A Crighton
Vice-Chair**

Enclosures: List of names and professions of members who were present at the meeting
"After ethical review – guidance for researchers"

Copy to: Dr Erica Packard, R&D Office, Tennent Building, Western Infirmary

Appendix 3.3. Research and Development Approval.



Coordinator/Administrator: Dr Erica Packard/Ms Elaine O'Donnell
Telephone Number: 0141 211 6208
E-Mail: erica.packard@ggc.scot.nhs.uk
Website: www.nhsggc.org.uk/r&d

R&D Management Office
Western Infirmary
Tennent Institute
1st Floor 38 Church Street
Glasgow, G11 6NT,

9 March 2011

Miss Ann-Marie Wall
Psychological Medicine
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH

NHS GG&C Board Approval

Dear Miss Wall,

Study Title:	The influence of maternal attributions and personality on choice and outcome expectancies of sleep interventions.
Principal Investigator:	Miss Ann-Marie Wall
GG&C HB site	Gartnavel Royal Hospital
Sponsor	NHS Greater Glasgow and Clyde
R&D reference:	GN10CP531
REC reference:	11/S0709/2
Protocol no:	V2; 17/12/10
(including version and date)	

I am pleased to confirm that Greater Glasgow & Clyde Health Board is now able to grant **Approval** for the above study.

Conditions of Approval

1. **For Clinical Trials** as defined by the Medicines for Human Use Clinical Trial Regulations, 2004
 - a. During the life span of the study GGHB requires the following information relating to this site
 - i. Notification of any potential serious breaches.
 - ii. Notification of any regulatory inspections.

It is your responsibility to ensure that all staff involved in the study at this site have the appropriate GCP training according to the GGHB GCP policy (www.nhsggc.org.uk/content/default.asp?page=s1411), evidence of such training to be filed in the site file.

Delivering better health

www.nhsggc.org.uk

Page 1 of 2

R&D Approval Letter_GN10CP531

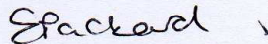
2. **For all studies** the following information is required during their lifespan.
- a. Recruitment Numbers on a quarterly basis
 - b. Any change of staff named on the original SSI form
 - c. Any amendments – Substantial or Non Substantial
 - d. Notification of Trial/study end including final recruitment figures
 - e. Final Report & Copies of Publications/Abstracts

Please add this approval to your study file as this letter may be subject to audit and monitoring.

Your personal information will be held on a secure national web-based NHS database.

I wish you every success with this research study

Yours sincerely,



Dr Erica Packard
Research Co-ordinator

Appendix 3.4. Demographics Questionnaire

Thank you for agreeing to take part in this study. Please answer the following questions. They will take around 20 minutes to complete.

Please tick this box to confirm that you have read the Participant Information Sheet. ☐

“Please answer the questions below”.

What is the first part of your post code (e.g., G45)?

How old (in years) are you?

How old (in months) is your child?

Is your child a girl or a boy? (circle one)

Girl

Boy

What is your current employment status? (Please circle)

Working full-time

Working part-time

Unemployed/ in search of a job

Retired

Studying full-time

Studying and working

Full-time parent

Other (please specify) _____

What is your highest level of education? (Please circle)

Primary school

High school (Standard grades)

High school (Highers)

College

University

Appendix 3.5. Hypothetical Vignettes and Ammended Version of IPQ

Story 1

Please read Mary and Paula's story. Try to form a picture of what you think they are like. Keep Mary and Paula in mind as you answer the questions. You may read Mary and Paula's story as many times as you like.

Mary is 12 months old and lives with her parents. Her mother, Paula, puts her to bed at night. Once put to bed, Mary will cry and become upset. It usually takes her up to two hours to settle to sleep.

