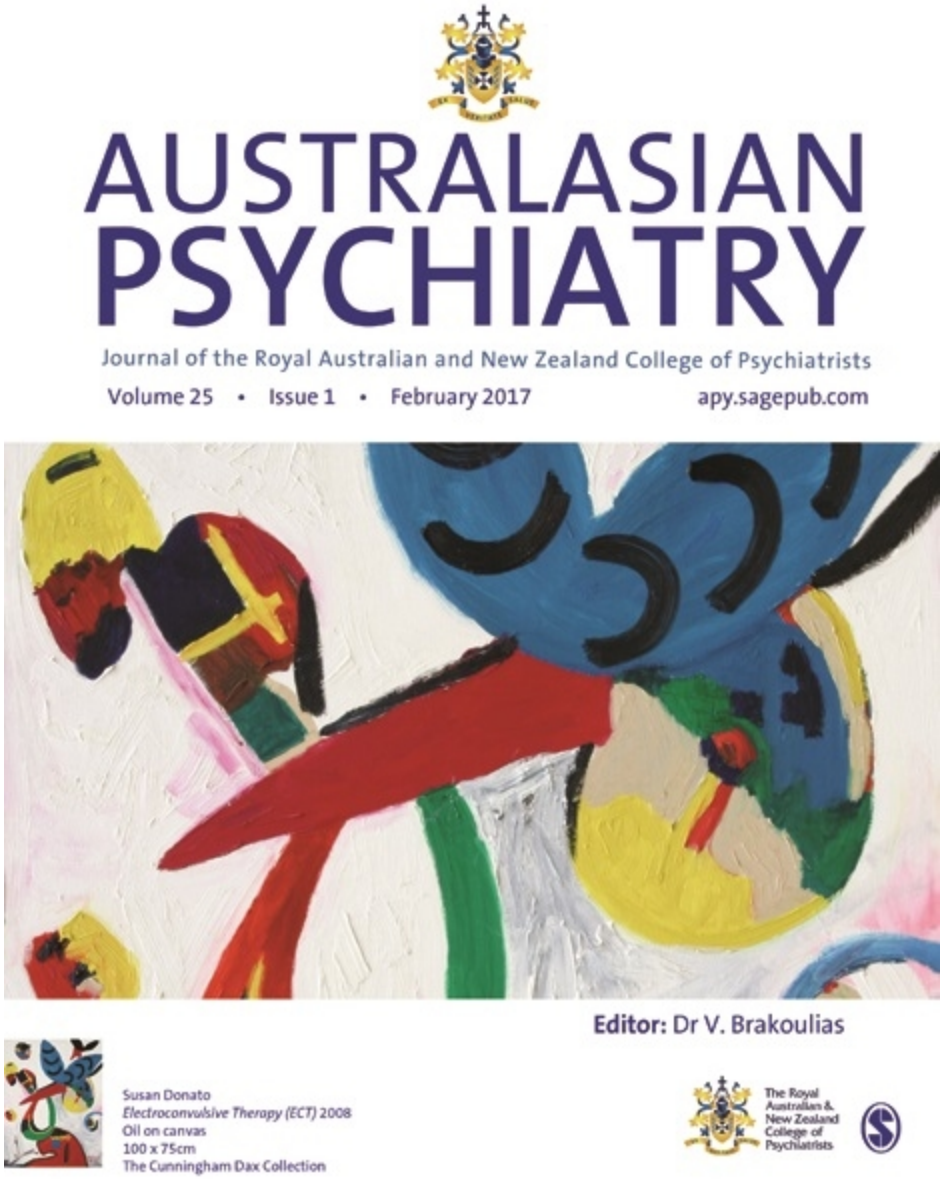


# Maternal Depression and Early Parenting: A Comparison between Culturally and Linguistically Diverse and Australian born Mothers



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**Abstract**

Objective: To examine if there are differences in women from culturally and linguistically diverse (CaLD) backgrounds in the risk of perinatal depression, parenting stress and infant sleep practices.

Method: This study utilises data obtained from 487 pregnant women within Mercy Pregnancy and Emotional Wellbeing Study, including 52 CaLD women and a comparison of 435 women. Depression was measured using the Structured Clinical Interview for DSM-IV and the Edinburgh Postnatal Depression Scale. Parenting Stress Inventory, infant sleep measures.

Results: This study found no difference between CaLD and non-CaLD women for depression or depressive symptoms. At 6 months postpartum, more mothers in the CaLD group were bed sharing with their infant during the night. Finally, we found a significant association between bed sharing at 6 months postpartum and parenting stress for women who were not CaLD, whereas for CaLD women there was no association between bed sharing and parenting stress.

Conclusions: This suggests both differences in infant sleep parenting practices and in parenting stress but not general emotional wellbeing. Future research is required to replicate these findings.

