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Doctor of Clinical Psychology (DClinPsy)

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Word Count by Component

Research Component	Word Count
1. Systematic Review of the Literature (SRL)	6901
2. Service Improvement Project (SIP)	4982
3. Theoretically Driven Research Project (TDRP)	4989
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Systematic Review of the Literature

Background: In the three decades since the World Health Organisation advised member nations to introduce Universal Newborn Hearing Screening Programmes, early identification and intervention programmes are now commonplace. However, diagnoses of hearing loss in infants still require significant adjustment for families, as over 90% of children with hearing loss are born to hearing parents.

Objective: To review research findings of parental psychological wellbeing and coping resources in the early years of their deaf/hard of hearing child's (cDHH) life.

Method: A systematic search of five databases (PsychINFO, Medline, CINAHL, Embase, and Central) was conducted to identify studies investigating psychosocial factors in parents of young cDHH (from infancy up to age six). Following screening, data on parents' experiences and variables impacting parent outcomes were synthesised.

Results and Conclusions: Eighteen studies met inclusion criteria. Findings were organised, based on variables assessed, into three main categories: 1) parenting stress, 2) parental mental health and wellbeing, and 3) parental adjustment and coping resources. Families of infants diagnosed with hearing loss do not universally experience poorer wellbeing, though some variability by populations and outcomes are observed. The limited evidence of protective coping resources (such as social support and parent's appraisals of their lives) and access to early intervention programmes may explain some of the variability in findings but more research utilising different study designs are necessary. Implications are discussed.

Service Improvement Project

Purpose: In Berkshire Talking Therapies (BTT), perinatal clients form a small minority of overall clients, and male perinatal clients an even smaller proportion. However, those who engage tend to have favourable recovery rates. This study therefore aimed to investigate barriers and facilitators to accessing and engaging with BTT support for perinatal clients, including male perinatal clients.

Methods: A mixed-methods approach was used across two phases to: 1) quantitatively assess patterns of access and engagement, and 2) explore perceptions of factors that fostered or hindered these. Phase 2 was completed in two parts. In part one all perinatal clients were invited to complete a survey (*n*=17) and part two used interviews to explore the specific experiences of male perinatal clients (*n*=5).

Outcomes: Perinatal clients were more likely than not to complete treatment. There were statistically significant gender differences in treatment completion across stepped care interventions. Referral source and final referral destination did not alter patterns of engagement. Qualitative data indicated the importance of early engagement. Survey and interview themes highlighted increased flexibility and attuned therapy delivery as significant facilitators, with lack of awareness, stigma and burdensome processes key barriers.

Implications: Increasing these facilitators and addressing barriers could improve numbers of perinatal clients accessing and successfully engaging in BTT support. NHS Talking Therapies services, such as BTT, are key primary care providers for perinatal clients, particularly male perinatal clients who have been historically excluded and overlooked in healthcare service.

Theory Driven Research Project

Background: Postnatal anxiety is under-studied in comparison to postnatal depression, yet evidence suggests it can influence caregiving behaviours, such as responding less sensitively to infant cues. Negatively biased interpretations of ambiguous information could represent a cognitive processing mechanism between anxiety and parenting behaviours. Aims: To explore maternal interpretation biases in those with high or low postnatal anxiety and the content-specificity of potential biases by comparing general and caregiving-related ambiguous scenarios. To additionally examine the relationships of postnatal depression symptoms and perinatal anxiety subtypes within ambiguous interpretations.

Methods: This online cross-sectional study compared 53 mothers with high anxiety and 62 with low anxiety (*N*=115). Measures included screening scales for perinatal anxiety (PASS) and depression (EPDS), and the Recognition Test paradigm for interpretative biases of ambiguous scenarios.

Results and Conclusions: High maternal postnatal anxiety was associated with more negative interpretation biases, but this did not significantly differ by ambiguous scenario type, i.e., general (less personally-salient) or caregiving-specific (more personally-salient) ambiguous scenarios. Postnatal depression symptoms significantly contributed to the variance explained (7%) in interpretation bias indices but there was no difference by subscale of perinatal anxiety. Addressing general interpretation biases in perinatally anxious mothers may present an effective intervention target, however, further research into content-specificity and the profiles of perinatal processing biases is still needed.

Systematic Review of the Literature (SRL)

Parental Psychological Wellbeing and Coping in the Context of Infant-Preschool-aged Childhood Hearing Loss: A Systematic Review.

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Abstract

Background: In the three decades since the World Health Organisation advised member nations to introduce Universal Newborn Hearing Screening Programmes, early identification and intervention programmes are now commonplace. However, diagnoses of hearing loss in infants still require significant adjustment for families, as over 90% of children with hearing loss are born to hearing parents.

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Results and Conclusions: Eighteen studies met inclusion criteria. Findings were split, based on variables assessed, into three main categories: 1) parenting stress, 2) parental mental health and wellbeing, and 3) parental adjustment and coping resources. Families of infants diagnosed with hearing loss do not universally experience poorer wellbeing, though some variability by populations and outcomes are observed. The limited evidence of protective coping resources (such as social support and parent's appraisals of their lives) and access to early intervention programmes may explain some of the variability in findings but more research utilising different study designs are necessary. Implications are discussed.

1. Introduction

1.1 Prevalence and Terminology

Approximately one in 1000 babies are born with some level of hearing loss (HL), ranging from mild to profound loss (Butcher et al., 2019). In the UK this equates to some 50,000 children (Rashbrook & Perkins, 2019). The term ‘hearing loss’ is used here to describe the physical condition, but ‘deaf or hard of hearing’ (DHH) is used when referring to individuals with HL to acknowledge that the deaf (or Deaf) identity is distinct from physiological aspects of HL (Grech et al., 2023). DHH also acknowledges the wide range of experiences and levels of HL (from mild, unilateral loss, to profound bilateral loss, classified by the lowest level of sound perceptibility, measured in decibels; Clark, 1981), as well as this being a term widely used within the literature. However, within the d/Deaf community, individual terminology and ‘person-first’ or ‘identity-first’ preferences should be prioritised over standardised terms (Duncan & O’Neill, 2020).

1.2 Family Impact

With Universal Newborn Hearing Screening (UNHS) introduced in many countries from the 1990s and 2000s, many children diagnosed with HL now receive prompt intervention to minimise long-term negative impacts on language development, cognitive functioning and socioemotional outcomes (Figueras et al., 2008; Tellevik, 1981; World Health Organization; WHO, 2016; Yoshinaga-Itano et al., 1998). Approximately 90-95% of DHH children (cDHH) are born to hearing parents (Mitchell & Karchmer, 2002; Wright et al., 2021). For many families the diagnosis of HL can come as a surprise, with some reporting shock, anger or grief for the child they believed they would have and their hoped-for future (Kurtzer-White & Luterman, 2003).

The early identification of HL in children predominantly born to hearing parents, therefore requires rapid adaptation to new ways of interacting and communicating with their child. Parents have identified challenges across areas including: managing hearing devices, attending multiple appointments with numerous professionals, making decisions regarding education, and concerns about their child's developmental prospects (Calderon & Greenberg, 1999; Haddad et al., 2019). Furthermore, approximately 40% of cDHH have additional needs such as physical and/or learning disabilities (Picard, 2004), necessitating further unique adjustments within their parents' lives (Dammeyer et al., 2019).

However, not all families will experience such challenges, or at least to the same degree. Using a positive psychology framework, Szarkowski and Brice (2016) conducted interviews with hearing parents of cDHH and found some parents experienced a range of positive outcomes including being more able to appreciate the everyday positives and enjoy increased involvement with their cDHH. As this heterogeneity of parental experiences would suggest, understanding factors which foster or hamper parental coping and psychological wellbeing is key to successfully supporting families during this time of adaptation.

The parent-child relationship is amongst the most important proximal influences on the child's environment (Bronfenbrenner, 1992; Bush et al., 2020), particularly during early (e.g., infancy-preschool) years for language and socio-cognitive development (e.g., Topping et al., 2013; Vygotskiĭ, 1986). The impact of HL on early parent-infant interactions includes reduced sensitivity and responsiveness, often through more directive than dynamic communicative interactions (Ambrose et al., 2015; Spencer & Meadow-Orlans, 1996). Parents whose psychological wellbeing and coping resources are robust to the adaptations required in such interactions, will be better placed to support their child's development (Traci & Koester, 2010).

1.3 Parental Adaptation: Wellbeing and Coping

Models of family stress and coping include the ABCX (Hill, 1958) and Double ABCX (McCubbin & Patterson, 1983) frameworks (figure 1), which highlight that following stressors/significant events, such as a diagnosis of HL (A), family resources (including family strengths/capabilities and social support; B) and perceptions (C) of the stressor(s) are key to helping or hindering parents' adaptation (X). Drawing on these, McCubbin and McCubbin (1993) developed their Resiliency Model of Family Stress to explain processes which contribute to adaptation to illnesses in the family, particularly childhood illnesses, emphasising the role of resources and appraisals on families' problem solving and coping abilities for successful adjustment and adaptation.

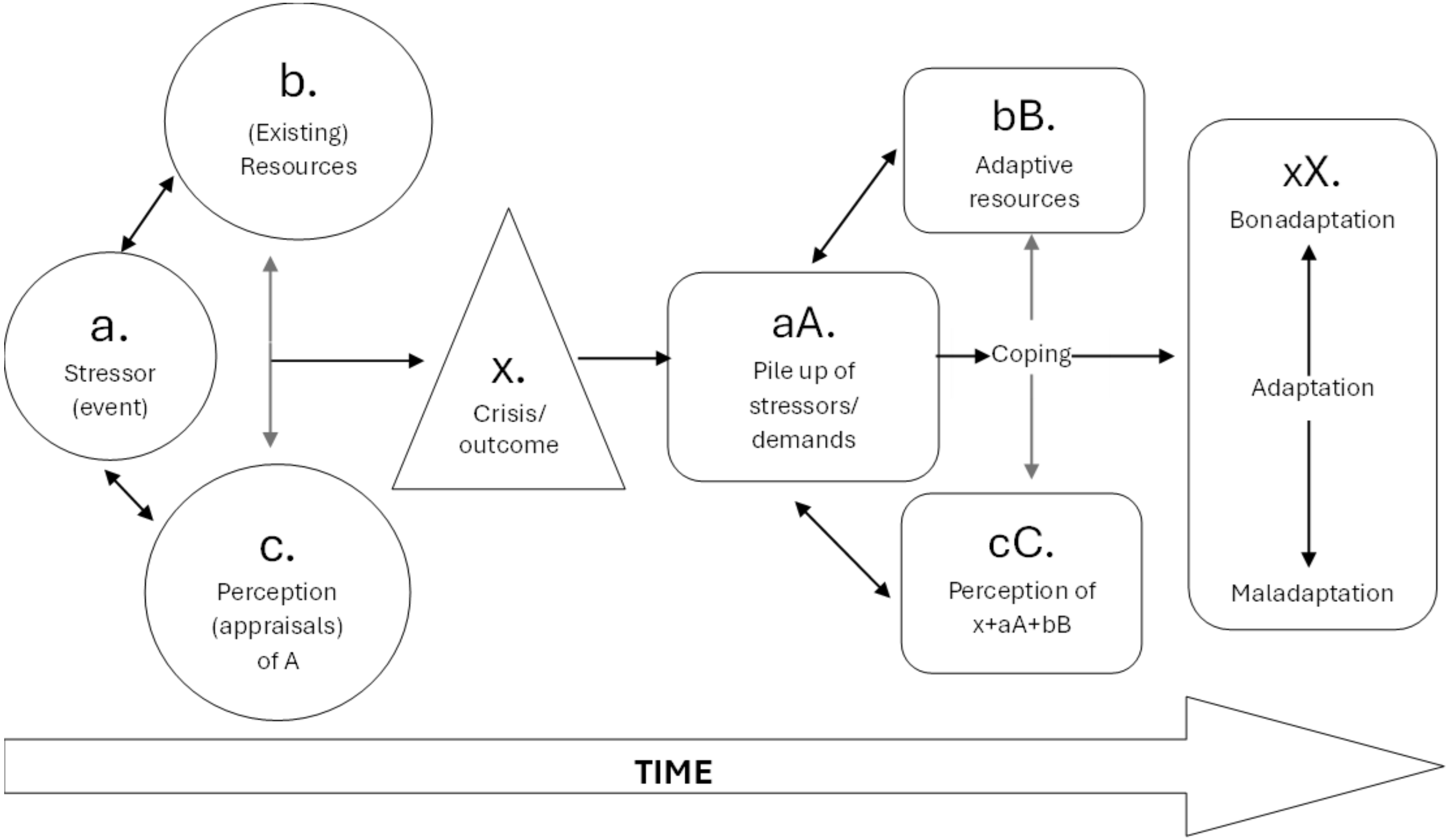

Figure 1. Depiction of the ABCX model (Hill, 1958) of family stress, including the expansion of the Double ABCX model (McCubbin & Patterson, 1983) to show change over time

In a mixed-methods study utilising the Resiliency Model framework, it was found that in 54 families with cDHH aged 3-9yrs, family coping resources including social support, family time, family hardiness, problem-solving abilities and religion alongside parental appraisals (searching for meaning and acceptance of their child's hearing status) were associated with family resilience (Ahlert & Greeff, 2012). Similarly, a recent review focusing specifically on parenting stress (PS) and coping resources in parents of cDHH (0-16yrs) found three broad categories of factors influencing PS: parent/family-related factors (including, reduced social support, lower income, lower self-efficacy); child-related factors (including, additional disabilities, child behavioural issues, and child communicative abilities); and professionals/services-related factors (including lack of professional support and services; (Gunjawate et al., 2023). The review authors also grouped coping strategies to reduce PS into those which improved support (such as availability of spousal and family support) and those relating to professional resources (such as access to professionals and services).