We are interested in learning what you think are the possible causes of Mary's sleep difficulty. Please read the statements on the next page and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

For example, if you thought that it was 'likely' that Mary's sleep difficulty was because she didn't like the rain at night, you would complete the table like this:

<i>Mary has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
The rain at night	1	2	3	4	5

	<i>Mary has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
1	Health problems	1	2	3	4	5
2	Where Mary sleeps (e.g. dark/ light/ noisy/quiet place)	1	2	3	4	5
3	Her stage of development (e.g. the terrible 2s)	1	2	3	4	5
4	Paula's stress/worry	1	2	3	4	5
5	Hereditary (it probably runs in Mary's family)	1	2	3	4	5
6	Mary's diet/ eating habits	1	2	3	4	5
7	How Paula reacts to Mary's sleeping difficulties e.g. letting Mary sleep in her bed	1	2	3	4	5
8	Stress in the family because of Mary's difficulty sleeping	1	2	3	4	5
9	Paula's worries about Mary's safety during the night	1	2	3	4	5
10	Mary's nature/ temperament/ personality	1	2	3	4	5

Are there any others reasons that you think might explain Mary's sleep difficulty? Please write them in the box below.

How much do you believe that this could be the cause of Mary's sleep difficulty?

<i>Not at all</i>								<i>Completely</i>	
1	2	3	4	5	6	7	8	9	10

We are also interested in learning what you think might be the effect of Mary's sleep difficulty, and how long you think it might last. Please read the statements below and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

		Very unlikely	Unlikely	Equally likely	Likely	Very likely
11	Improvement in Mary's sleep is largely dependent on luck	1	2	3	4	5
12	Mary's difficulty sleeping will last a long time	1	2	3	4	5
13	How Paula reacts to Mary's sleep problem could be the difference between the problem getting better or worse.	1	2	3	4	5
14	Mary's difficulty sleeping will have serious financial consequences	1	2	3	4	5
15	Using certain sleep strategies/ approaches will help Mary sleep better	1	2	3	4	5
16	Mary's sleeping difficulties strongly affects how Paula feels about her	1	2	3	4	5
17	Mary's sleeping difficulties are likely to be permanent rather than temporary	1	2	3	4	5
18	There is very little that can be done to improve Mary's sleep	1	2	3	4	5
19	Mary's sleep problem does not have much effect on her life at present	1	2	3	4	5
20	There is a lot that Paula can do to control Mary's sleep pattern	1	2	3	4	5
21	Mary's difficulty sleeping is easy for Paula to live with	1	2	3	4	5
22	Mary's difficulty sleeping will last a short time	1	2	3	4	5
23	Mary's sleeping difficulties have serious consequences for her life	1	2	3	4	5
24	Mary's difficulty sleeping will improve in time	1	2	3	4	5
25	Mary's sleeping difficulties will affect the way others see her	1	2	3	4	5
26	Mary's difficulty sleeping is a serious condition	1	2	3	4	5

We are also interested in how you think Paula should help Mary to sleep at night. List A and list B below describe a range of approaches that Paula could use to help Mary to sleep at night. Please read list a and list b carefully. It doesn't matter if you don't agree with every approach described in the option, just choose one list that you think would work best for Mary overall. Remember there are no right or wrong answers, and your answers are confidential.

List A	List B
Paula could use at least one of the following approaches: <ul style="list-style-type: none"> • Paula could soothe Mary and help her to fall asleep. • This could be done every time that Mary has difficulty getting to sleep. • Paula could cuddle or rock Mary in her arms, or sing her a lullaby or talk softly to her until she falls asleep. • Paula could also settle on the sofa with Mary or bring Mary into her bed to help her settle to sleep. Paula could react each time Mary has a difficulty with sleep.	Paula could use at least one of the following approaches: <ul style="list-style-type: none"> • Paula could let Mary sleep on her own. • Paula could check on Mary's safety and then leave her to cry till she falls asleep. • Paula could try to limit Mary's sleep time to night-time. • Paula could put Mary to bed at the same time each night and allow her to cry until she falls asleep. • Paula could also try gradually increasing the amount of time it takes for her to respond to Mary's crying at bedtime.

On the whole, which set of strategies do you think would work best for Mary?
PLEASE TICK ONE ONLY.