**Keywords**

Depression; Pregnancy; Infant; Sleep; Culture

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## Background

Many recent migrants to Australia are women of childbearing age. Previous studies have reported an increased prevalence of maternal mental disorders among migrant mothers from Culturally and Linguistically diverse (CaLD) backgrounds compared to their non-CaLD counterparts [1-3]. However, other studies have reported similar or improved maternal mental health amongst migrant women when compared to native born mothers [3, 4]. However, given the growing evidence base supporting detrimental associations between maternal emotional disorders and outcomes relating to pregnancy, birth, infant development, and attachment [5] along with the reduced likelihood of immigrant mothers accessing mental health care [6], hence broadening our understanding of the relationship between CaLD status and maternal mental health is worthwhile.

A particular area of interest is the relationship between perinatal depression, parenting stress and infant sleep. These are complex factors, with infant sleep and settling practices rooted in a sociocultural context and the majority of studies examining infant sleep, depression and parenting stress have not been undertaken in culturally diverse populations or included cultural practices as a co-variate within their reported results [7, 8].

The primary aim of this study is to compare depression and parenting stress in mothers from CaLD and Australian-born 'non-CaLD' backgrounds during pregnancy and the first year after birth. The secondary aim is to investigate the relationship between maternal depression, parenting stress and early parenting practices for infant sleep and settling, both within and between groups.

## Methods

### Sample

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This study draws on 487 participants recruited less than 20 weeks of pregnancy in Melbourne, Australia within the Mercy Pregnancy Emotional Wellbeing Study (MPEWS), a prospective pregnancy cohort study [9]. Eligibility required proficiency in English.

Data collection for the MPEWS study occurred over five time points across pregnancy and the first-year post-partum and further details are contained in the published study protocol [9]. The original study was approved by the Human Research Ethics Committee prior to its undertaking and all participants provided written informed consent to take part.

**Measures**

***Cultural and Linguistic Diversity***

Cultural and linguistic diversity (CaLD) was defined as being born overseas and possessing a primary language other than English. Self-identified ethnicity was recorded according to the Australian Bureau of Statistics classification for broad cultural and ethnic groups.

***Maternal depression***

The SCID-IV-TR for Mental Disorders 4th Edition (mood modules) was administered to all participants at recruitment [10]. The Edinburgh Postnatal Depression Scale (EPDS) and the State and Trait Anxiety Inventory, state anxiety subscale (STAI-S) were used to measure self-reported dsymptoms over the four time points in the perinatal period [11, 12] .

***Parenting stress***

The Parenting Stress Index, Short Form (PSI) was used at 6 and 12 months postpartum[13]. The PSI has been validated across diverse cultures and language groups [14].

***Infant sleep***

Infant sleep arrangement was categorised according to the location in which mothers "usually" put infants to sleep night. The categories included '*own room*' '*same room'* and





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'*same surface'*. Bed sharing is used synonymously with 'same surface' in this paper. To avoid confusion, the term co-sleeping has been avoided as it can be used to describe both room, and bed-sharing.

The Parental Interactive Bedtime Behaviour Scale (PIBBS) was used to measure types and frequency of parenting practices used to settle infants to sleep [15].

Three items from the Maternal Cognitions about Infant Sleep Questionnaire (MCIS), [16] were administered at 6 and 12 months postpartum. These three items were "It is alright to let my child cry at night", "My child will feel abandoned if I don't respond immediately" and "I should respond straight away when my child wakes crying at night" on a 6-point Likert scale (0 = strongly agree, 5 = strongly disagree). The MCIS has been validated for cross cultural use [17].

**Statistical Analyses**

Statistical analyses were conducted using SPSS version 24. To address the first research question, three split-plot analysis of covariance (SPANCOVA) tests were conducted. For the second research question, chi-square tests for categorical outcomes and univariate analysis of variance (ANOVA) tests for continuous outcomes were used to examine differences. To assess whether CaLD status moderated the association between infant sleep practices and maternal mental health, a series of linear regressions were estimated to model the interactions. As breastfeeding is a commonly cited reason for bed-sharing [18], this was included as a covariate in the multiple regression models. Overall, the withdrawal rate for this cohort is less than 5%, and there was a high rate of completion (> 90%) up to wave 5. For all analyses, missing data were handled using case-wise removal.

## Results

**Participant Characteristics**

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Demographic characteristics of the participants are summarised in Table 1. The overall cohort were women from Oceanic/European ($n$ = 426), Asian ($n$ = 47) and Middle Eastern ($n$ = 8) regions. Four women within this sample were Aboriginal and/or Torres Strait Islanders. In total, 52 women were identified as being culturally and linguistically diverse with Oceanic ($n$ = 20), Asian ($n$ = 29), and Middle Eastern ($n$ = 3) regions represented in the CaLD group.