1.4 Current Review

A review of factors involved in parental (mal)adaptation to a HL diagnosis, covering the approximately 3 decades since UNHS-style programmes were widely recommended (WHO, 1995), would aid understanding of how to best support parents of cDHH. Specifically, investigating what psychosocial factors are implicated in parental wellbeing and coping resources (including resilience and related constructs) during the infancy and preschool period, when parents and caregivers' influence on their child's development is most significant (Lanjekar et al., 2022). To synthesise research regarding the determinants of parental wellbeing and coping in the early years following HL diagnosis, this systematic review aimed to address the following questions:

1. What are the wellbeing and coping outcomes for parents of cDHH following diagnosis, up to school-age?
2. What psychosocial factors contribute to these outcomes?
3. How do these outcomes compare to other groups (such as parents of typically hearing children)?

2. Method

The review was conducted in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021) and registered on PROSPERO prior to database searches (registration number: CRD42022348350; appendix 1A).

2.1 Search Strategy

Initial searches were completed in May 2023 (and updated in January 2025) on the following databases: PsychINFO, Medline, CINAHL, Embase, and Central. A research librarian was consulted to optimise search strategy (see appendix 1B for full strategy). Dates were narrowed to 1995-2025 as in 1995 a report following the 48th WHO assembly was issued, urging member states to make plans for early detection of HL in infancy (WHO, 1995). Subsequently, from the late 1990s and into the 2000s, UNHS programmes were widely rolled out in countries around the world.

The following key constructs were used to develop search terms:

- Childhood hearing loss
- Family
- Psychosocial: wellbeing and coping

Wellbeing was used as an umbrella concept to encompass psychosocial variables such as symptoms of mental health conditions (for instance, depression or anxiety), psychological distress, stress, quality of life (QoL), and general wellbeing. Though there are no agreed definitions of the term, wellbeing has been defined as broadly encompassing subjective appraisals of one's life and those psychological factors which promote optimal functioning (Abdullahi et al., 2020).

2.2 Eligibility Criteria

2.2.1 Screening

Studies were included if they (a) were primarily quantitative and published in peer-reviewed journals, (b) had samples comprised of parents with infant to preschool-aged cDHH (0-6yrs old or with means ≤5yrs), (c) assessed psychological wellbeing and/or coping of parents as a primary study aim, (d) used a validated measures of psychosocial outcome(s) for parents, and (e) were available in English.

Papers were excluded if they (a) primarily studied child outcomes (as previous reviews have addressed this, e.g., Stevenson et al., 2015), (b) focused on audiological/language/communication or other physical health outcomes, (c) parents of cDHH constituted fewer than 50% of the sample, (d) cDHH characteristics could not be established (e.g., ages or HL levels), (e) focused on siblings' experience, and (f) focused on Deaf adults.

2.3 Selection Process

Screening of titles and abstracts were completed by two independent raters to assess eligibility, with the second-rater screening 25% of search-returned papers. There was acceptable agreement between raters (κ = 0.81), so the lead author completed full text screening with the second rater again screening 25% (n=32) against eligibility criteria. The criteria were discussed between raters prior to screening to ensure clarity with acceptable inter-rater agreement found (κ = 0.81).

2.4 Data extraction

The lead author created a structured data extraction template. The second reviewer independently extracted data for studies included in final analysis to ensure accuracy. Discrepancies were discussed and resolved between reviewers. Data were extracted (where reported) for the following: (a) study aims and group comparators, (b) parent data, (c) cDHH characteristics (age, HL levels, hearing technologies used, and presence of additional disabilities), (d), study findings (e) intervention details, (f) psychological wellbeing and coping variables, and (g) other variables measured (table 1). Data were also extracted for child outcomes when measured as factors associated with parent psychosocial outcomes (for instance, as predictors of parent variables). Whilst mixed-method studies were included, data were only systematically extracted for quantitative outcomes to maintain a standardised, consistent approach using a quantitative quality appraisal measure.

2.5 Quality assessment

Study quality was assessed using the quantitative standard quality appraisal tool developed by Kmet et al. (2004). This was chosen as it is a general, widely applicable quality assessment tool suitable for the diverse studies included in this review. It contains a 14-item checklist with ratings for each item ranging from 0 (study does not at all meet the criterion), 1 (study partially meets the criterion), to 2 (study fully meets the criterion). A 'not applicable' option is also offered for certain items (for example, those pertaining to Randomised Control Trials; RCTs). A summary score was produced for each study (see table 2), with scores grouped into descriptive categories of study strength (from 'limited' to 'strong'). A second rater concurrently assessed 30% of included studies against the checklist to ensure rater reliability ($\kappa = 0.89$).

2.6 Data synthesis

Whilst RCTs were included, a meta-analysis was ruled out due to broad variability in outcomes and lack of effect-size reporting. Similarly, due to the heterogeneity of included studies (regarding variables measured, design of studies and use of comparison groups), a narrative synthesis is presented, grouping studies by psychosocial factors with subsections to detail outcomes and predictors/additional variables assessed (see table 3 for details of psychometric variables assessed by validated measures).

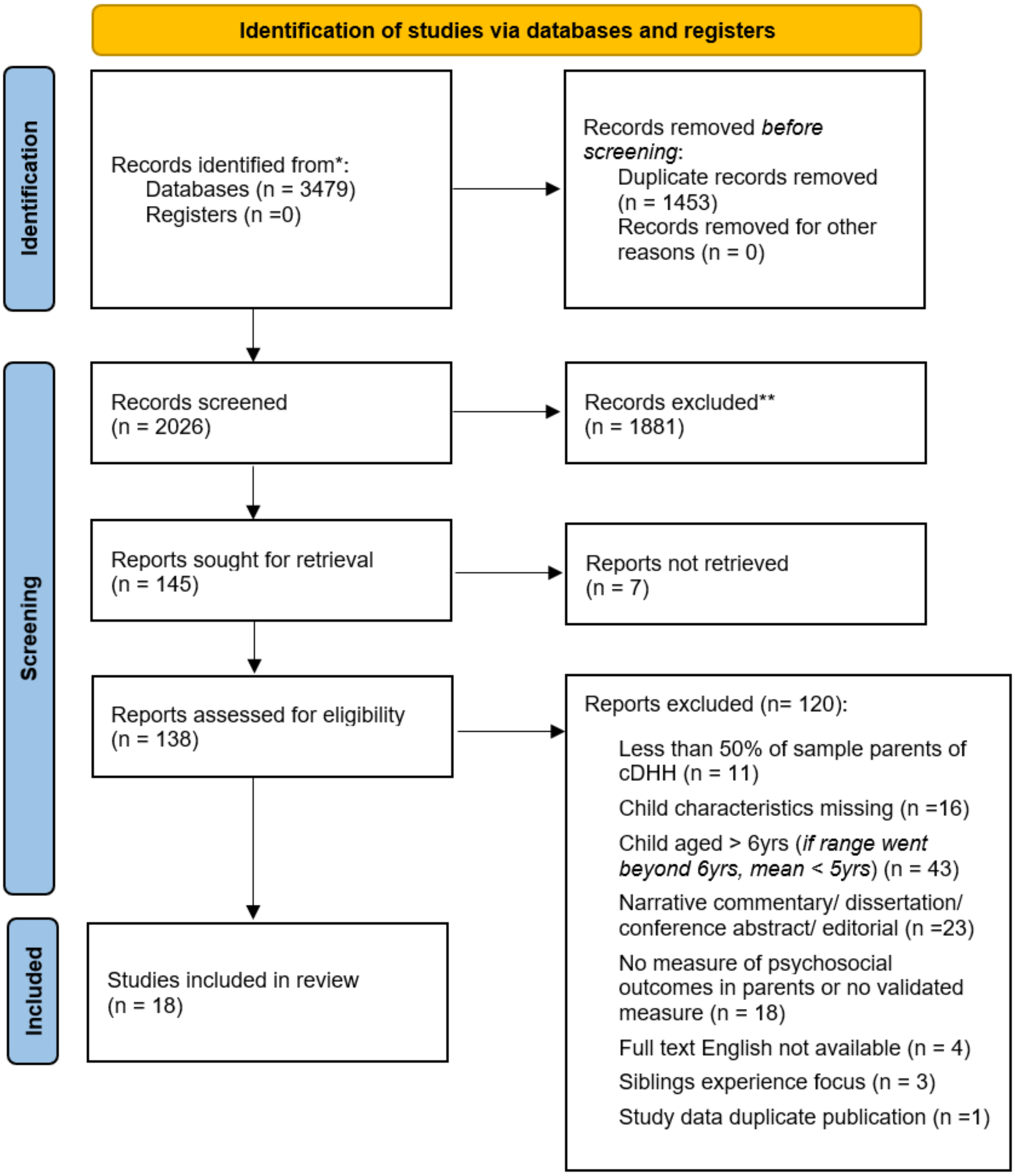

Figure 1 PRISMA flow chart of search strategy and results

3. Results

3.1 Study Selection

The flow diagram in figure 2 details the study selection process, incorporating both initial and updated searches into totals.

3.1.1 Initial Search

Through database searches, 3104 papers were identified, reducing to 1835 when duplicates were removed. Following title and abstract screening, 128 papers were eligible for full text review. Upon application of eligibility criteria, 14 studies remained.

3.1.2 Updated Search

Using the same databases and search strategy eighteen months later, 375 additional results were returned, reducing to 191 upon duplicate removal. Subsequently, 174 results were excluded during title and abstract screening, leaving 17 for full-text screening. A final four studies were eligible for inclusion. Thus, a total of 18 studies were included in this review.

3.2 Study Characteristics

A summary of study characteristics is presented in table 1. Studies were published between 1995 and 2024 and used a mix of designs including RCTs (n=3), longitudinal (n=4), cross-sectional (n=10) and one case series. Eleven studies included a between and/or within subjects' (i.e., pre-post intervention) comparison. The total number of recruited parent participants across all studies was 1579. In six studies, mothers were the only caregiver assessed, nine described a mix of mothers and fathers, two studies did not report caregiver sex, and one study focused on fathers.

Studies were conducted in a range of countries, most in high-income nations (including North America n=5, Australia n=2, Israel n=1, and four European countries) and the rest in upper-middle income countries (Iran n=4, and Brazil n=1). Only five studies included cDHH with additional disabilities with the rest either excluding (n=8) or failing to report on this (n=5). Demographic details such as education level of parents, sex of children, and socio-economic status of families, were not consistently reported.

Table 1. Study Characteristics.

Study ID, Author (Year) & Country	**Study Design and Comparison Group**	**Study Aims****	**Parents/Caregiver Characteristics (N)**	**DHH Child Characteristics**	**Main Findings (Summary)**	**Variables Assessed†**
			Parenting Stress*			
1. Aiello & Ferrari (2015) **Brazil**	RCT **Comparison:** Experimental to control (no access to "Babies' Portal) *(Both groups were parents of cDHH)*	To evaluate the efficacy of an online social network ("Babies' Portal") on improving parenting stress in parents of cochlear implant-candidate children.	**Sample size:** • N=22 (n=11 experimental, n=11 control) **Caregivers:** • All mothers • 18-39yrs old **Education:** • High school: n= 5 (experimental), n=6 (control); higher education: high school: n= 6 (experimental), n= 5 (control) **SES:** • Low: n=8 (experimental), n= 9 (control); average: n=3 (experimental), n= 2 (control)	**Age:** • 0-3.9yrs **Sex:** • Female = 12 (experimental: n=6, control n=6) • Male n= 10 (experimental: n=5, control n=5) **Hearing Loss:** • Severe-profound **Hearing technologies:** • CI candidates (awaiting surgery) **Additional disabilities:** • None	No significant difference was found between intervention and control group on parenting stress, or in subscales or at follow-up (3months). Qualitative data revealed that the most frequent posting theme was on personal information and expressions of religious beliefs.	**Psychological Variables:** Parenting stress (PSI-SF) Online social network intervention **Other variables:** Qualitative feedback on social network
2. Dirks et al. (2016) **Netherlands**	Cross-sectional study **Comparison:** Between: typically	To examine parental stress in parents of young children with moderate hearing loss compared to hearing controls	**Sample size:** • N= 60 • n= 30 parents cDHH • n=30 parents hearing children	**Age:** • 1.4-2.8yrs **Sex:** • Females = 32 • Males = 28 **Hearing Loss:**	Parents of young children with moderate HL, who had access to early intervention reported comparable stress levels to parents of hearing children. They also reported receiving less social support. Mediator	**Psychological Variables:** Perceived social support (MPSS) Parenting stress (Dutch version of PSI; NPSI)

	hearing controls	and investigate associations between parental stress and child- and parent-related factors such as language, social-emotional functioning and social support.	• Approximately 1/3 children in study had a DHH sibling and/or parent **Caregivers:** • Not reported **Education:** • Parents cDHH: average of lower secondary education • Parents of hearing children: average of higher general education	• Moderate-moderate/ severe (40-60db= 93%, 60-70db= 7%) **Hearing technologies:** • All HA users **Additional disabilities:** • None	analyses showed more social support was related to less parent-related stress.	**Other variables:** Child language ability (<24 months; NNST, >24months; RDLS – receptive language, and SELT – expressive language) Social-emotional functioning of child (ITSEA)
3. Lederberg & Golbach (2002) **North America**	Longitudinal correlational study **Comparison:** Between: typically hearing controls Within: T1=18-26months old, T2= 3yrs old, and T3= 4yrs old	To investigate the impact of child deafness on mothers' parenting stress, size of social networks, and satisfaction with perceived social support as well as general life satisfaction.	**Sample size:** • N= 46 • n= 23 parents of DHH children • n= 23 parents of H children **Caregiver:** • All mothers **Education:** • High-school or less = 16 • Some college =15 • College graduate or above =15 **Employment:** • Full-time = 24 • Part-time = 3 • Homemaker = 19	**Age:** • 1.5-2.2yrs • T1= 18-26months old, • Follow-ups at 3 and 4yrs old **Sex:** • Females = 26 • Males = 20, **Hearing Loss:** • Severe-profound **Hearing technologies:** • Not reported **Additional disabilities:** • None	Mothers' life evaluations were consistently, significantly and directly impacted by parenting stress as established in statistical path analyses. Mothers of 22-month-old cDHH expressed more stress than hearing controls, but stress was comparable at 3 and 4yrs old (though different parenting stress measures were used between first and second time-points). The mothers of cDHH also had smaller social networks than mothers of hearing children but both groups were equally satisfied with social support.	**Psychological Variables:** Parenting stress (T1= QRS-F, T2/T3= PSI) Social support and life satisfaction (SSQ) **Other variables:** None
4. Meadow-Orlans (1995)	Case series **Comparison:**	To compare mothers of DHH infants with additional	**Sample size:** • N= 43	**Age:** • <12 months old **Sex:**	Parenting stress scores did not differ between maternal groups. However, mothers of cDHH infants were consistently rated	**Psychological Variables:** Parenting stress (PSI) **Other variables:**