List A Strategies

☐

List B Strategies

☐

How successful do you think **List A** would be if Paula used it to help Mary's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>					<i>Completely</i>				
1	2	3	4	5	6	7	8	9	10

How successful do you think **List B** would be if Paula used it to help Mary's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>					<i>Completely</i>				
1	2	3	4	5	6	7	8	9	10

Story 2

Please read Jane and Clare's story. Try to form a picture of what you think they are like. Keep Jane and Clare in mind as you answer the questions. You may read Jane and Clare's story as many times as you like.

Jane is 12 months old and lives with her parents. Her mother, Clare puts her to bed at night. However, Jane usually wakes three or four times during the night. When she wakes she will often cry for long periods of time.

We are interested in learning what you think are the possible causes of Jane's sleep difficulty. Please read the statements on the next page and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

For example, if you thought that it was 'likely' that Jane's sleep difficulty was because she didn't like the rain at night, you would complete the table like this:

<i>Jane has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
The rain at night	1	2	3	4	5

	<i>Jane has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
1	Health problems	1	2	3	4	5
2	Where Jane sleeps (e.g. dark/ light/ noisy/quiet place)	1	2	3	4	5
3	Her stage of development (e.g. the terrible 2s)	1	2	3	4	5
4	Clare's stress/worry	1	2	3	4	5
5	Hereditary (it probably runs in Jane's family)	1	2	3	4	5
6	Jane's diet/ eating habits	1	2	3	4	5
7	How Clare reacts to Jane's sleeping difficulties e.g. letting Jane sleep in her bed	1	2	3	4	5
8	Stress in the family because of Jane's difficulty sleeping	1	2	3	4	5
9	Clare's worries about Jane's safety during the night	1	2	3	4	5
10	Jane's nature/ temperament/ personality	1	2	3	4	5

Are there any others reasons that you think might explain Jane's sleep difficulty? Please write them in the box below.

How much do you believe that this could be the cause of Jane's sleep difficulty?

<i>Not at all</i>					<i>Completely</i>				
1	2	3	4	5	6	7	8	9	10

We are also interested in learning what you think might be the effect of Jane's sleep difficulty, and how long it might last. Please read the statements below and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

		Very unlikely	Unlikely	Equally likely	Likely	Very likely
11	Improvement in Jane's sleep is largely dependent on luck	1	2	3	4	5
12	Jane's difficulty sleeping will last a long time	1	2	3	4	5
13	How Clare reacts to Jane's sleep problem could be the difference between the problem getting better or worse.	1	2	3	4	5
14	Jane's difficulty sleeping has serious financial consequences	1	2	3	4	5
15	Using certain sleep strategies/ approaches will help Jane sleep better	1	2	3	4	5
16	Jane's sleeping difficulties strongly affect how Clare feels about her	1	2	3	4	5
17	Jane's sleeping difficulties are likely to be permanent rather than temporary	1	2	3	4	5
18	There is very little that can be done to improve Jane's sleep	1	2	3	4	5
19	Jane's sleep problem does not have much effect on her life at present	1	2	3	4	5
20	There is a lot that Clare can do to control Jane's sleep pattern	1	2	3	4	5
21	Jane's difficulty sleeping is easy for Clare to live with	1	2	3	4	5
22	Jane's difficulty sleeping will last a short time	1	2	3	4	5
23	Jane's sleeping difficulties have serious consequences for her life	1	2	3	4	5
24	Jane's difficulty sleeping will improve in time	1	2	3	4	5
25	Jane's sleeping difficulties strongly affects the way others see her	1	2	3	4	5
26	Jane's difficulty sleeping is a serious condition	1	2	3	4	5

We are also interested in how you think Clare should help Jane to sleep at night. List A and list B below describe a range of approaches that Clare could use to help Jane to sleep at night. Please read list a and list b carefully. It doesn't matter if you don't agree with every approach described in the option, just choose one list that you think would work best for Jane overall. Remember there are no right or wrong answers, and your answers are confidential.