**Maternal mental health and CaLD status**

Women who met diagnostic criteria for depression accounted for 18.5% of the sample (90/487). There were fewer CaLD mothers who met criteria for depression at recruitment ($n$ = 3/52, 5.8%) compared to non-CaLD mothers ($n$ = 87/435, 20.0%), $\chi^2$ ($N$ = 485, $df$ = 1) = 6.30, $p$ < .012. Figure 1 displays estimated marginal means from the three separate SPANCOVA models and demonstrate that maternal perinatal mental health trajectories were relatively similar for women in the CaLD and women in the non-CaLD groups.

**Infant sleep practices and CaLD Status**

Figure 2(a) displays infant sleep arrangements (i.e., room and bed sharing) proportions by CaLD groups at 6 and 12 months postpartum. There were significant differences in sleep arrangements at 6 months between CaLD groups (Fisher's exact $\chi^2$ [$N$ = 330] = 11.37, $p$ = .003). One-quarter (25%) of CaLD mothers shared a sleep surface with their infant at 6 months postpartum, compared to 11% of mothers from non-CaLD backgrounds ($p$ < .05). While similar patterns were observed at 12 months postpartum, there were no significant differences in proportions between CaLD groups, $\chi^2$ ($N$ = 330, $df$ = 1) = 5.32, $p$ = .060.

Figure 2(b) displays maternal infant sleep cognitions reported at 6 and 12 months postpartum by CaLD group. Both CaLD and non-CaLD mothers recorded high mean scores for cognitions (MCIS) relating to their responsiveness to infant cues at sleep times at 6 and 12 months postpartum.

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Figure 2(c) displays maternal infant bedtime settling behaviours reported at 12 months postpartum by CaLD groups. Only average PIBBS social comforting scores varied significantly between CaLD and non-CaLD mothers ($F$[1,341] = 13.06, $p$ = < .001, $\eta^2$ = .037), such that CaLD women reported using methods such as talking, singing, and reading stories to baby, and playing with baby to settle them off to sleep more than non-CaLD women.

**Infant sleep practices and CaLD status predicting maternal mental health**

Table 2 displays the descriptive data and bivariate Pearson's correlations for all variables included in the regression models.

Table 3 presents the results of the final multiple regression models to also address the second aim. CaLD was not a moderator of the associations between any infant sleep practice, cognition, or behaviour with depressive and anxious symptoms. For parenting stress at 12 months postpartum, however, there was a significant interaction between surface sharing at 6 months postpartum and CaLD ($p$ = .047). Figure 3 illustrates the pattern of this interaction. For the non-CaLD group, parenting stress at 12 months postpartum was significantly higher in mothers who reported surface sharing compared to mothers who reported no surface sharing at 6 months postpartum ($b$ = 7.92, $p$ = .011). Conversely, surface sharing at 6 months in the CaLD group was not significantly associated with parenting stress at 12 months postpartum ($b$ = -2.39, $p$ = .570).

## Discussion

Our study found that perinatal mental health symptoms were relatively stable for Australian women identified as CaLD and were not different when compared to women who were not identified as CaLD within this sample. At 6 months, more mothers in the CaLD group were sharing the same sleep surface with their infant during the night, when compared to mothers in the non-CaLD group. Women in the CaLD group also reported significantly



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more time spent settling their infants to sleep at night using social comforting behaviours, compared to women in the non-CaLD group. Finally, we found that CaLD status buffered the negative association between surface sharing at 6 months postpartum and parenting stress at 12 months postpartum, such that the significant positive association observed for the non-CaLD group was not found for women in the CaLD group.

The non-significant finding of lower parenting stress scores for CaLD mothers who bed-shared with their infant was an interesting observation as it raises the question of whether infant sleep practices, when more closely aligned with maternal cultural norms, might offer some protective effect on maternal emotional wellbeing. A study examining child and maternal sleep problems found that the degree to which mothers perceived infant awakenings as problematic when bed (or room) sharing differed depending on how the practice fit with maternal cultural beliefs and practices relating to infant sleep [19]. Perhaps even more than the practice itself, is a mother's sense of connection to culture through such practices that contributes to her emotional wellbeing [20].

**Limitations**

Whilst the study was adequately powered to detect true variance in maternal mental health and sleep outcomes between groups, our small sample size may contribute to imprecision in the predictions. As mentioned above, the relative homogeneity in demographics (in terms of education, income, relationship stability, fluency in English, being able to access an antenatal service - all of which could be considered social determinants of mental health) might have introduced bias toward a healthier group overall, missing those further along the social gradient of health. Measures of infant sleep were maternal report, another potential source of bias, although all measures have been used across diverse populations in previous studies..