North America	Between: 4 groups; (1) cDHH with ADs, (2) cDHH at risk of developing ADs, (3) cDHH without ADs and (4) mothers of hearing infants with no ADs	disabilities, (ADs) to mothers of DHH infants at risk of ADs (but not currently diagnosed), those not at risk of ADs and those with typically developing infants on parenting stress and coded video recordings of mother-infant free play interactions.	• n= 23 parents of DHH children • n= 20 parents of H children **Caregiver:** • All mothers **Education** • Years (range): 13-18yrs	• Female =18 • Male =25, **Hearing Loss:** • Mild-profound **Hearing technologies:** • Unknown (may be too young) **Additional disabilities:** • Yes, included diagnosed and 'at-risk' comparison	lower in behavioural measures of sensitivity, involvement and affect. However, the presence of additional disabilities in infants did not significantly affect interactions compared to cDHH with no additional needs.	Mother-infant interaction (coded video recordings)
5. Pipp-Siegel et al. (2002) **North America**	Cross-sectional study **Comparison:** None	To examine parenting stress in mothers of young cDHH, comparing to established normative data. Secondly, to determine which factors (HL variables, child characteristics, or maternal characteristics) contribute to stress in mothers of cDHH in each domain of the measure of parenting stress.	**Sample size:** • N= 184 **Caregiver:** • All mothers	**Age:** • 0.5-5.6yrs **Sex:** • Not reported **Hearing Loss:** • Mild-profound **Hearing technologies:** • Not reported (but 40% used only spoken language, 60% of families used spoken and sign language) **Additional disabilities:** • Yes, 38% of sample	Stress levels in mothers of cDHH were not clinically higher than normative data. However, mothers who perceived their daily hassles as more intense, also rated their stress levels higher across subscales. Similarly, lower family support ratings were associated with higher Parenting Distress PSI subscale scores. The presence of one or more disabilities in addition to HL was a significant predictor of parenting stress in the Dysfunctional Parent-Child Interaction PSI subscale. As cDHH language delays increased, mothers also reported more parenting stress.	**Psychological Variables:** Parenting stress (PSI) Parenting hassles (PDH) Family support (FSS; Family Support Scale) **Other variables:** Child language (MCDI)

6. Quittner et al. (2010) **North America**	Cross-sectional study **Comparison:** Between: typically hearing controls	To evaluate both general and context-specific parenting stress in parents of young cDHH (awaiting cochlear implantation) and to assess links between hearing status, language delays, child behaviour problems and parenting stress.	**Sample size:** • N= 273 (n= 181 parents of cDHH, n= 92 parents of H children) • n=12 DHH parents excluded from analysis (due to presence of HL in parents) **Caregiver:** • Not reported **Education:** • Less than high school: n=18 • High school graduate: n=28 • College: n=225	**Age:** • Mean=2.2yrs (SD, 1.2) **Sex:** • Male: n=123 • Female: n=150 **Hearing Loss:** • Severe-profound **Hearing technologies:** • All CI-candidates **Additional disabilities:** • Not reported	General parenting stress in parents of cDHH was not elevated compared to parents of hearing children. However, higher DHH-specific parenting stress was observed. Context-specific parenting stress measures were more sensitive to differences in observational measures of cDHH behaviours than those assessing general parenting stress. Parent-reported and observational measures of behavioural difficulties indicated greater behavioural problems in cDHH compared to hearing controls with language delays increasing risk of behavioural problems and both this and language delays were related to increased parenting stress for parents of cDHH.	**Psychological Variables:** Parenting stress; general (PSI) Parenting stress; context-specific (FSS) **Other variables:** Child behaviour problems (CBCL and video observation) Child language abilities (RDLS)
15. Adily et al. (2024) **Australia**	Cross-sectional study **Comparison:** None	Using the PHICE, to assess levels of parenting stress in parents of cDHH and identify family, child- and service-related factors influencing stress domains.	**Sample size:** • N= 99 • n= 70 parents of HA users • n= 29 parents of CI users **Caregiver:** • 85% mothers **Education:** • More than high school (55%) • High school or less (20%)	**Age:** • 5yrs old **Sex:** • Female =49 • Male =50, **Hearing Loss:** • Mild-profound **Hearing technologies:** • 71% HAs • 29% CIs **Additional disabilities:**	Overall DHH context-specific stress levels of parents were low in this Australian sample. However, there were three main predictors of increased parenting stress which were; the use of cochlear implants over hearing aids, use of sign and oral language (i.e., mixed communication) over oral language as the primary/sole communication mode at home,	**Psychological Variables:** Parenting stress; context-specific (PHICE) **Other variables:** Caregiver and family factors (SES, parent-child relationship, and parental education level) Child factors (Hearing device type, communication mode, language ability (PLS-4),

			• Unknown (25%)	Yes, 34.3% of sample	and increased child behavioural difficulties.	health-related QoL (PedsQL), behavioural and emotional difficulties (SDQ), functional listening (PEACH), and additional disabilities)
16. Dall et al. (2023) **Austria**	Cross-sectional study **Comparison:** None *(Compared to normative data for measures used)*	To investigate the impact and association of child behaviour and social communication on parenting stress.	**Sample size:** • N= 81 • n= 40 cDHH at 36 months old • n=41 cDHH at 66 months old **Caregiver:** • No details **Parent demographics** • None reported	**Age:** • 36 and 66 months **Sex:** • Female =33 • Male =48 **Hearing Loss:** • Mild-profound **Hearing technologies:** • CI: 18 (22%) • HA: 62 (77%) • Both: 1 (1%) **Additional disabilities:** • Yes, (but no details on proportion of sample)	No significant difference was found in parenting stress for parents of cDHH compared to normative data. However, a strong positive correlation between child behaviour problems (externalising, internalising and hyperactivity) and parenting stress was found, accounting for 49.7% of the variance in parenting stress. Child communication abilities had an indirect effect on parenting stress via its impact on child behaviour problems (particularly hyperactivity). The degree of the child's HL did not impact parenting stress.	**Psychological Variables:** Parenting stress (PSI, German Translation) **Other variables:** Child factors: • Social communication ○ CCC-2 ○ LUI ○ SOR-N • Problem behaviours (internalising, externalising, and hyperactivity) ○ SDQ ○ CBCL ○ BRIEF-P
17. Hakimzadeh et al. (2024) **Iran**	Cross-sectional study **Comparison:** None	To investigate the associations between parenting stress and quality of life in Iranian parents of cDHH who have undergone cochlear implantation.	**Sample size:** • N= 80 **Caregiver:** • 68 mothers • 12 fathers **Education:** • High school diploma (11%) • Associates degree (34%) • Bachelor's degree (35%)	**Age:** • Mean: 5.4yrs **Sex:** • Not reported **Hearing Loss:** • Severe-profound **Hearing technologies:** • All CIs **Additional disabilities:** • Not reported	Iranian parents of CI recipients reported low parenting stress and relatively high quality of life (compared to measure norms).	**Psychological Variables:** Parenting Stress: (PSI-4-SF) Quality of Life (SF-36) **Other variables:** None

			• Master’s degree (19%) • Doctoral degree (1%) **Occupation:** • Employed (35%) • Unemployed (6%) • Housewife (59%)			
18. Marie et al. (2023) **France**	Cross-sectional study **Comparison:** None		**Sample size:** • N= 27 (mother-father pairs, n=54 total respondents) **Caregiver:** • Mother-father couples (n=27 of each) **Education:** • Baccalauréat or less (15%, both parents) • Bachelor’s degree (44% mothers, 37% fathers) • Master’s or PhD (41% mothers, 48% fathers)	**Age:** • Mean= 3.5yrs **Sex:** • Female =14 • Male =13 **Hearing Loss:** • Moderate-profound **Hearing technologies:** • Not reported **Additional disabilities:** • None (excluded)	Comparable levels of parenting stress to normative data averages was found. When comparing mothers and fathers of the same cDHH, no differences in formal and informal support needs were observed. However, within fathers, there was a tendency to express greater needs for more formal support than informal support.	**Psychological Variables:** Parenting Stress: (PSI-4-SF) Social support needs (FNS) **Other variables:** None
			Parental Mental Health and Wellbeing*			
7. Green (2020) **Australia**	Longitudinal correlational study **Comparison:** None. Within group comparison* on service engagement	To investigate parental adjustment to HL diagnoses in their children by assessing their engagement with medical investigations and early intervention services, and the	**Sample size:** • N= 27 **Caregiver:** • Mothers = 93%, • Fathers = 7% **Education:** • Postgraduate degree = 5 • Undergraduate = 9 • TAFE/ apprenticeship = 5	**Age:** • 0.25-0.42yrs (3-5months old) **Sex:** • Female = 16 (55.2%) • Male = 13 (44.8%) **Hearing Loss:** • Mild-profound **Hearing technologies:**	Just over 10% showed mild or moderate levels of depression and just over 20% showed mild or greater levels of anxiety. One third scored above mid-point on stress subscale. The sample means for each subscale were compared to Australian norms for the DASS-21: Depression 1.86 (Norm 2.57), Anxiety 1.69 (1.74) and	**Psychological Variables:** Reflective function (DMRF) Depression, anxiety and stress (DASS-21) **Other variables:** Engagement with services *(proxy measure of adjustment; medical records assessed at*

	**Measures collected when DHH baby was 3-5months old, compared to service engagement 6 months later*	impact of maternal reflective functioning and parental depression, anxiety or stress on engagement.	• High School to year 12 = 5 • High school to year 10 = 5 **Employment:** • Not in paid employment = 10 • Maternity leave = 12 • Full time = 3 • Part time/ casual = 4	• Not reported (due to age) **Additional disabilities:** • Yes, (41%)	Stress 4.31 (3.99). Stress was slightly above the normed mean but only parental anxiety was associated with service engagement. 86% began with engaging with services but after 6 months, around one third did not. Reflective functioning, parents' education and additional needs for their child all did not impact engagement with early intervention services.	*9-11 months old to view clinic attendance record for families)*
8. Burger et al. (2005) **Germany**	Prospective longitudinal study **Comparison:** Between: hearing controls Within: T1=pre-implant/ first HA adjustment, T2=post-implant/ 6months after 1st HA adjustment	Investigate the impact of child audiological treatment events (Hearing Aids and Cochlear Implantation) and the child's hearing and speech status on parental mental health.	**Sample size:** • N=116 parent pairs (started study) • N=71 total for both time-points (parents of 66 children) • n=50 parents of 32 HA users (26 mothers, 25 fathers) • n=66 parents of 34 CI users (35 mothers, 31 fathers) **Caregivers:** • Mothers=61 • Fathers= 55	**Age:** • Median = 2.4yrs (both groups) • CI-recipients mean = 2.8yrs • HA-recipients mean = 3.5yrs **Sex:** • Not reported **Hearing Loss:** • Mild-profound **Hearing technologies:** • HA n= 32 (48.5%), CI n=34 (51.5%) **Additional disabilities:** • Not reported	Compared to German normative data, both parents of cDHH children who are CI candidates or HA candidates had significantly increased scores of psychological distress prior to their child's hearing technology intervention (T1). Post CI-surgery (T2), parents' psychological distress was no longer significantly increased compared to normative data, though distress remained high for parents of HA recipients after intervention. However, both groups of parents showed significant improvements in subjective quality of life between T1 and T2.	**Psychological Variables:** Psychological distress (SCL-R, German version) Quality of Life (EDLQ) **Other variables:** Hearing technology intervention (HAs or CIs)
9. Hashemi et al. (2019) **Iran**	RCT **Comparison:**	To evaluate the effect of a cochlear implant parent	**Sample size:** • N= 70 • n= 35 intervention, • n=35 control	**Age:** • 1-3yrs **Sex:** • Female = 43	Significant reductions in trait and state anxiety in the intervention group compared to the control were seen post	**Psychological Variables:** Self-efficacy (GSE) Anxiety (STAI)

	Intervention to control (waitlist) *(Both groups were parents of cDHH)*	educational programme on the anxiety and self-efficacy levels of mothers of children undergoing cochlear implant surgery.	**Caregiver:** • All mothers **Education:** • <Diploma = 26 • ≥Diploma = 35 **Employment:** • Homemaker = 57 • Work/employed = 13	• Male = 27 **Hearing Loss:** • Severe-profound **Hearing technologies:** • All CI candidates **Additional disabilities:** • not reported	educational intervention, with differences maintained at 2-month follow-up. Also found significant increases in the mean self-efficacy ratings in the interventional group of cDHH mothers, both immediately and two months after the intervention, compared to mothers in the control group.	**Other variables:** Educational/ audiology training intervention
10. Saki et al. (2017) **Iran**	Longitudinal study *(reported as cross-sectional design by authors)* **Comparison:** Within: T1=pre-implant T2=post-implant	Compare happiness and self-esteem among mothers of children with severe hearing loss before and after cochlear implantation.	**Sample size:** • N= 40 **Caregiver:** • All mothers **Income:** • High = 9 • Average = 20 • Low = 11 **Education:** • Elementary = 7 • Under Diploma = 15 • Diploma and higher = 18	**Age:** • Mean = 3yrs • (required to be <7yrs) **Sex:** • Females = 16 • Males = 24 **Hearing Loss:** • Severe-profound **Hearing technologies:** • All CI recipients **Additional disabilities:** • Not reported	Compared to pre-CI surgery, parents scores on both the happiness and self-esteem measures increased post-implantation.	**Psychological Variables:** Happiness (Oxford Happiness Questionnaire) Self-esteem (SES) **Other variables:** Hearing technology intervention (usual treatment)
11. Talebi et al. (2022) **Iran**	Cross-sectional study **Comparison:** Between: typically hearing controls	Compare anxiety levels of parents of children with cochlear implants to anxiety levels of parents of typically hearing children.	**Sample size:** • N= 100 • n= 50 parents of children with CIs • n= 50 parents of H children **Caregiver:** • Mother and Father pairs • Mothers = 51 • Fathers = 49	**Age:** • 1-3yrs **Sex:** • Female = 49 • Male = 51 **Hearing Loss:** • Severe-profound **Hearing technologies:** • All CI	Elevated levels of anxiety were found in parents of cDHH who had undergone CI surgery compared to parents of typically hearing children. However, no associations were found between parents' anxiety level and their demographic characteristics such as educational attainment,	**Psychological Variables:** Anxiety (Beck Anxiety Inventory) **Other variables:** None