List A	List B
<p>Clare could use at least one of the following approaches:</p> <ul style="list-style-type: none"> • Clare could soothe Jane and help her to fall asleep. • This could be done every time that Jane has difficulty getting to sleep. • Clare could cuddle or rock Jane in her arms, or sing her a lullaby or talk softly to her until she falls asleep. • Clare could also settle on the sofa with Jane or bring Jane into her bed to help her settle to sleep. Clare could react each time Jane has a difficulty with sleep. 	<p>Clare could use at least one of the following approaches:</p> <ul style="list-style-type: none"> • Clare could let Jane sleep on her own. • Clare could check on Jane's safety and then leave her to cry till she falls asleep. • Clare could try to limit Jane's sleep time to night-time. • Clare could put Jane to bed at the same time, in the same place each night and allow her to cry until she falls asleep. • Clare could also try gradually increasing the amount of time it takes for her to respond to Jane's crying at bedtime.

On the whole, which set of strategies do you think would work best for Jane?

PLEASE TICK ONE ONLY.

List A Strategies

☐

List B Strategies

☐

How successful do you think **List A** would be if Clare used it to help Jane's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>								<i>Completely</i>	
1	2	3	4	5	6	7	8	9	10

How successful do you think **List B** would be if Clare used it to help Jane's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>								<i>Completely</i>	
1	2	3	4	5	6	7	8	9	10

Story 3

Please read Fiona and Sarah's story. Try to form a picture of what you think they are like. Keep Fiona and Sarah in mind as you answer the questions. You may read Fiona and Sarah's story as many times as you like.

Fiona is 12 months old and lives with her parents. Her mother, Sarah, puts her to bed at night. However, Fiona is not tired at night-time and does not go to sleep at times when Sarah puts her to bed. Fiona usually falls asleep for long periods of time during the day.

We are interested in learning what you think are the possible causes of Fiona's sleep difficulty. Please read the statements on the next page and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

For example, if you thought that it was 'likely' that Fiona's sleep difficulty was because she didn't like the rain at night, you would complete the table like this:

<i>Fiona has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
The rain at night	1	2	3	4	5

	<i>Fiona has this sleep difficulty because of:</i>	Very unlikely	Unlikely	Equally likely	Likely	Very likely
1	Health problems	1	2	3	4	5
2	Where Fiona sleeps (e.g. dark/ light/ noisy/quiet)	1	2	3	4	5
3	Her stage of development (e.g. the terrible 2s)	1	2	3	4	5
4	Sarah's stress/worry	1	2	3	4	5
5	Hereditary (it probably runs in Fiona's family)	1	2	3	4	5
6	Fiona's diet/ eating habits	1	2	3	4	5
7	How Sarah reacts to Fiona's sleeping difficulties e.g. letting Fiona sleep in her bed	1	2	3	4	5
8	Stress in the family because of Fiona's difficulty sleeping	1	2	3	4	5
9	Sarah's worries about Fiona's safety during the night	1	2	3	4	5
10	Fiona's nature/ temperament/ personality	1	2	3	4	5

Are there any others reasons that you think might explain Fiona's sleep difficulty? Please write them in the box below.

How much do you believe that this could be the cause of Fiona's sleep difficulty?

<i>Not at all</i>					<i>Completely</i>				
1	2	3	4	5	6	7	8	9	10

We are also interested in learning what you think might be the effect of Fiona's sleep difficulty, and how long it might last. Please read the statements below and circle one response which represents how much you agree with each statement. Please answer all questions. There are no right or wrong answers and your answers will be confidential.