**Conclusion**



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The comparable mental health outcomes between culturally diverse and Australian-born mothers, if confirmed with a more definitive study, would contribute to a broader understanding of CaLD women's strengths and resilience relating to their transition into motherhood.

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## References


1. Navodani T, Gartland D, Brown SJ, et al. Common maternal health problems among Australian-born and migrant women: A prospective cohort study. *PLoS One* 2019; 14: e0211685. 2019/02/12. DOI: 10.1371/journal.pone.0211685.
2. Fellmeth G, Fazel M and Plugge E. Migration and perinatal mental health in women from low- and middle-income countries: a systematic review and meta-analysis. *BJOG* 2017; 124: 742-752. 2016/06/21. DOI: 10.1111/1471-0528.14184.
3. Anderson FM, Hatch SL, Comacchio C, et al. Prevalence and risk of mental disorders in the perinatal period among migrant women: a systematic review and meta-analysis. *Arch Womens Ment Health* 2017; 20: 449-462. 2017/04/09. DOI: 10.1007/s00737-017-0723-z.
4. Collins CH, Zimmerman C and Howard LM. Refugee, asylum seeker, immigrant women and postnatal depression: rates and risk factors. *Arch Womens Ment Health* 2011; 14: 3-11. 2010/12/15. DOI: 10.1007/s00737-010-0198-7.
5. Deave T, Heron J, Evans J, et al. The impact of maternal depression in pregnancy on early child development. *BJOG* 2008; 115: 1043-1051. 2008/07/25. DOI: BJO1752 [pii] 10.1111/j.1471-0528.2008.01752.x.
6. Moore L, Jayaweera H, Redshaw M, et al. Migration, ethnicity and mental health: evidence from mothers participating in the Millennium Cohort Study. *Public Health* 2019; 171: 66-75. 2019/05/20. DOI: 10.1016/j.puhe.2019.03.022.
7. Giannotti F and Cortesi F. Family and cultural influences on sleep development. *Child Adolesc Psychiatr Clin N Am* 2009; 18: 849-861. 2009/10/20. DOI: 10.1016/j.chc.2009.04.003.
8. Mindell JA, Sadeh A, Wiegand B, et al. Cross-cultural differences in infant and toddler sleep. *Sleep Med* 2010; 11: 274-280. 2010/02/09. DOI: 10.1016/j.sleep.2009.04.012.
9. Galbally M, van IM, Permezel M, et al. Mercy Pregnancy and Emotional Well-being Study (MPEWS): Understanding maternal mental health, fetal programming and child development. Study design and cohort profile. *Int J Methods Psychiatr Res* 2017; 26 2017/01/26. DOI: 10.1002/mpr.1558.
10. First MB. Structured clinical interview for the DSM (SCID). *The encyclopedia of clinical psychology* 2014: 1-6.
11. Cox JL, Holden JM and Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry* 1987; 150: 782-786. 1987/06/01.
12. Spielberger CD. State-Trait anxiety inventory. *The Corsini encyclopedia of psychology* 2010: 1-1.
13. Abidin RR. Parenting Stress Index: a measure of the parent–child system. 1997.
14. Barroso NE, Hungerford GM, Garcia D, et al. Psychometric properties of the Parenting Stress Index-Short Form (PSI-SF) in a high-risk sample of mothers and their infants. *Psychological assessment* 2016; 28: 1331.
15. Morrell J and Cortina-Borja M. 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 and Child Development: An International Journal of Research and Practice* 2002; 11: 17-41.
16. Morrell JM. The role of maternal cognitions in infant sleep problems as assessed by a new instrument, the maternal cognitions about infant sleep questionnaire. *J Child Psychol Psychiatry* 1999; 40: 247-258. 1999/04/03.
17. Tikotzky L and Shaashua L. Infant sleep and early parental sleep-related cognitions predict sleep in pre-school children. *Sleep Med* 2012; 13: 185-192. 2011/12/06. DOI: 10.1016/j.sleep.2011.07.013.


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18. Ball HL. Reasons to bed-share: why parents sleep with their infants. *Journal of reproductive and infant psychology* 2002; 20: 207-221.
19. Mindell JA, Sadeh A, Kwon R, et al. Relationship Between Child and Maternal Sleep: A Developmental and Cross-Cultural Comparison. *J Pediatr Psychol* 2015; 40: 689-696. 2015/03/10. DOI: 10.1093/jpepsy/jsv008.
20. Jenni OG and O'Connor BB. Children's sleep: an interplay between culture and biology. *Pediatrics* 2005; 115: 204-216. 2005/05/04. DOI: 10.1542/peds.2004-0815B.