			Education: • Primary school = 7 • High school = 22 • College = 33 • Associate degree = 17 • Bachelor's or above = 21	**Additional disabilities:** • None	parents' age and their child's gender.	
Parental Adjustment and Coping Resources*						
12. Aghaziarati et al. (2023) **Iran**	RCT (semi-randomised) **Comparison:** Intervention to control (waitlist) *(Both groups were parents of cDHH)*	To test the effects of an 8-session mindful parenting programme (three, 90-minute sessions per week) for mothers of cDHH on their resilience and on parent-reports of child attachment.	**Sample size:** • N=30 (n=15 intervention, n=15 control) **Caregiver:** • All mothers • 30-40yrs old **Education:** • (not reported separately) • n=10 diplomas, • n=3 associates degree, • n=14 bachelor's degree, • n=3 master's degree	**Age:** • 4-6yrs **Sex:** • not reported **Hearing Loss:** • Moderate-Moderate/Severe (40-70dBs) **Hearing technologies:** • HAs **Additional disabilities:** • none	Found that the mindful parenting programme significantly, positively influenced the parent-rated attachment of cDHH and increased resilience in their mother's post-intervention. Effects were maintained at follow-up (1.5months).	**Psychological Variables:** Resilience (CD-RISC) **Other variables:** Child attachment (KCAQ) Time (pre-test= prior to first intervention session; post-test= 2 days after intervention; follow-up= 45 days after intervention)
13. Ingber and Most (2012) **Israel**	Cross-sectional study **Comparison:** Between: fathers of cDHH and fathers of H children	To compare level of involvement in their children's development and education of fathers of young children with hearing loss to a matched group of fathers of typically	**Sample size:** • N= 74 • n= 38 fathers of cDHH • n= 36 fathers of H children **Caregiver:** • All fathers • But also sought mother's ratings of	**Age:** • 3-6yrs **Sex:** • Females = 35 • Males = 39 **Hearing Loss:** • Mild-profound • Unilateral = 8% • Mild-mod = 34%	Fathers of both cDHH and typically hearing children both showed high levels of involvement in their child's life (self and partner-rated). Father's reporting higher levels of parenting self-efficacy also reported higher parental involvement. Significant associations between wife-	**Psychological Variables:** Self-efficacy (PSEQ) Family adaptability and cohesion (FACES III) **Other variables:** Father's involvement with child/family life (IFI)

		hearing children. To also examine correlations of father's involvements and child, father, and family characteristics.	father's involvement (cross-comparison)	- Severe = 28% - Profound = 30%) **Hearing technologies:** - CIs (32%) - HAs (60%) **Additional disabilities:** - None	reported involvement in child rearing by father's self-efficacy and family cohesion ratings were only observed in family's with typically hearing children.	
14. Jackson et al. (2010) **North America**	Cross-sectional study **Comparison:** None.	To assess parents' perceptions of their quality of life following early identification of hearing loss in their children.	**Sample size:** - N= 207 **Caregiver:** - Mothers =186 - Fathers = 16 - Grandmother = 3 - Other = 2 **Education:** - High school diploma = 12 - GED = 28 - College but no degree = 68 - Associates degree = 28 - Bachelor's degree = 102 - Graduate degree = 68	**Age:** - 0-6yrs **Sex:** - Not reported **Hearing Loss:** - Mild-profound - Mild= 3%, - Moderate= 16%, - Severe/ profound= 76%) **Hearing technologies:** - CI (50%) - HA (46%) - No device (4%) **Additional disabilities:** - None	Generally high satisfaction with all areas of family life was found. Also observed a trend for lower satisfaction within the emotional wellbeing domain of the FQoL. Items on the scale most impacted by HL were also ranked as areas of lower satisfaction. Similarly, areas participants ranked as being most strongly impacted by HL (time and stress) were some of the same areas about which families reported being least satisfied. Perceptions of somewhat lower satisfaction with emotional well-being may be related to the need for social connections and networks.	**Psychological Variables:** Family support (one open-ended question to identify family supports desired during early intervention) Satisfaction with Family Life (FQoL) Impact of HL on family (one Likert scale for each family domain item on FQoL to rate subjective impact of deafness on family life) **Other variables:** Parent-rated child outcomes (satisfaction with child's speech production, overall language skills and speech perception/ listening skills)

Abbreviations: cDHH – Deaf or Hard of Hearing Children, HL – Hearing Loss; dBs – decibels; HAs – Hearing Aids; CIs – Cochlear Implants; ADs – Additional Disabilities, SES – Socio-economic Status, RCT – Randomised Control Trial

**Studies grouped by primary variables, so studies only appear once in this table, though some measured multiple variables which feature across categories (see synthesis)*
***If study aims were not clearly reported, an approximation of study aims was made by the lead author of the review (EC)*
†Only abbreviations of measures are given here for clarity, for full descriptions and references see table 3

Table 2. Quality appraisal summary ("Y" = yes, "P"= partial, "N" = no, "N/A" = not applicable).

Study ID and Author (year)	1. *	2.*	3.*	4.*	5.*	6.*	7.*	8.*	9.*	10.*	11.*	12.*	13.*	14.*	Quality Rating**
1. Aiello & Ferrari (2015)	P	Y	P	Y	Y	N	N	Y	P	Y	P	Y	Y	Y	71% **Good**
2. Dirks et al. (2016)	Y	P	Y	Y	N/A	N/A	N/A	Y	Y	Y	P	P	Y	Y	86% **Strong**
3. Lederberg & Golbach (2002)	Y	Y	P	Y	N/A	N/A	N/A	Y	Y	Y	Y	Y	Y	Y	95% **Strong**
4. Meadow-Orlans (1995)	P	P	N	Y	N/A	N/A	N/A	Y	P	Y	N	P	Y	Y	64% **Adequate**
5. Pipp-Siegel et al. (2002)	P	P	Y	Y	N/A	N/A	N/A	Y	N/A	P	Y	N/A	Y	Y	83% **Strong**
6. Quittner et al. (2010)	Y	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	Y	Y	Y	Y	100% **Strong**
7. Green (2020)	Y	P	Y	Y	N/A	N/A	N/A	P	N/A	Y	P	N/A	P	Y	72% **Good**
8. Burger et al. (2005)	Y	Y	P	P	N/A	N/A	N/A	Y	Y	Y	N	N	P	Y	73% **Good**
9. Hashemi et al. (2019)	P	Y	P	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	86% **Strong**
10. Saki et al. (2017)	P	P	P	P	N/A	N/A	N/A	Y	Y	P	Y	N	P	N	55% **Adequate**
11. Talebi et al. (2022)	P	Y	P	Y	N/A	N/A	N/A	Y	P	Y	P	P	P	P	68% **Adequate**
12. Aghaziarati et al. (2023)	Y	Y	Y	P	P	N	N	Y	Y	Y	Y	P	Y	Y	75% **Good**
13. Ingber and Most (2012)	Y	P	Y	Y	N/A	N/A	N/A	Y	Y	Y	P	Y	Y	Y	91% **Strong**
14. Jackson et al. (2010)	Y	P	P	Y	N/A	N/A	N/A	P	N/A	P	Y	N/A	Y	Y	78% **Good**
15. Adily et al. (2024)	Y	P	P	Y	N/A	N/A	N/A	Y	Y	Y	Y	N/A	Y	Y	90% **Strong**
16. Dall et al. (2023)	Y	Y	Y	P	N/A	N/A	N/A	Y	Y	Y	Y	N/A	Y	Y	95% **Strong**

17. Hakimzadeh et al. (2024)	Y	Y	Y	P	N/A	N/A	N/A	Y	Y	P	Y	N/A	P	P	80% **Strong**
18. Marie et al. (2023)	Y	P	Y	Y	N/A	N/A	N/A	Y	P	Y	Y	N/A	Y	Y	90% **Strong**

**Kmet et al. (2004) quantitative studies quality appraisal tool items:*
1. Question/objective sufficiently described?
2. Study design evident and appropriate?
3. Method of subject/comparison group selection described and appropriate?
4. Subject (and comparison group if applicable) characteristics sufficiently described?
5. Random allocation to treatment group described (if applicable)?
6. Blinding of investigators possible and reported (if interventional/applicable)?
7. Blinding of subjects possible and reported (if interventional/applicable)?
8. Outcome and exposure measures (if applicable) well defined and robust to measurement/ misclassification bias? Means of assessment reported?
9. Sample size appropriate?
10. Analytic methods described/justified and appropriate?
11. Some estimate of variance is reported for the main results?
12. Controlled for confounding?
13. Results reported in sufficient detail?
14. Conclusions supported by results?

*** Quality summary score calculated by: (number of "yes" x2) + (number of "partial" x1) / (28 - number of N/A x2). The quality rating (expressed here as a percentage) is then categorised by the following groupings: “strong”= >80%, “good”= 71-79%, “adequate”= 50-70%, and “limited”= <50%.*

Table 3. Details of psychometric variables assessed by validated measures, split by parent/ child factors.
(see table 1 for full list of variables including those not assessed with validated measures).

Study IDs	**Measure abbreviation**	**Measure (including variants/ translations)** ***Measure descriptions are given where necessary to aid interpreting Parenting Stress results in the narrative synthesis***
		Parent Variables
		Parenting Stress (general)
1, 5, 6, 16, 17 (PSI) **3, 4, 18** (PSI-SF) **2** (NPSI)	PSI *PSI-SF* *NPSI*	**Parenting Stress Index (Abidin, 1990)** ***and Nijmegen Parenting Stress Index (De Brock et al., 1992) – Dutch version*** The full PSI contains 2 domains, the scores of which are combined to create an overall PS score; the Child Domain (six subscales assessing: distractibility/hyperactivity, adaptability, demandingness, mood, acceptability of child to parent and extent parent-child interactions are positively reinforcing) and the Parent Domain (seven subscales assessing: competence, isolation, attachment, health, role restriction, depression, and spouse/parenting partner relationship; Abidin, 1995). ***Parenting Stress Index-Short-Form (Abidin, 1995)*** The short-form PSI contains 3 subscales; Parental Distress (due to personal factors such as parenting competence and parent-parent conflict); Parent-Child Dysfunctional Interaction (perceptions of how reinforcing the child is); and Difficult Child (temperamental perceptions; Abidin, 1995)
Study IDs		**Parenting Stress (children with additional needs)**
3	QRS-SF	**Questionnaire on Resources and Stress- Short Form (Friedrich et al., 1983)** The QRS-F was developed to specifically measure parenting stress in children with additional needs and contains four subscales: the Parent and Family Problems scale (assessing perceptions of individual, other family members, or family as a whole); Pessimism scale (assessing immediate and future pessimistic perceptions of the child's prospects); Child

		Characteristics scale (assessing specific perceptions of child attitude/behaviour problems); and Physical Incapacitation scale (assessing perceptions of limitations of the child's physical abilities).
Study IDs		**Parenting Stress (deaf/hard of hearing-specific)**
6	FSS	**Family Stress Scale (Quittner et al., 1990, 1991)** The Family Stress Scale contains 11 items addressing general family stressors and five items addressing stressors of young child HL (including communication and managing hearing devices; Quittner et al., 2010).
15	PHICE	**Paediatric Hearing Impairment Caregiver Experience measure (Meinzen-Derr et al., 2008)** This is a 68-item measure developed for parents of cDHH to rate their stress across 8 domains: Communication, Education, Wellbeing, Equipment, Financial, Health, Social, and Support.
		Depression, Anxiety and Stress
7	DASS-21	Depression, Anxiety and Stress Scale-21 item (Lovibond & Lovibond, 1995)
		Anxiety
9	STAI	State-Trait Anxiety Inventory (Spielberger et al., 1970)
11	BAI	Beck Anxiety Inventory (Beck et al., 1993)
		Psychological Distress
8	SCL-R-90	Symptom Checklist (Derogatis et al., 1973)
		Self-Esteem
11	SES	Rosenberg Self-Esteem Scale (Rosenberg, 1965)
		Happiness
11	OHQ	Oxford Happiness Questionnaire (Hills & Argyle, 2002)

		Quality of Life perceptions
8	EDLQ	Everyday Life Questionnaire (Bullinger et al., 1993)
14	FQoL	Family Quality of Life (Hoffman et al., 2006; Poston et al., 2003)
17	SF-36	MOS (Medical Outcome Survey) Short-Form health survey - 36 items (Ware & Sherbourne, 1992)
Study IDs		**Self-Efficacy**
9	GSE	Generalised Self Efficacy Scale (Sherer et al., 1982)
13	PSEQ	Parenting Self-Efficacy Questionnaire (Soref et al., 2012)
		Father Involvement in Child's Life
13	IFI	Inventory of Father Involvement (Hawkins et al., 2002)
		Family Cohesion and Adaptability
13	FACES III	Family Environment: Adaptability and Cohesion questionnaire (Olson et al., 1985)
		Resilience
12	CD-RISC	Connor-Davidson Resilience Scale (Connor & Davidson, 2003)
		Parenting Hassles
5	PDH	Parenting Daily Hassles scale (Crnic & Greenberg, 1990)
		Reflective Functioning
7	DMRF	Diamond Maternal Reflective Function scale (Diamond et al., 2013)
		Social Support
2	MPSS	Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)
3	SSQ	Social Support Questionnaire (Crnic et al., 1983)