		Very unlikely	Unlikely	Equally likely	Likely	Very likely
11	Improvement in Fiona's sleep is largely dependent on luck	1	2	3	4	5
12	Fiona's difficulty sleeping will last a long time	1	2	3	4	5
13	How Sarah reacts to Fiona's sleep problem could be the difference between the problem getting better or worse.	1	2	3	4	5
14	Fiona's difficulty sleeping has serious financial consequences	1	2	3	4	5
15	Using certain sleep strategies/ approaches will help Fiona sleep better	1	2	3	4	5
16	Fiona's sleeping difficulties strongly affect how Sarah feels about her	1	2	3	4	5
17	Fiona's sleeping difficulties are likely to be permanent rather than temporary	1	2	3	4	5
18	There is very little that can be done to improve Fiona's sleep	1	2	3	4	5
19	Fiona's sleep problem does not have much effect on her life at present	1	2	3	4	5
20	There is a lot that Sarah can do to control Fiona's sleep pattern	1	2	3	4	5
21	Fiona's difficulty sleeping is easy for Sarah to live with	1	2	3	4	5
22	Fiona's difficulty sleeping will last a short time	1	2	3	4	5
23	Fiona's sleeping difficulties have serious consequences for her life	1	2	3	4	5
24	Fiona's difficulty sleeping will improve in time	1	2	3	4	5
25	Fiona's sleeping difficulties strongly affects the way others see her	1	2	3	4	5
26	Fiona's difficulty sleeping is a serious condition	1	2	3	4	5

We are also interested in how you think Sarah should help Fiona to sleep at night. List A and list B below describe a range of approaches that Sarah could use to help Fiona to sleep at night. Please read list a and list b carefully. It doesn't matter if you don't agree with every approach described in the option, just choose one list that you think would work best for Fiona overall. Remember there are no right or wrong answers, and your answers are confidential.

List A	List B
<p>Sarah could use at least one of the following approaches:</p> <ul style="list-style-type: none"> • Sarah could soothe Fiona and help her to fall asleep. • This could be done every time that Fiona has difficulty getting to sleep. • Sarah could cuddle or rock Fiona in her arms, or sing her a lullaby or talk softly to her until she falls asleep. • Sarah could also settle on the sofa with Fiona or bring Fiona into her bed to help her settle to sleep. Sarah could react each time Fiona has a difficulty with sleep. 	<p>Sarah could use at least one of the following approaches:</p> <ul style="list-style-type: none"> • Sarah could let Fiona sleep on her own. • Sarah could check on Fiona's safety and then leave her to cry till she falls asleep. • Sarah could try to limit Fiona's sleep time to night-time. • Sarah could put Fiona to bed at the same time each night and allow her to cry until she falls asleep. • Sarah could also try gradually increasing the amount of time it takes for her to respond to Fiona's crying at bedtime.

On the whole, which set of strategies do you think would work best for Fiona? PLEASE TICK ONE ONLY.

List A Strategies

☐

List B Strategies

☐

How successful do you think **List A** would be if Sarah used it to help Fiona's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>								<i>Completely</i>	
1	2	3	4	5	6	7	8	9	10

How successful do you think **List B** would be if Sarah used it to help Fiona's sleep difficulty? Use any number on the scale (from 1 to 10), with 1 being 'Not at all', and 10 being 'Completely'

<i>Not at all</i>								<i>Completely</i>	
1	2	3	4	5	6	7	8	9	10

Appendix 3.6 Participant Information Sheet



Participant Information Sheet



Title: The influence of maternal attributions and personality on recommendation and outcome expectancies of sleep interventions.

What do mothers believe that may be helpful to manage infants' sleep difficulties?

You are being invited to take part in a research study. This study is an educational study, for the purpose of a **Doctorate Course in Clinical Psychology**. Before you decide whether or not you wish to take part in this study, it is important for you to understand why the research is being done and what it will involve. Therefore, I am providing you with the following information. Please take time to read this information carefully and discuss it with others if you wish. Please ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. You do not have to make an immediate decision.

What is the purpose of the study?

The purpose of this study is to learn more about mothers' beliefs about infants sleep and what strategies they suggest could be used to help manage infants' sleep.

Why is the study important?

Settling and waking difficulties are extremely common among infants and young children. There is a range of advice available for mothers on how to manage infants' sleep. However, it is important to learn more about mothers' own beliefs about infant sleep and what may help. The findings of this study may help improve our understanding of what approaches are helpful to manage infant sleep.

Why have I been chosen?

You have been chosen to take part in this study because we are interested in gathering information from mothers who have infants aged between 6 and 36 months old.

Do I have to take part?