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**Table 1.** Demographic characteristics of participants by CaLD groups.

| Characteristic | CaLD ($n$ = 52) | Non-CaLD ($n$ = 435) | $p$-value |
|---|---|---|---|
| Age, years, mean (SD) | 32.3 (4.1) | 31.8 (4.8) | .533 |
| Nulliparous mothers, n (%) | 43 (82.7) | 358 (82.9) | .974 |
| University Educated, n (%) | 46 (88.5) | 286 (67.5) | .001 |
| *Employed, n (%)* | | | .028^ |
| Full time | 35 (68.6) | 265 (63.2) | |
| Part-time | 7 (13.7)$_a$ | 118 (28.2)$_b$ | |
| Unemployed | 5 (9.8)$_a$ | 13 (3.1)$_b$ | |
| Full-time home duties | 2 (3.9) | 14 (3.3) | |
| Student | 2 (3.9) | 9 (2.1) | |
| Married, De Facto, or otherwise stable relationship, n (%) | 49 (98.0) | 395 (96.6) | 1.000^ |

^ Fishers Exact test used die to expected cell counts less than 5.
a,b Cell proportions differ significantly using pairwise comparison at $p < .05$

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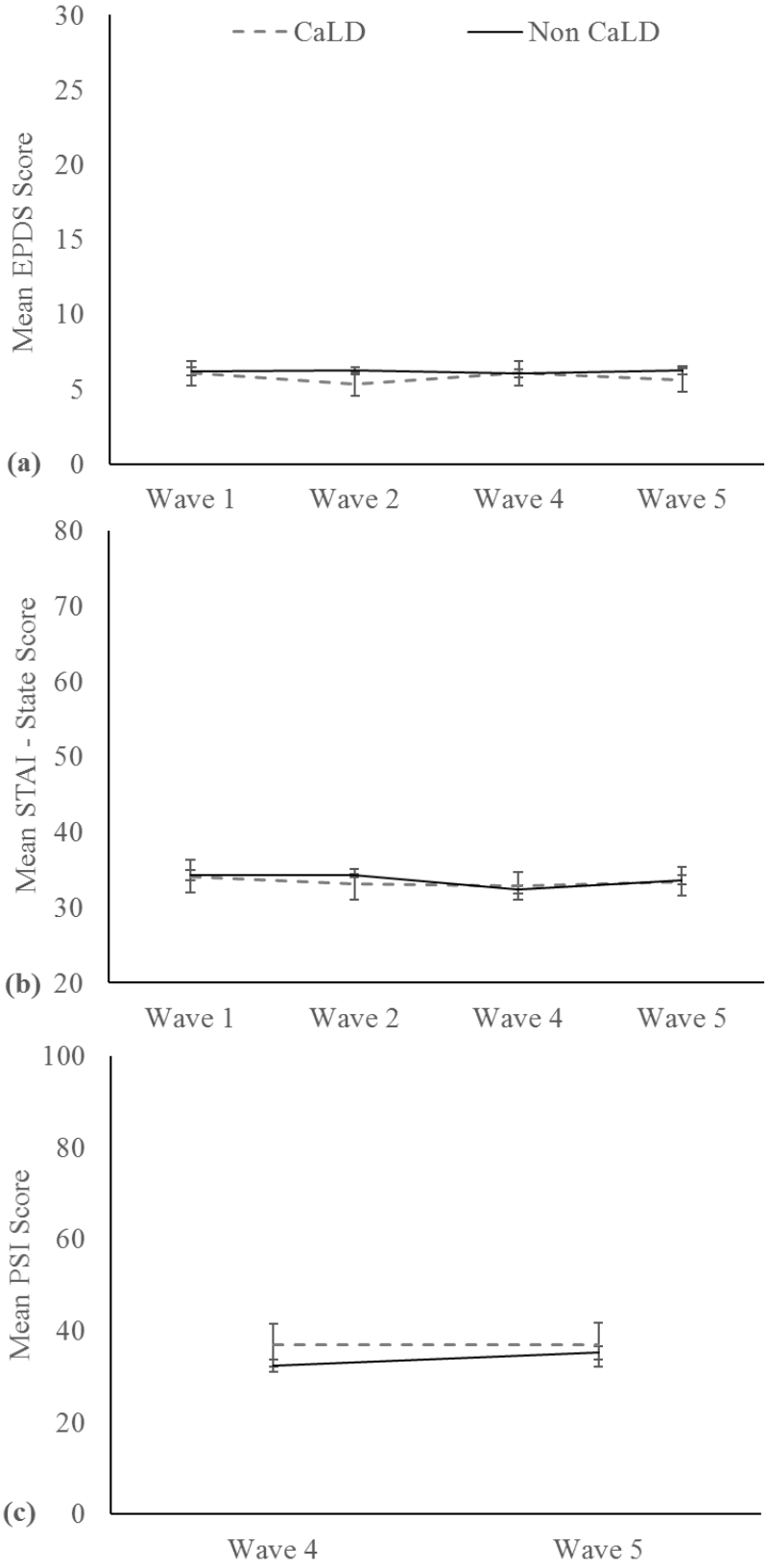