18	FNS	Family Needs Survey (Bailey et al., 1992)
5	FSS	Family Support Scale (Dunst, 1984)
		Child Variables
Study IDs		**Parent-Child Attachment**
12	KCAQ	Kinship Centre Attachment Questionnaire (Kappenberg & Halpern, 2006)
		Language/Communicative Abilities
5	MCDI	Minnesota Child Development Inventory-Expressive Language Scale (Ireton & Thwing, 1974)
2	NNST	Netherlands Non-Speech Test (Zink & Lembrechts, 2000)
6, 2	RDLS	Reynell Developmental Language Scales (Reynell & Gruber, 1997)
2	SELT	Schlichting Expressive Language Test (Schlichting & Spelberg, 2003)
15	PLS-4	Preschool Language Scale - Fourth Edition (Zimmerman et al., 2002)
15	PEACH	Parent's Evaluation of Aural/Oral Performance of Children (Ching & Hill, 2007)
16	CCC-2	Children's Communication Checklist-2 (Bishop, 2013)
16	LUI	Language Use Inventory (O’Neill, 2009)
		Cognitive Abilities
16	SOR-N	Snijders-Oomen Nonverbal Intelligence Test (Tellegen et al., 2007)
16	BRIEF-P	Behaviour Rating Inventory of Executive Functioning - Preschool version (Sherman & Brooks, 2010)
Study IDs		**Socio-Emotional and Behavioural presentations**
15, 16	SDQ	Strength and Difficulties Questionnaire (Goodman, 1997)
2	ITSEA	Infant-Toddler Social and Emotional Assessment (A. S. Carter et al., 2003)

6, 16	CBCL	Child Behaviour Checklist (Achenbach & Rescorla, 2000)
15	PedsQL	Paediatric Quality of Life Inventory (Varni & Limbers, 2009)

3.3 Quality Assessment

Details of quality assessments are presented in table 2. Study quality could be categorised as ‘limited’, ‘adequate’, ‘good’ or ‘strong’. Only three studies were rated as ‘adequate’ (4, 10, 11), with the rest were deemed ‘good’ (1, 7, 8, 12, 14) or ‘strong’ (2, 3, 5, 6, 9, 13, 15-18) and none were deemed ‘limited’ in quality. Methods of participant selection were mixed in their reporting across the studies, with half meeting full reporting criteria (2, 5, 6, 8, 12, 13, 16, 17, 18) and the other nine failing to meet this due to reporting ambiguity (for example, due to clear reporting of sample characteristics), reducing the generalisability of findings. Only one study (4) provided no information at all regarding participant selection.

Of the three studies which used RCT designs (1, 9, 12) two clearly reported methods of randomisation (1, 9) whilst the third reported that group allocation was randomised but offered no detail on how this was done (12). None of the three studies reported on blinding of investigators and only one stated that participants were blinded to group allocation (9). Additionally, none reference published protocols ahead of their trials, increasing risks of reporting and publication bias (Dwan et al., 2008).

3.4 Narrative Synthesis

Table 3 details psychometric measures used to assess psychosocial variables.

3.4.1 Parenting Stress

3.4.1.1 Outcomes

Seven studies (1, 2, 4, 5, 16, 17, 18) solely employed the PSI to assess PS (table 3). In all seven studies, no significant difference in PS was found between parents of cDHH and parents of hearing controls (2, 4) or increased scores (e.g., above cut-offs) compared to normative data of parents of hearing children (1, 5, 16, 17, 18).

General Parenting Stress

Lederberg and Golbach (2002; 3) assessed PS when cDHH were 22 months old (T1), 3yrs old (T2) and 4yrs old (T3). They found PS scores were significantly higher for parents of cDHH than controls at T1 but not at T2 or T3. However, for the first time-point they used the QRS-F then replaced this with the PSI for T2 and T3. Within the QRS-F, they found parents of cDHH scored higher on subscales of stress for Pessimism (particularly items regarding the child's future) and Child Characteristics (particularly items regarding the child's communication), noting that the items contributing to increased PS on these subscales did not map onto those assessed in the PSI. Thus, the reduced PS over time was likely related to the measures assessing subtly different constructs.

Context-Specificity and Early Intervention

Addressing this discrepancy, Quittner and colleagues (2010; 6) studied predictors of general PS (PSI) and context-specific PS (i.e., stress relating to parenting a cDHH; FSS) and compared parents of cDHH to parents of hearing children. They also found no difference in general PS between parent groups (cDHH and hearing children), but did find significantly higher levels of DHH-specific PS. However, in an Australian sample (Adily et al., 2024; 15), also using a DHH-relevant PS measure (PHICE), ratings for stress levels across all eight domains of the measure were classified as low for 72-90% of respondents, with the lowest stress reported in the "support" domain (Adily et al., 2024; 15). Similar findings were observed by creators of the measure in their sample including a broad age-range of cDHH (0-21yrs old) but changes in areas perceived as more stressful were noted as cDHH aged (Meinzen-Derr et al., 2008). For instance, those assessed within two-years of diagnosis reported greater stress in Healthcare and Wellbeing domains, transitioning to greater concerns in Education and Support systems as children aged, which the authors stated may relate to greater experience and time to adjust to their cDHH's diagnosis and individual needs (Meinzen-Derr et al., 2008).

Alongside the context-specificity of PS, timing of identification and intervention may also account for discrepancies in PS findings. For instance, whilst Lederberg and Goldbach (2002; 3) collected data between 1985-1993, they acknowledged that children in their sample were largely identified and diagnosed early. Comparatively, in studies conducted prior to widespread adoption of UNHS programmes, PS was found to be significantly increased for parents of cDHH compared to normative samples (Quittner et al., 1990, 1991). As such, there are likely protective benefits of early detection and intervention for PS (Sarant & Garrard, 2013; Yoshinaga-Itano et al., 2021).

3.4.1.2 Predictors of Outcome

Despite a lack of evidence of globally increased PS in parents of cDHH children compared to normative data or controls, several studies noted differences in PS profiles when examining predictors such as social support (1, 2, 3, 5, 18) and child factors including communication abilities and emotional/behavioural difficulties (2, 4, 5, 6, 15, 16).

Child Factors

Child-related variables have been frequently assessed in relation to PS with five studies including measures of communicative abilities (2, 5, 6, 15, 16), five on child behaviour, socio-emotional development and parent-child interaction (2, 4, 6, 15, 16), and two also assessed the impact of additional disabilities (4, 5).

Child Factors: Communication Abilities and Behaviour

Pipp-Siegel et al. (2002; 5) found that poorer expressive language abilities in cDHH significantly increased PS by greater interactional difficulties. Yet, whilst Dirks et al. (2016; 2) also found poorer child language abilities and more internalising difficulties was associated with higher PS, there were no significant differences between parents of cDHH or parents of hearing children. Subsequently, the contributions of poorer child communicative abilities and behavioural problems towards greater PS may not be unique to cDHH. Interestingly, Adily et al. (2024; 15) found no association between language abilities of cDHH and PS. The only communication factor which did significantly contribute to PS was mode of communication, with mixed (oral and sign) methods leading to greater stress than oral-only, which the authors speculate likely relates to the dissonance between home and public communication accessibility (Adily et al., 2024; 15).

Employing observational measures as well as parent-reports, Quittner et al. (2010; 6) observed more negative behaviours from cDHH towards their parent compared to hearing children in coded video-recordings. Mediation analyses indicated an indirect path from child hearing status to observed negative behaviours via child language delays, was significant for DHH-specific PS, but not general PS. Additionally, the association between child hearing status and DHH-specific PS remained significant after controlling for child language delays. Similar path analyses were found by Dall et al. (2023; 16) with a significant indirect effects from social communication abilities via problematic child behaviour on PS.

Evidence supporting this is found in Meadow-Orlans et al.'s study (1995; 4) of mother-infant interaction video-recordings coded on dimensions of mother's behaviours (e.g., sensitivity, involvement and affect), infant's behaviours (e.g., compliance, involvement and gentleness), and dyadic interactions (enjoyment, understanding and turn-taking). In their study, mother-infant interaction ratings were significantly more negative for mothers of cDHH compared to mothers of typically hearing infants.

Child Factors: Additional Disabilities

Finally, the two studies which assessed the impact of additional disabilities on PS (4, 5) showed conflicting results. Pipp-Siegel et al. (2002; 5) found additional disabilities (including vision problems and cognitive impairment) were a significant predictor of stress on the parent-child dysfunctional interaction subscale of the PSI but Meadow-Orlans et al. (1995; 4) failed to find a significant relationship. However, the much larger sample size (n=184) in the former (5) compared to only 5 parents of DHH infants with additional disabilities in the latter (4), may account for this lack of a significant relationship.

Social Support

For studies comparing parents of cDHH to parents of hearing children, findings on the impact of social support were mixed. One study found that parents of cDHH perceived themselves as having less social support than parents of hearing children, but it was not clear from their analysis how this impacted (or not) PS between the groups

(Dirks et al., 2016; 2). Similarly, whilst Pipp-Siegel et al. (2002; 5) did not compare their sample to a control group, they did find both decreased social support perceptions and increased ratings of parenting daily hassles predicted greater scores on the Parenting-Distress subscale of the PSI. When assessing family support needs, Marie et al. (2023; 18) also highlighted that the stress profiles of the mother and father pairs in their study indicated greater social support needs as PS increased.

Conversely, Lederberg and Golbach (2002; 3) found that parents of cDHH rated themselves as having smaller social networks, but satisfaction with social support and related general life satisfaction were equivalent between groups. So, whilst the social circles of parents may be negatively affected by their child's HL, this does not appear to contribute to feelings of dissatisfaction with social support nor was it related to greater PS at any time point (between 22months to 4yrs old). Additionally, in an online social network intervention study for parents of cDHH, Aiello and Ferrari (2015; 1) found access to the network did not result in any significant difference in PS the intervention and control group (who did not access the network). Aiello and Ferrari (2015) did not measure levels of perceived social support or other coping resources for both the intervention and control groups pre- or post-intervention, so it is unclear whether the intervention affected levels of social support perception, even if it did not significantly influence PS.

3.4.2 Parental Mental Health and Wellbeing

3.4.2.1 Outcomes and Predictors

Anxiety and Depression

In a cross-sectional study (Talebi et al., 2018;11) the total average of anxiety scores on the BAI were found to be significantly higher for parents of cDHH with CIs when compared to parents of hearing children, with 44% scoring above threshold for mild or greater anxiety compared to 32% in the comparison group. Additionally, an RCT (Hashemi et al., 2019; 9) investigated the impact of a hospital-based education intervention on parents' anxiety for mothers of cDHH undergoing cochlear implantation. Sessions covered general information on HL and the surgery, caring for their child post-procedure, and ongoing care of CIs. Prior to the intervention, both groups had mean trait and state anxiety scores in the medium-high range. However, the individualised education significantly decreased anxiety for mothers, with further reductions found at 2-month follow-up.

By contrast, in an Australian sample, parents of cDHH displayed low levels of depression, anxiety and stress compared to normative data for the DASS-21, with scores typically falling in the low-moderate ranges (Green, 2020; 7). Parents' reflective functioning was also measured but the authors did not analyse its' relationship to parents' mental health outcomes, nor compare to of parents of typically hearing children. So, conclusions cannot be drawn regarding the relationship between parental reflective functioning and cDHH parents' mental health, or how this compares to parents of hearing children. Furthermore, the generalisability of these results may be low as the sample was small (n=27) and it is not clear what effect sizes the study was powered to find as no power analyses or effect sizes were reported.

Psychological Wellbeing

Saki et al. (2017; 10) found both parents' happiness and self-esteem increased significantly 1-year post CI surgery for their cDHH compared to pre-surgery. Suggesting that for parents in their study, this significant audiological intervention for cDHH may contribute positively to parents' psychological wellbeing. Contextualising levels of happiness and self-esteem for parents of cDHH more broadly is not possible from these findings, however, as the researchers did not compare parents of children with differing hearing status' nor provide information on normative data for the measures used (10).

Psychological Distress

Finally, in a longitudinal study following parents of young (median= 2.4yrs) cDHH during audiology intervention processes (receiving either hearing aids; HAs, or CIs) the experiences of parents' psychological distress was compared (Burger et al., 2005; 8). The researchers found that compared to normed data for the German population on the SCL-90, both parents of CI and HA candidates had significantly increased scores of psychological distress prior to the hearing technology intervention (T1). Post CI-surgery (T2), parents' psychological distress was no longer significantly increased. However, the difference remained significant for parents of cDHH after their HA were fitted (T2).

3.4.3 Parental Adjustment and Coping Resources

3.4.3.1 Outcomes and Predictors

Quality of Life (QoL)

In addition to psychological distress, Burger et al. (2005; 8) also assessed parents' general QoL. They found both groups of parents of cDHH (those receiving HAs and those receiving CIs) showed significantly lower QoL compared to normative data pre-hearing technology intervention. Conversely, on a family-specific measure of QoL, researchers found generally high satisfaction with all areas of family life (Jackson et al., 2010; 14). Parents were also asked to rate the impact of child HL on family life. The areas rated as most impacted (and for which lower satisfaction scores were also found) were emotional and financial wellbeing, time demands and child-focused support (Jackson et al., 2010; 14). This is further emphasised by relatively high QoL ratings for parents of cochlear implanted children in Hakimzadeh et al.'s (2024;17) study. As Burger et al.’s (2005; 8) results suggest parents’ subjective QoL ratings significantly improved after the hearing technology interventions, it likely QoL perceptions improve upon receipt and establishment of hearing technologies. Equally, as there were no differences in QoL perceptions between parents of HA-recipients and CI-recipients, QoL perceptions are not influenced by the severity of HL or hearing technologies interventions.

Self-Efficacy

As with anxiety, Hashemi et al. (2019; 9) found the CI-focused education intervention also led to significant improvement in the self-efficacy of parents of cDHH, compared to the control group. However, it is not clear how scores at any stage of the study compare to parents of typically hearing children. Yet, when Ingber and Most (2012; 13) compared fathers of cDHH (60% HA-users and 31% CI-users) to fathers of hearing children, no difference in levels of self-efficacy were observed. Equally, across both fatherhood groups, those who reported feeling higher parenting self-efficacy and perceived their family as more cohesive and adaptable were more involved and this did not differ by child hearing status. In their sample, fathers of cDHH and typically hearing children had high levels of self-reported involvement in their child’s lives overall (Ingber & Most, 2012; 13).