It is up to you to decide whether or not to take part in this study. If you decide to take part you will be given this information sheet to keep. If you agree to take part you are still free to stop completing questions at any time and you do not have to give a reason. If you decide not to take part, it will not make a difference to the support groups you attend for mothers and infants or any help you receive from health professionals.

What will happen to me if I take part?

If you agree to take part in the study, your participation will involve reading three short descriptions of infant sleep difficulties and answering a number of questions about each child's sleep difficulties and what approach towards sleep you would recommend to the mother of each child to use. You will also be asked some questions about how you cope with difficulties and about your general levels of worry. The questionnaires will be anonymous and will be stored in a secure setting. Your identity will remain unknown to others; no-one will be able to tell that you have answered the questions. You do not have to answer questions that you are not comfortable with.

What do I have to do?

If you agree to be part of this study, you will be asked to read and complete the questionnaire which all should take approximately 20 minutes. You will be provided with a free-post envelope and asked to return the questionnaires to the researcher by post. Alternatively, you may return hand completed questionnaires to your group leader in the envelope provided. Completed questionnaires will be anonymous and collected from the group leader by the researcher.

Will the information that I give be kept confidential?

Yes. Any information given will be kept strictly confidential. Your identity will remain unknown to others and all questionnaires completed and information used in the write up of this study shall remain anonymous. All questionnaires will be stored securely and destroyed on completion of the research in line with the Data Protection Act of 1998. The storage of completed interviews will be kept in a manner that does not identify you in any direct way. Data obtained during this study may be looked at by responsible individuals from the Health Promotion Department, from regulatory authorities or from the NHS trust, to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and nothing that could reveal your identity will be disclosed.

What will happen if I don't want to carry on with the research?

If you change your mind about taking part in this study you do not have to complete and return the questionnaire to the researcher.

What are the potential benefits of taking part?

The study will not help you personally, but the information I get will help us to get a greater understanding of what factors influence mothers' use of sleep strategies for infant sleep. This may provide further information about how sleep strategies we suggest can be improved. This may help reduce levels of stress for parents and allow children to sleep better.

What are the possible disadvantages and risks of taking part?

There are no real risks to taking part in the study. However, completing this questionnaire may potentially lead to questions or concerns about your infant's sleep. Therefore, a list of sources of support and helpline numbers will be provided for you if you require any additional help and support. You are free to change your mind about completing this questionnaire at any time during the study.

Who is supervising this study?

My research supervisor, Dr Kenneth MacMahon, who works for the University of Glasgow, will supervise me.

What if there is a problem?

If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, you can contact my supervisor, Dr Kenneth MacMahon at the University of Glasgow (Tel: 0141 232 7700), who will be able to advise you on the appropriate complaints procedure, should you wish to use this.

What will happen to the results of the research study?

The results of this study will be given to the University of Glasgow as part of an educational research project required for completion of a Doctorate in Clinical Psychology course that the researcher is involved in. It is intended to publish these results in the relevant psychology journals and make them available in the University library. You will not be identifiable in any publications and the information you have given is entirely anonymous, ensuring that your identity will remain unknown to others. A written summary of the results will be given to you by the researcher if you so request. You can request a copy of the results from your Health Visitor or Group Leader or you can request a summary of the findings via the researcher's email.

Who is reviewing and paying for this study?

This study is being funded through the University of Glasgow and has been reviewed by a Research Ethics Committee. The committee has approved the research.

Where do I get more Information?

If you require further information please do not hesitate to contact:

Ann-Marie Wall

Trainee Clinical Psychologist,

Psychological Medicine

University of Glasgow

Gartnavel Royal Hospital

Glasgow G12 OXH

Email annmarie.wall@student.gla.ac.uk

Telephone number 07521057020

Or Dr. Kenneth McMahon

Clinical Psychologist,

University of Glasgow Sleep Centre

Southern General Hospital

1345 Govan Road

Glasgow G51 4TF

Email k.macmahon@nhs.net

Telephone number 0141 232 7566

Thank you for taking time to read this sheet.