***Figure 1.*** Estimated marginal means for **(a)** depressive symptoms and **(b)** state anxiety symptoms across the perinatal period, and **(c)** parenting stress in the postpartum, for CaLD and non-CaLD groups. Error bars represented standard error of the estimated marginal means.
EPDS: Edinburgh Postnatal Depression Scale; STAI-S: State-Trait Anxiety Inventory, State Scale; PSI: Parenting Stress Index; Wave 1: Early Pregnancy; Wave 2: Third Trimester; Wave 4: 6 Months Postpartum; Wave 5: 12 Months Postpartum.

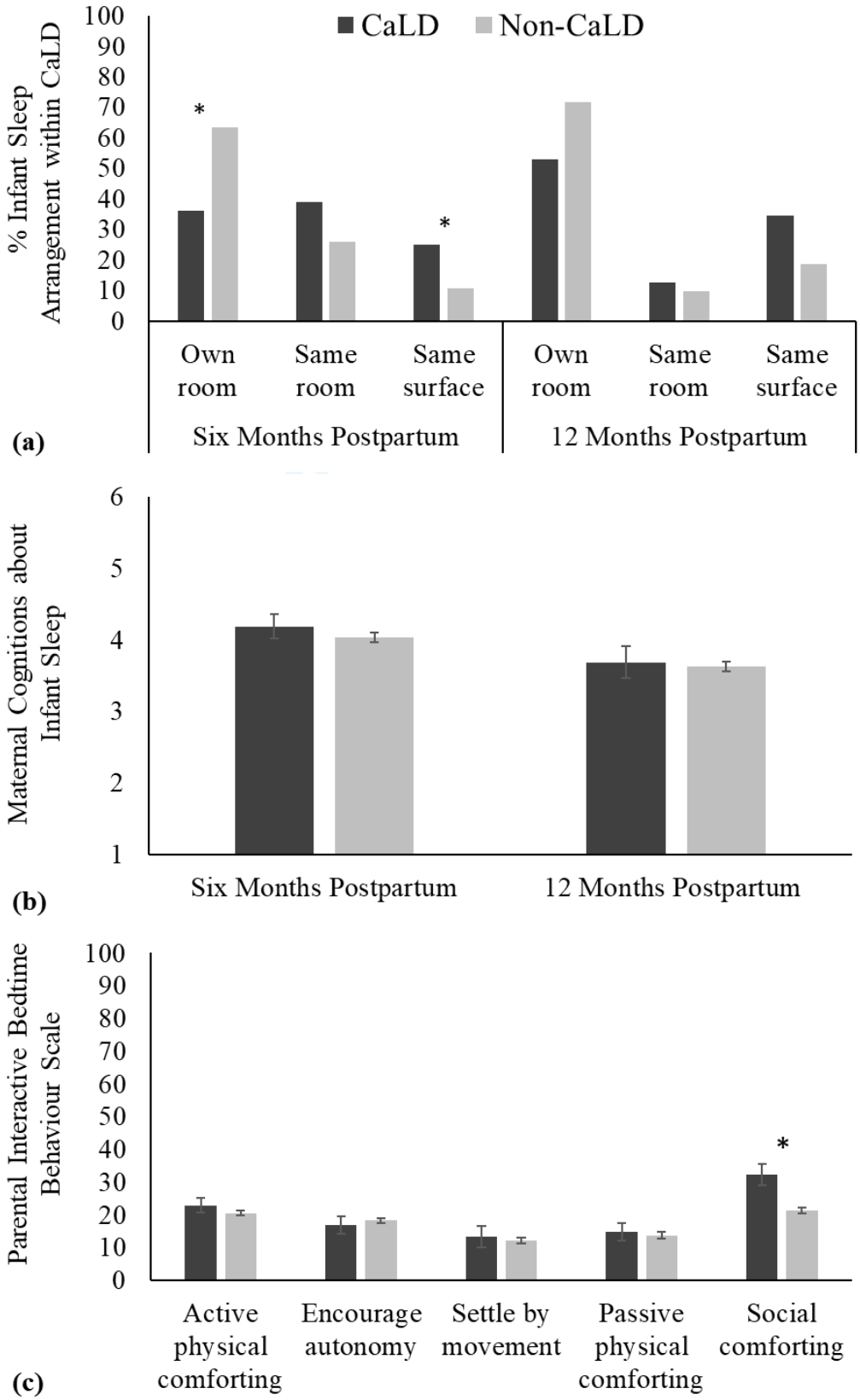


***Figure 2***. **(a)** Infant sleep arrangements at 6 and 12 months postpartum by CaLD Status.
**(b)** Maternal cognitions about infant sleep at 6 and 12 months postpartum between CaLD status.
**(c)** Maternal infant bedtime settling behaviours at 12 months postpartum between CaLD status.
* $p < .05$

**Table 2.** Zero-order bivariate correlation between all women, infant sleep practices, and maternal mental health at six and 12 months postpartum.