Resilience

Finally, the impact of a mindful parenting programme for parents of four to six-year-olds with moderate-moderate/severe HL on parents' resilience and their child's reported attachment was assessed by Aghaziarati et al. (2023; 12) in their RCT. Compared to no-treatment controls, the eight-session manualised mindful parenting intervention (Bögels & Restifo, 2014) significantly increased parents resilience scores on the CD-RISC and strengthened parent-rated attachments of their cDHH (Aghaziarati et al., 2023; 12). These findings were maintained at a follow-up of 1.5 months. However, the researchers do not report levels of mindfulness pre- or post-intervention in either group in their study, so it is not clear if greater resilience was associated with increased mindfulness abilities.

Table 4.
Summary of review-identified factors involved in parents' psychosocial outcomes in the context of young childhood HL, categorised under the ABCX framework of family stress (Hill, 1958; McCubbin & Patterson, 1983).

Stressors (A)*	Resources/ Strengths (B)*	Perceptions (C)*	Impact (X)*
Additional disabilities (4, 5)	Social support** (1, 2, 3, 5, 18)	Quality of Life perceptions (8, 14, 17)	Parenting stress (1, 2, 3, 4, 5, 6, 7, 15, 26, 17, 18)
Daily parenting hassles (5)	Parental involvement (13)	Self-efficacy (9, 13)	Anxiety/ depression (7, 9, 11)
Type of hearing technology used (i.e., CIs or HAs; 8, 9, 10, 11, 15)	Resilience (12)	Reflective functioning (7)	General psychological distress (8)
Child communicative abilities (2, 5, 6, 14, 15, 16)	Reflective functioning (7)		Parent-child interactions/ attachment (4, 12)
Child behaviours and socio-emotional functioning (2, 6, 15, 16)	Family cohesion and adaptability (13)		Self-esteem (10) Happiness (10)
			Engagement with services ('adaptation'; 7)

**Variables may apply to one or more category; resilience, for example, can be considered a strength or personal resource (Ayed et al., 2019) but also include appraisal-based components (Hiebel et al., 2021). However, reflective functioning in this context was deemed equally to represent a parental cognitive process ('appraisal'; Barlow et al., 2021) and a family strength so it is the only construct to appear twice across categories. Similarly, though 'stressors' and 'impact' imply causal directions, this is not assumed but merely presented to illustrate possible influences on parental wellbeing as per the focus of the present review. It was beyond the scope of the review to include the impact of demographic characteristics such as parents' education and income, on parents wellbeing and coping, which have already been detailed elsewhere in relation to parenting stress (Gunjawate et al., 2023).*

***Including social support needs (i.e., the Family Needs Survey; FNS, 18)*

4. Discussion

This review aimed to examine and synthesise the available evidence on the factors determining the psychosocial experiences of parents of young children with HL (infants to preschool-aged). Specifically, to explore the existent literature of psychosocial factors involved in the wellbeing of cDHH parents within the early years of diagnosis and intervention, including variables identified as contributing (enhancing or decreasing) parental wellbeing and how outcomes compare to other groups such as parents of typically hearing children or those with additional disabilities (where relevant).

Eighteen studies met full inclusion criteria and the psychosocial factors they measured were grouped into three domains: 1) parenting stress (PS), 2) mental health and psychological wellbeing, and 3) parental adjustment and coping resources. To address the review aims table 3 summarises variables explored, grouping them by domains within the ABCX framework of family stress and resilience (Hill, 1958; McCubbin & Patterson, 1983; figure 1). These are illustrative categorisations only and does not assume linearity or directions of causal effects. It must be acknowledged that within parent-child interactions there are reciprocal (bi-directional) processes which alter or exacerbate parent and child behaviours to one-another (Dall et al., 2023).

Overall, results of studies in this review encouragingly suggest that poorer parental wellbeing, such as PS and mental health difficulties, are not globally increased in parents of cDHH when compared to hearing groups or to normative data. When reviewing factors which contribute (positively or negatively) to parental wellbeing, the results are more varied such as some studies suggesting parents of cDHH have smaller social networks and greater social support needs (Dirks et al., 2016; Lederberg &

Golbach, 2002; Marie et al., 2023) or have children with greater behavioural difficulties, due to poorer communicative abilities (e.g., Dall et al., 2023; Quittner et al., 2010), with other studies finding a lack of evidence for the contributions of these psychosocial factors (e.g., Adily et al., 2024). As such, nuanced interpretations are required.

4.1 Empirical Implications

The reviewed research suggests it would be reductionist to conclude that more severe HL, greater communicative difficulties or more cDHH behavioural challenges are consistently detrimental to parental wellbeing. For instance, findings from the North America and European samples suggest that a combination of poorer communicative abilities, resulting in greater socio-emotional behavioural difficulties, may have a negative impact on parental wellbeing (Dall et al., 2023; Quittner et al., 2010). Yet, whilst Adily et al. (2024) did find that increased behavioural difficulties significantly contributed to DHH-related PS in their Australian sample, their lack of association between poorer child communicative abilities and PS indicates that relationships between cDHH outcomes and parental wellbeing may be culturally/socially dependent. Similarly, in another Australian sample, Green (2020) found levels of depression and anxiety below the population norm, but in a study of Iranian parents of CI-recipients, Talebi et al. (2018) found significantly greater anxiety compared to parents of hearing children.

Therefore, whilst HL can be related to greater DHH-related PS (for instance), these effects tend to be indirect and not generalisable to broader PS (e.g., Meadow-Orlans et al., 1995; Pipp-Siegel et al., 2002) or across cultural contexts. Furthermore, parental wellbeing is likely influenced by the quality of professional support as in another study of Iranian parents of CI-recipients, Hashemi et al. (2019) found training parents in CIs significantly reduced anxiety and increased parental self-efficacy. Additionally, evidence suggests poorer parental wellbeing may be found early in a cDHH's diagnostic journey before hearing technologies interventions (Burger et al., 2005; Kurtzer-White & Luterman, 2003). However, this appears to improve following audiological intervention, particularly for parents of cDHH receiving cochlear implants (Burger et al., 2005; Hakimzadeh et al., 2024; Saki et al., 2017). Though psychological distress may remain elevated for longer in parents of HA-recipients, QoL ratings have frequently been found to improve with time regardless across hearing technology types (Burger et al., 2005; Mundayoor et al., 2022; Spahn et al., 2003). The impact on parental wellbeing thus seems to change with time after diagnosis and following audiological interventions to establish families with the right hearing technologies for them.

Favourable parental wellbeing findings have been attributed to increasingly widespread adoption of early screening for HL and subsequent enrolment in early intervention programmes (Adily et al., 2024; Lederberg & Golbach, 2002). Consequently, parents can be exposed to more multifaceted and holistic support throughout the adjustment process after diagnosis and before significant developmental delays are established, when compared to pre-UNHS days (Yoshinaga-Itano, 2003; Yoshinaga-Itano et al., 2021).

Though most studies included in this review focused on prevalence and utilised cross-sectional designs, there is an encouraging increase in research investigating resources and coping factors which may be protective of parental wellbeing from DHH-related stressors, an area previously under-investigated in this population (e.g., Asta et al., 2024; Kara et al., 2024; Zhang et al., 2024). For example, Aghaziarati et al.'s (2023) finding that a mindfulness intervention increased cDHH parents' resilience and attachment to their child, is further supported by a study with a Chinese sample which indicates that greater resilience in parents of older cDHH significantly mediates the impact of high PS on parents' ability to utilise active coping strategies (X. Zhang et al., 2024). Whilst mindfulness interventions for parents may be one route to increasing parental resilience, other studies suggest that reducing loneliness and increasing perceptions of social support and life satisfaction, are also important for enhancing cDHH parents' resilience (Kara et al., 2024). Though an online social network intervention failed to alter PS scores (Aiello & Ferrari, 2015) this may relate to the particular social support needs for families of cDHH as Marie et al. (2023) found the greatest family support need is for information including in both parent peer-support and specialist professional input. Though even these needs differ in strength between parents of the same cDHH (Marie et al., 2023). Encouragingly, there is an increase in studies investigating resources and coping factors which may be protective of parental wellbeing from DHH-related stressors, an area also previously lacking in research.

4.2 Clinical Implications

Where there are increased levels of parental mental health problems such as depression or anxiety (e.g., Talebi et al., 2018), parents should be offered appropriate psychological interventions to address this, especially as anxiety may impact parental engagement with early intervention services for their cDHH (Green, 2020). Similarly, the presence of additional disabilities in cDHH may increase the potential for parental burnout due to the added challenges these may present (Whicker et al., 2019). Though further studies are required to clearly identify needs for parents of cDHH with additional disabilities as this remains an under-studied area with only five out of the 18 current studies including or reporting on this.

Though rates of PS in parents of cDHH are largely comparable to the general population (e.g., Lederberg & Golbach, 2002; Pipp-Siegel et al., 2002; Adily et al., 2024), included study findings support emphasise the need to consider DHH context-specific PS in this population and the bi-directional influence of child factors, and parental responses to these, in contributing to parental outcomes (e.g., Quittner et al., 2010; Dall et al., 2023). For instance, Dall et al. (2023) highlight the importance of functional, social communicative skills for cDHH (e.g., Kelly et al., 2020) in determining levels of child behaviour issues (with greater communicative difficulties leading to more problematic behaviour), how these problems in behaviours then increase PS, risking subsequent disruptions to sensitive and consistent behavioural responses of stressed parent to their cDHH's communicative attempts.

Evidence also suggests stress levels may ebb and flow across different domains of life as new challenges arise and are overcome (Blank et al., 2020), for instance, with greater stress around healthcare and wellbeing soon after diagnosis, evolving to education-specific stressors in time (Meinzen-Derr et al., 2008). Family Life Cycle theory provides a helpful framework to understand these findings, positing that family stress is at its greatest when transitioning between life cycle stages (such as being a family with young children, to one with adolescents) with the adaptability of family members and availability of support systems either dissipating or exacerbating stress at these times (Berge et al., 2012; Carter & McGoldrick, 1999).

This review has highlighted that context-specific stressors should be identified and addressed within DHH support services. For example, during audiological interventions, providing as much information as possible and access to meaningful peer support (Marie et al., 2023) and ensuring parents feel skilled in the hearing technologies to be used, thus boosting their sense of self-efficacy which can be done even through short educational interventions (Hashemi et al., 2019) and their resilience to evolving challenges as their child develops (Asta et al., 2024; Blank et al., 2020). It also emphasises the need for specialised parent-child interactional support approaches in this population (Kelly et al., 2022) to lessen antagonistic effects of parent and child factors by reducing the likelihood of utilising problematic behaviours to communicate their needs in lieu of other effective modes of communication, leading to poorer parental wellbeing outcomes (Quittner et al., 2010) and less sensitive and flexible responses, further exacerbating child behavioural difficulties (Dall et al., 2023; Quittner et al., 2013).

4.3 Limitations

The scope of the review was wide, as such there was a broad range of variables measured using a variety of methodologies. The quality of included studies was acceptable as assessed by a general appraisal tool (Kmet et al., 2004), though more idiosyncratic quality assessment suggests greater variability, particularly regarding omissions of key information or inaccuracies in reporting. Whilst other research has explored the psychosocial experiences of parents of cDHH in the wider evidence base, a challenge of this review was narrowing the focus to early childhood. This was not clearly nor consistently reported and thus is reflected in the small number of studies included.

As such, studies investigating the concepts of interest relevant to this review may have been omitted due to broad age-ranges or poor reporting of this.

4.4 Conclusion and Future Directions

In a recently published call to action, particular emphasis has been placed on Family-Centred Early Intervention (FCEI) programmes to address the dynamic, multifaceted and multi-level factors which interact and shape outcomes across family members (see model suggested by Holzinger et al., 2022; figure 3), including parental wellbeing and cDHH outcomes (Szarkowski et al., 2024). Adding the findings from the current review, evidence indicates that siloed, untimely care from audiological, child developmental and parental mental health perspectives will likely be ineffective in altering any reciprocally detrimental relational patterns in families of cDHH. Instead, coordinated and simultaneous interventions across these domains utilising early diagnosis and interventions are more likely to be effective and explain the favourable outcomes observed in regions in which such models of FCEI care are readily available (Yoshinaga-Itano et al., 2021). The findings of the current review therefore echo the call to action series in its plea to continue pursuing research into factors affecting (particularly those which promote) wellbeing for families with a cDHH specific to their familial and cultural context, to better inform the clinical needs and cater support offered within FCEI approaches (Szarkowski et al., 2024).