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CaLD | - | | | | | | | | | | | | | | | |
| 2 | STAIS, 6mo pp | -.01 | - | | | | | | | | | | | | | | |
| 3 | STAIS, 12mo pp | -.03 | -.56** | - | | | | | | | | | | | | | |
| 4 | EPDS, 6mo pp | -.01 | .76** | .53** | - | | | | | | | | | | | | |
| 5 | EPDS, 12mo pp | -.05 | .54** | .77** | .63** | - | | | | | | | | | | | |
| 6 | PSI, 6mo pp | .01 | .51** | .39** | .56** | .35** | - | | | | | | | | | | |
| 7 | PSI, 12mo pp | .01 | .48** | .53** | .504** | .45** | .67** | - | | | | | | | | | |
| 8 | Same surface, 6mo pp | .13* | .01 | .02 | .04 | -.01 | .03 | .11 | - | | | | | | | | |
| 9 | Same surface, 12mo pp | .12* | .05 | .11 | .04 | .09 | .03 | .16** | .52** | - | | | | | | | |
| 10 | MCIS, 6mo pp | .04 | .06 | .14* | .05 | .13* | .11* | .09 | .23** | .24** | - | | | | | | |
| 11 | MCIS, 12mo pp | .02 | -.02 | .11* | -.01 | .09 | .06 | .11* | .33** | .35** | .64** | - | | | | | |
| 12 | PIBBS - Active physical comforting, 12mo | .05 | .15** | .14** | .18** | .15** | .09 | .19** | .20** | .32** | .21** | .18** | - | | | | |
| 13 | PIBBS – Encourage autonomy, 12mo pp | -.03 | .05 | .06 | .06 | .07 | .03 | .05 | -.24** | -.11 | -.15** | -.25** | .03 | - | | | |
| 14 | PIBBS – Settle by movement, 12mo pp | .02 | .12* | .02 | .03 | .00 | .03 | .13* | .12* | .20** | .14** | .11* | .24** | .03 | - | | |
| 15 | PIBBS – Passive physical comforting, 12m | .02 | .06 | .09 | .11 | .12* | .06 | .07 | -.05 | -.03 | .01 | -.02 | .35** | .15** | .16** | - | |
| 16 | PIBBS – Social comforting, 12mo pp | .19** | .11 | .12* | .10 | .13* | .06 | .16** | .13* | .16** | .18** | .18** | .33** | .17** | .12* | .18** | - |
| Mean | | - | 32.59 | 33.73 | 6.33 | 6.53 | 33.37 | 36.00 | - | - | 4.05 | 3.64 | 20.76 | 18.19 | 12.28 | 13.82 | 22.48 |
| Std Dev | | - | 9.87 | 10.25 | 4.88 | 4.72 | 22.75 | 23.98 | - | - | 1.26 | 1.29 | 14.11 | 14.03 | 17.70 | 16.99 | 16.31 |
| Observed range | | 1, 0 | 20.00, 76.00 | 20.00, 72.00 | .00, 27.00 | .00, 25.00 | 1.00, 98.00 | 1.00, 99.00 | 1, 0 | 1, 0 | 1.00, 6.00 | 1.00, 6.00 | .00, 66.67 | .00, 66.67 | .00, 75.00 | .00, 75.00 | .00, 62.50 |

STAIS, State Trait Anxiety Inventory - State; EPDS, Edinburgh Postnatal Depression Scale; PSI, Parenting Stress Index; MCIS, Maternal Cognitions about Infant Sleep Questionnaire; PIBBS, Parental Interactive Bedtime Behaviour Scale; mo, months; pp, postpartum.

*p < .05, **p < .01 ***p < .001

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**Table 3.** Results of the multiple regression models predicting maternal mental health at 12 months postpartum, interactions between infant sleep variables (sleeping arrangements, and maternal infant sleep cognitions and behaviours) by CaLD groups.

| | EPDS at 12 months pp | | | STAI-State at 12 months pp | | | PSI at 12 months pp | | |
|---|---|---|---|---|---|---|---|---|---|
| Predictor | *B* | *SE* | β | *B* | *SE* | β | *B* | *SE* | β |
| Intercept | 6.29 | 1.17 | | 33.20 | 0.63 | | 36.08 | 1.27 | |
| CaLD | -1.20 | 0.85 | -0.08 | -0.51 | 1.76 | -0.02 | -2.68 | 2.91 | -0.03 |
| Surface sharing at 6 months pp | -0.51 | 0.57 | -0.04 | 0.94 | 1.5 | 0.03 | **7.92**** | 3.12 | 0.11 |
| MCIS at 6 months pp | **.39*** | 0.17 | 0.11 | **0.89*** | 0.43 | 0.11 | -0.17 | 0.82 | -0.01 |
| PIBBS SC at 12 months pp | 0.02 | 0.02 | 0.09 | 0.04 | 0.04 | 0.07 | **0.15*** | 0.08 | 0.11 |
| Surface sharing*CaLD | 1.43 | 1.48 | 0.05 | -3.21 | 2.82 | -0.05 | **-10.31*** | 5.19 | -0.07 |
| MCIS*CaLD | 0.44 | 0.69 | 0.03 | 1.56 | 1.26 | 0.05 | 0.36 | 2.38 | 0.01 |
| PIBBS SC*CaLD | 0.01 | 0.03 | 0.01 | 0.04 | 0.07 | 0.03 | 0.07 | 0.13 | 0.02 |
| $R^2$ | .41*** | | | .33*** | | | .49*** | | |

*Note.* All models adjusted for breastfeeding cessation and respective maternal mental health symptoms at 6 months.
MCIS, Maternal Cognitions about Infant Sleep Questionnaire; PIBBS SC, Parental Interactive Bedtime Behaviour Scale - Social Comforting subscale
* p < .05, ** p < .01 *** p < .001

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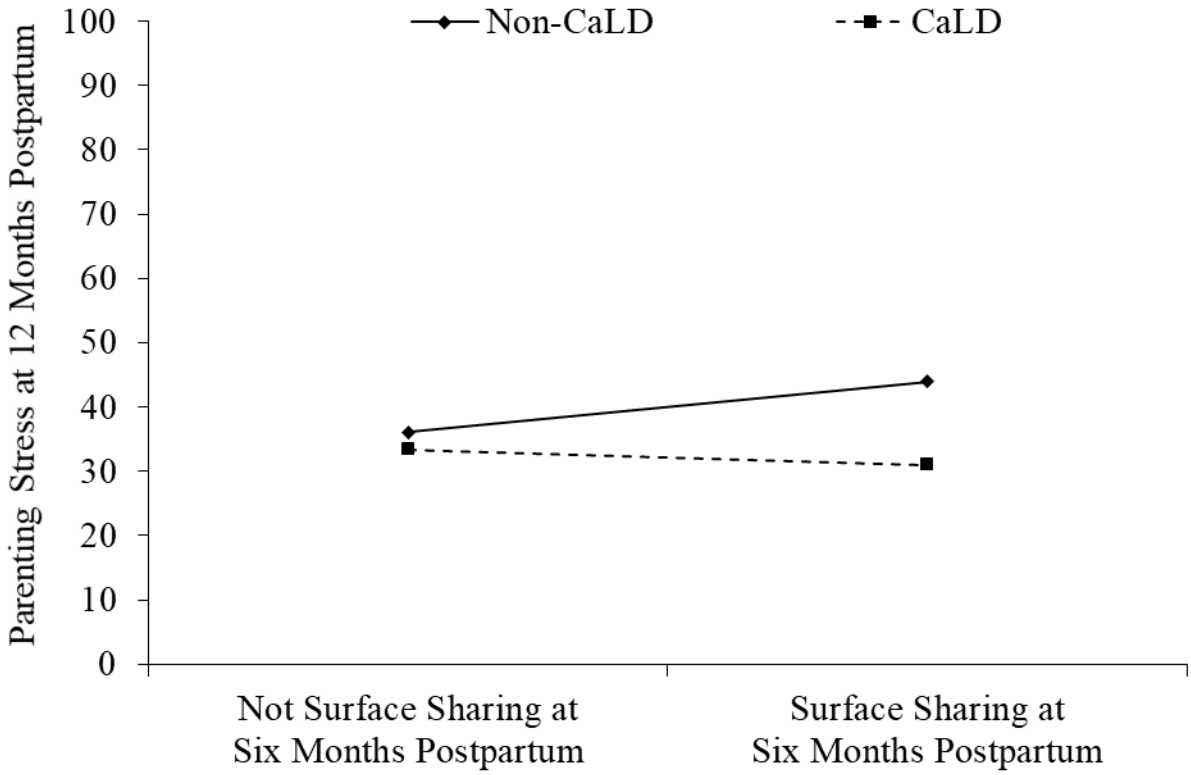


***Figure 3.*** Simple slopes depicting the pattern of the significant interaction between surface sharing at 6 months and CaLD on parenting Stress at 12 months postpartum.

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