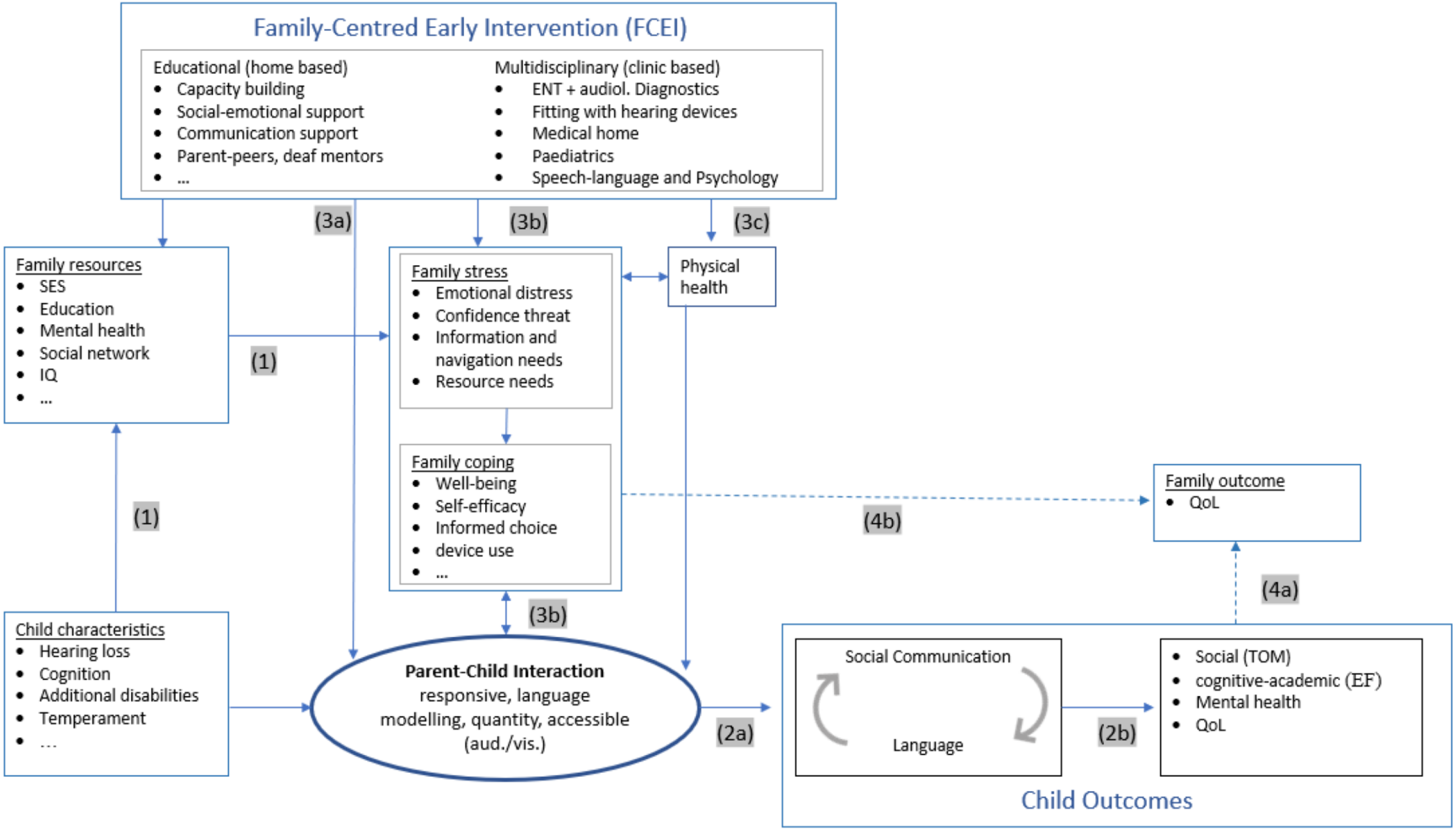

Figure 3. Conceptual model of early intervention for cDHH taken from Holzinger et al. (2022)

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Service Improvement Project (SIP)

A mixed methods investigation to understand access and engagement for Male and Female Perinatal Clients in Berkshire Talking Therapies Service, with recommendations for improvement.

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Abstract

Purpose: In Berkshire Talking Therapies (BTT), perinatal clients form a small minority of overall clients, and male perinatal clients an even smaller proportion. However, those who engage tend to have favourable recovery rates. This study therefore aimed to investigate barriers and facilitators to accessing and engaging with BTT support for perinatal clients, including male perinatal clients.

Methods: A mixed-methods approach was used across two phases to: 1) quantitatively assess patterns of access and engagement, and 2) explore perceptions of factors that fostered or hindered these. Phase 2 was completed in two parts. In part one all perinatal clients were invited to complete a survey (*n*=17) and part two used interviews to explore the specific experiences of male perinatal clients (*n*=5).

Outcomes: Perinatal clients were more likely than not to complete treatment. There were statistically significant gender differences in treatment completion across stepped care interventions. Referral source and final referral destination did not alter patterns of engagement. Qualitative data indicated the importance of early engagement. Survey and interview themes highlighted increased flexibility and attuned therapy delivery as significant facilitators, with lack of awareness, stigma and burdensome processes key barriers.

Implications: Increasing these facilitators and addressing barriers could improve numbers of perinatal clients accessing and successfully engaging in BTT support. NHS Talking Therapies services, such as BTT, are key primary care providers for perinatal clients, particularly male perinatal clients who have been historically excluded and overlooked in healthcare service.

Introduction

NHS Talking Therapies (TT, previously 'IAPT'; Clark & Whittington, 2023) form a key primary care mental health service provider for individuals in the perinatal period (National Collaborating Centre for Mental Health; NCCMH, 2018), classified as the period from conception to 2yrs postnatal (NHS, 2019). Up to one in five women (Howard et al., 2014) and one in seven men (Howard & Khalifeh, 2020; O'Mahen et al., 2023) suffer from mental health problems in this period. Of the estimated £8.1bn cost of perinatal mental health (PMH) problems in mothers, 72% has been associated with long-term adverse child outcomes such as later behavioural, emotional and educational problems (Bauer et al., 2014). Though less-researched, there is increasing evidence men also experience postnatal depression and anxiety during the perinatal period (Cameron et al., 2016; Leach et al., 2016; Paulson & Bazemore, 2010). Paternal PMH problems have also been linked to poorer child developmental outcomes, though the impact appears more indirect through its influence on parent-child dynamics and couple conflict (Gutierrez-Galve et al., 2015; Sweeney & MacBeth, 2016).

In line with National Institute for Health and Care Excellence guidelines (NICE, 2014) and the NHS IAPT Perinatal Positive Practice Guide (Department of Health, 2013), NHS TT perinatal referrals are given priority labels to ensure clients are offered an assessment within two-weeks of referral and treatment within four-weeks (NCCMH, 2018). A pathfinder site estimated 27% of NHS TT clients would likely be pregnant or in the postnatal period (Joint Commissioning Panel for Mental Health; JCPMH, 2012) but exact guidance on perinatal client targets for NHS TT services is currently lacking.

The Five Year Forward View (NHS, 2014) and NHS Long Term Plan (LTP; NHS, 2019) prioritised improving PMH support pathways from primary through to tertiary care services including committing to increase support for fathers and partners (NHS, 2019). However, significant barriers remain for fathers, particularly social stigma (Martin et al., 2013), including a reluctance to disclose PMH problems and perceived lack of entitlement to support services in the perinatal period (Darwin et al., 2017; Fenton et al., 2021), views unfortunately mirrored by some healthcare professionals (Baldwin et al., 2019). Furthermore, despite the revised NHS TT Perinatal Positive Practice Guide indicating large proportions of new parents suffering from anxiety and depression are eligible for NHS TT support, for many years access and engagements rates have been lower than non-perinatal age-matched peers (O'Mahen et al., 2023).

Service-specific Context

Referred clients are perinatally labelled if they or their partner are pregnant or have a child under two-years-old. In Berkshire Talking Therapies (BTT), perinatal clients accounted for 6.6% of referrals in the financial year between 01/04/2021-31/03/2022. Of these, only 15% were male perinatal clients, despite overall male clients accounting for 33% of BTT referrals. Additionally, drop-out rates (where treatment ended earlier than planned) for perinatal clients (23%) were higher than overall BTT rates (19%). Yet perinatal clients who completed treatment had markedly better recovery rates (63%) than overall referrals (56%), despite being just as likely to complete treatment as overall referrals (36%).

Objectives:

1. To understand factors that promote or hinder perinatal clients to access and engage with BTT support and to produce recommendations for addressing barriers and/or enhancing facilitators.

2. To understand the patterns of service access and engagement, including differences by treatment, gender and referrals pathways.
3. To investigate what the perceived barriers and facilitators are to accessing psychological support in BTT, particularly for men in the perinatal period.

Methods

Design

A cross-sectional, mixed-methods design was used to examine engagement and access barriers and facilitators for BTT perinatal clients. Figure 1 details the funnelled data collection process, starting with a broad quantitative review of service data (phase 1), narrowing to qualitative approaches (phase 2). Phase 2 was split into a further two parts: (1) a survey was sent to all eligible perinatal clients and (2) specific interviews with fathers within the perinatal period were conducted. Though analysed by stage, findings from all three elements were subsequently combined to produce service improvement recommendations (table 5).

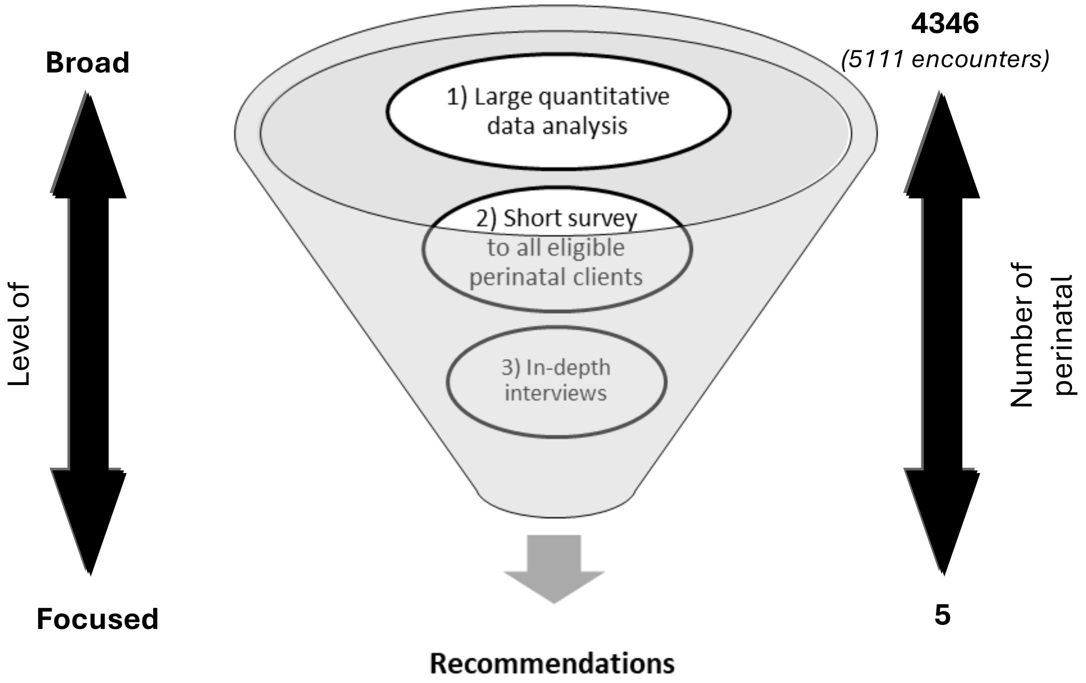

Figure 2. Process illustration of the funnelled approach to the study design and data collection

Procedure

Phase 1: Quantitative Review

Participants/data collection: Data routinely collected by BTT were pulled from a report for all perinatal clients discharged from the service between 01/04/2019 to 31/08/2022. This timeframe was chosen to cover a period of three financial years (pre-, during and post-Covid-19 pandemic), plus another two quarters to accommodate easing of Covid-19 restrictions.

Analysis: The review answered pre-determined questions, defined in collaboration with the Perinatal Service Lead (TL). The following questions were used to guide data analysis, with chi-square tests of independence used to examine statistical significance of gender differences:

1. What proportion of BTT clients were labelled as perinatal in this period? What were their demographics?

2. What proportion of perinatal clients were "non-completers" of treatment and how did they differ from “completers”?
    a. What step/level of input had they received?
    b. Were there differences in female and male perinatal clients?
3. Did referrals into and out of the service impact treatment completion?

Phase 2: Qualitative Exploration

A brief survey and in-depth interviews were conducted to explore the service-user experiences. Purposive sampling was used to identify participants for both the survey and interview with eligibility criteria set as:

1. Identified as ‘perinatal’ client
2. Discharged from the service within last financial year (at time of data collection)
3. Previously consented to be contacted for research
4. (*For interviews*): recorded as ‘male’

1: Survey

Participants: A Microsoft Forms survey (appendix 2A) was emailed out in two rounds to 172 perinatal clients who meet the first three inclusion criterion, discharged between 01/04/2022 and 31/03/2023.

Data collection and analysis: Responses were analysed using content analysis to allow data-driven categorisations (Forman & Damschroder, 2008). Content analysis was chosen due to its flexibility in accommodating the potentially broad variations in breadth and quantity of survey data (White & Marsh, 2006). Coding followed preparation, organising and reporting phases (figure 2; Elo & Kyngäs, 2008; Kleinheksel et al., 2020). The organisation phase followed through the coding, grouping and abstraction stages iteratively rather than linearly.

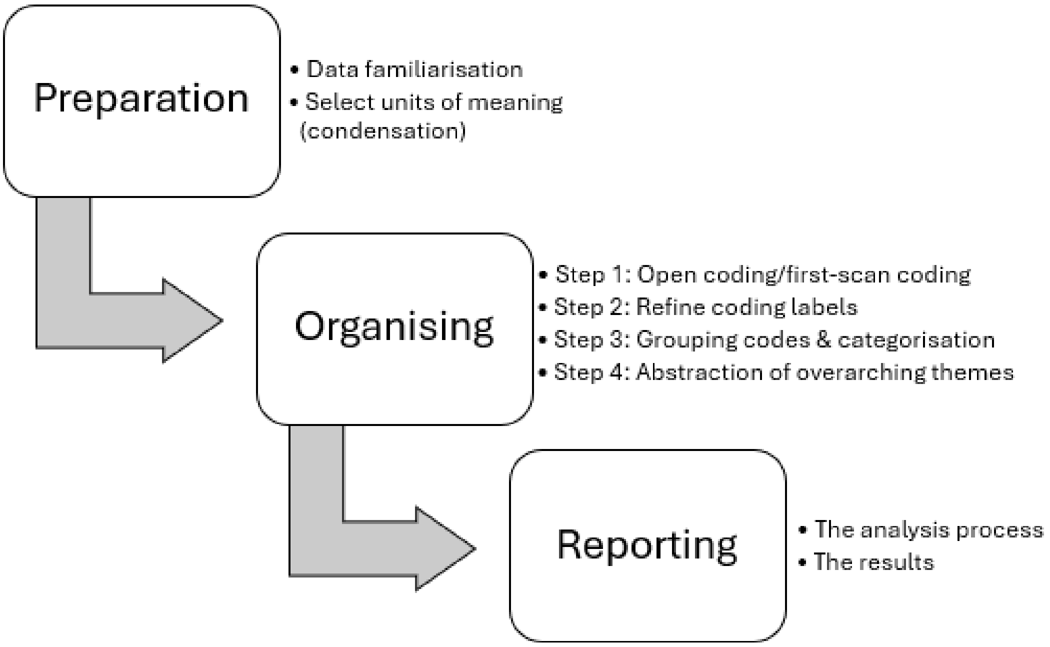

Figure 2. Content analysis approach (amalgamating processes detailed in Elo & Kyngäs, 2008, and Kleinheksel et al., 2020)

2: Interviews

Participants: Male perinatal clients were invited via telephone to share their experiences of BTT in a remotely-conducted, semi-structured interview (appendix 2B; interview schedule). Interviews were held via telephone or Microsoft Teams calls, depending on participants' preference. Twenty-five male perinatal clients were contacted, 12 answered, 10 consented to be booked for interview and five interviews were completed. The first two interviews were used as pilots, with feedback given on content and process. No significant changes were made so these interviews were included in the final analyses. Interviews were audio recorded and transcribed (EC) and lasted between 55-102 minutes.

Data collection and analysis: The interviews were analysed using thematic analysis (Braun & Clarke, 2006). This was chosen due to its clear but flexible protocol and transtheoretical applicability to rich and detailed qualitative data (Terry et al., 2017). The six stages of analysis were followed; (1) familiarisation with the data (via transcribing, reading through transcripts, and initial coding), (2) in-depth coding, (3) generating themes, (4) reviewing/developing themes, (5) refining themes, and (6) reporting results (Braun & Clarke, 2006, 2013). Themes were generated using both semantic and latent codes.

Results

Phase 1: Quantitative Review

Variables indicating barriers or facilitators to accessing and engaging with BTT were explored in instances in which treatment completion frequencies substantially deviated above or below the average 58% completion rate for perinatal clients.

Question 1. What proportion of BTT clients were labelled as perinatal in this period?

Between 01/04/2019 to 31/08/2022, there were 5111 total perinatal discharges equating to 6.4% of total discharges in BTT. Table 1 details perinatal client characteristics by BTT labels.

Table 1.

Summary of descriptives for all perinatal clients discharged between 01/04/2019-31/08/2022

Variable	BTT Categories	*n*	%
Gender	Female (including trans woman)	4129	80.8
	Male (including trans man)	977	19.1
	Non-binary	1	0.02
	Not stated/not listed	4	0.1
Age range	16-17years	17	0.3
	18-35years	3914	76.6
	36-64years	1172	22.9
	65-74years	6	0.1
	75-89years	2	0.04
Ethnicity	White	3717	72.7
	Asian/Asian British	597	11.7
	Black/Black British	208	4.1
	Mixed	176	3.4
	Other Ethnic Groups	91	1.8
	Not Stated/Blank	322	6.3
Variable	BTT Categories	*n*	%
Relationship status	Married	2097	41.0
	Single	916	17.9
	Co-Habiting	646	12.6
	Blank	563	11.0
	Long-Term	501	9.8
	Not Disclosed	154	3.0
	Separated	117	2.3
	Civil Partnership	71	1.4
	Divorced	44	0.9
	Widowed	2	0.04
Recovery status	At Recovery	1398	27.4
	Not at Recovery	893	17.5
	N/A	2820	55.2

Clients were predominantly ‘female (including trans women)’, ‘white’ and aged ‘18-35’years old. Proportions of female and male perinatal clients remained stable over each year covered (2019, 2020, 2021 and 2022) with females accounting for 80.8% (range=80.3-81.6%) and males for 19.1% (range=18.2-19.6%). Recovery status (whether clients scored below clinical cut-offs on standardised outcome measures) by the end of treatment was available for less than half of clients (45%), but for those with whom it was recorded, reaching recovery by discharge (27.4%) was more common than not (17.5%).

Question 2. What proportion of perinatal clients were "non-completers" of treatment and how did they differ from “completers”?

a. What step/level of input had they received?
b. Were there differences in female and male perinatal clients?

In total, 2160 (42%) of perinatal discharges were regarded as ‘non-completers’. Table 2 details average number of appointments attended, and discharge reasons and/or final step of therapy reached before discharge using BTT data labels. Earlier-than-planned termination of treatment and failure to attend assessment were the main non-completion discharge reasons (37%). On average, completers attended twice as many appointments in step 2 interventions and more than three times as many for step 3 interventions, than non-completers. For completers, a third were discharged after finishing a step 2 or 3 intervention.

Table 2.

Completion Status breakdown by Discharge Reasons and Average Number Appointments Attended

	Non-completers			Completers	
Total	**42%**			**58%**	
Non-Completers Treatment Step/Discharge Reason	%	**Non-completers Average Appointments Attended**	**Completers Treatment Step/Discharge Reason**	%	**Completers Average Appointments Attended**
Termination earlier than planned (*Steps 2 & 3 Interventions*)	**22%** (*Step 2=15%, Step 3=7%*)	4 (*Step 2* = **3**, *Step 3* = **4**)	Completed Step 2 Therapy	**18%**	**6**
Not assessed (*did not opt in/ declined or did not attend assessment*)	**15%**	1	Completed Step 3 Therapy	**15%**	**13**
Declined treatment (*at or after assessment*)	1%	1	Discharged (*following advice and support*)	23%	3
Not suitable for service	3%	2	Associated services*	1%	4
Referred to another service	1%	2	CPE**	1%	5
Deceased	(1 client)	4	Secondary care	1%	7

Note: Key comparisons are highlighted in ***bold****.*

**Associated services included: secondary care; voluntary services; non-statutory services; Berkshire Traumatic Stress Services).*

*** CPE: Common Point Entry into mental health services in Berkshire Healthcare Foundation Trust*

Completion status was then analysed by gender. Female and male perinatal clients (including trans men and women) both appeared more likely to complete treatment than not. A chi-square test suggested there was no statistically significant association between gender and completion status for overall perinatal clients, X^2 (1, N=5106) =0.06, *p*=.801.

Also examined was completion status across the four broad treatment categories; step 2 interventions, step 3 Cognitive Behavioural Therapy (CBT) interventions, step 3 Counselling or ‘no treatment recorded’. Chi-square tests were performed to examine the statistical significance of relationships between gender and completion status by each of the four treatment categories. There was a significant relationship between gender and completion status for step 2 interventions, X^2 (1, N=2574) =4.41, *p*=.036 and for step 3 CBT interventions, X^2 (1, N=1431) =4.52, *p*=. 034.There were no significant relationships between gender and completion status for step 3 counselling or the ‘no treatment recorded’ group. Analysis of contingency tables indicated male perinatal clients were more likely than expected to complete a step 2 intervention. The reverse was observed for step 3 CBT interventions, with male clients being less likely (and female clients more likely) than expected to complete these interventions.

Finally, overall recovery rates and average number of appointments attended for female and male completers and non-completers were assessed (table 3). On average male perinatal clients completed treatment in two fewer appointments than female perinatal clients. However, non-completing male and female perinatal clients were approximately equivalent in their average appointments attended.

Table 3.

Overall recovery rates by gender and average appointments attended for female and male perinatal clients (completers and non-completers)

	Recovery Rates	
	Female	61%
	Male	63%
Gender & Discharge Reason	**Count**	**Average Appointments Attended**
Female		
Completed treatment*	1439	10
Discharged*	939	3
Not assessed†	622	1
Termination earlier than planned†	920	4
Male		
Completed treatment*	317	8
Discharged*	250	3
Not assessed†	147	1
Termination earlier than planned†	228	4

*Note: *"completers"; †"non-completers"*

Question 3. Did referrals into and out of the service impact treatment completion?

To determine if referral source impacted treatment completion likelihood, completion status by proportion of each of the six most common referral sources was examined (figure 3). Self-referrals were considerably the most common method of referral (3566) followed by; GPs (486), other primary healthcare practitioners (440), other services/agencies (326), secondary care (181) and health visitors (80). Clients referred from most healthcare-professionals/services were more likely than not to complete treatment, apart from specialist secondary care referrals in which the opposite pattern was observed. Only 4% of clients were deemed ‘not suitable’ for the service and/or referred on to another service.

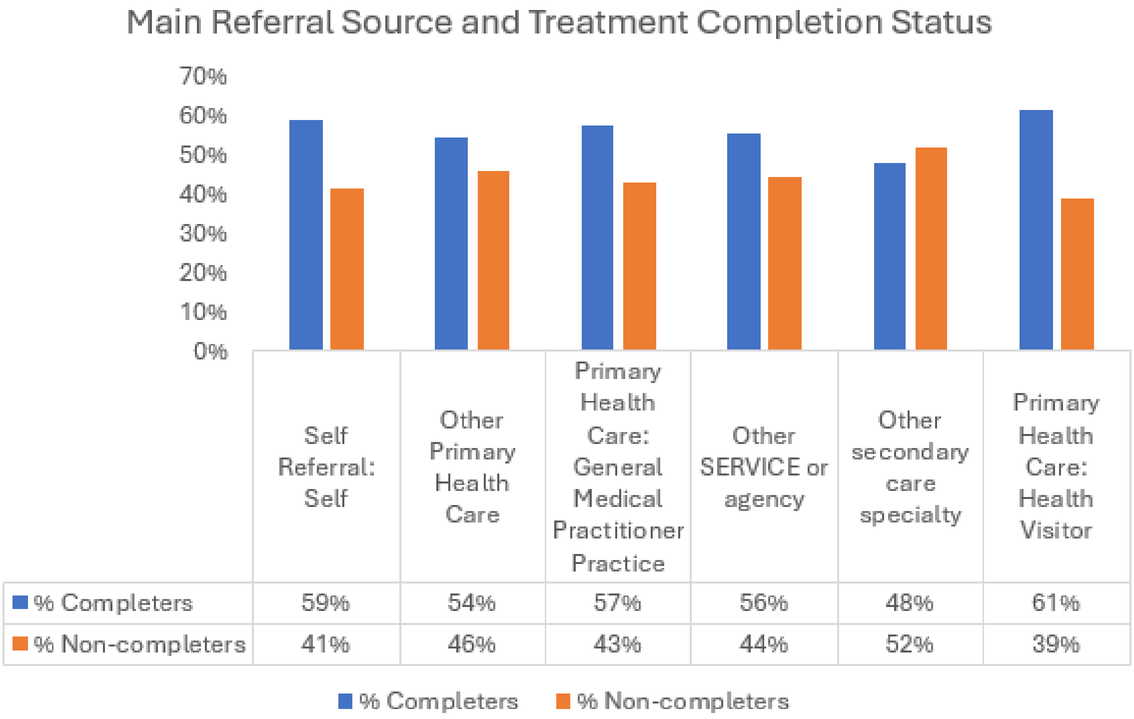

Figure 3. Six main referral sources and completion status by proportion of that referral source

Phase 2: Qualitative Exploration

Part 1: Survey

Descriptives

Seventeen participants completed the survey (approximately 10% of those invited, in-line with typical survey return rates). Reported results focus on those directly addressing project objectives. Full survey findings were shared separately with BTT (appendix 2A). Fifteen of the 17 respondents identified as female and two as male.

Support for anxiety-related issues was most frequently reported (n=10), followed by low mood (n=6).

Content Analysis

Content analysis was utilised to summarise the free-text response to the question "Are there any areas that could be improved to help people who are in the perinatal period access support from Talking Therapies, and if so, what might help?". This resulted in four themes (numbered) and eight additional subthemes. These were categorised into three service levels (figure 4). A full list of illustrative quotes for the sub-categories are presented in appendix 2C. Sub-categories identified on three-or-more occasions are indicated with a frequency count.

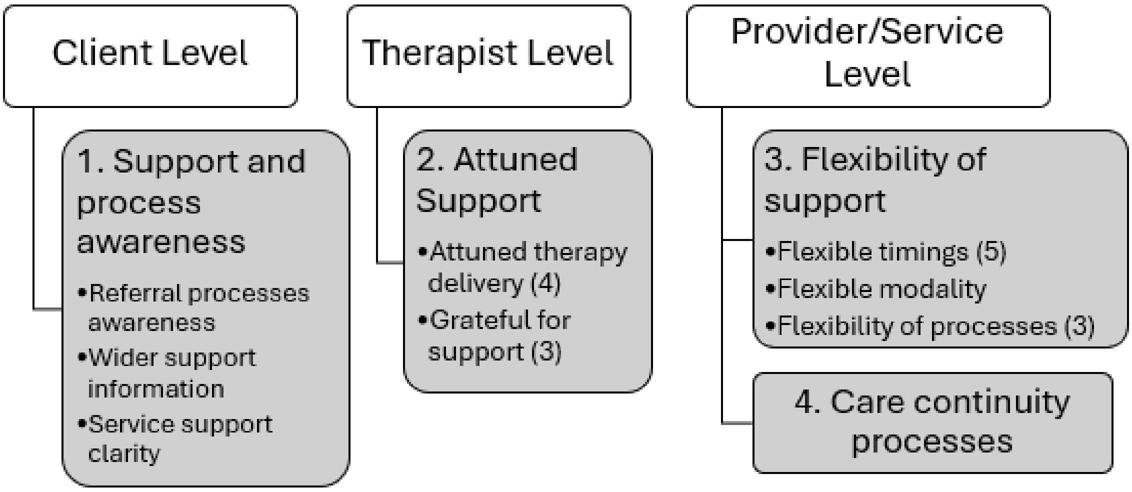

Figure 4. Content analysis themes and subthemes for the free-text question of the perinatal survey

At the 'client-level', respondents expressed wanting more awareness to be made of the option of self-referral in the perinatal period; "...I had friends who gave birth around the sa[m]e time who had never used these sorts of services and were surprised when I suggested self-referral". Similarly, another respondent believed "...women are only supported up until 12 months" indicating a need for greater clarity of service support provision in addition to wider support information such as "signposting to any charities or groups that could provide respite or free play".

At the 'therapist-level', subthemes centred around the attunement and flexibility of support provided with requests for "more tailored support and availability of support". One respondent noted that "times available to talk were a bit tricky (as it was around the same time I was putting my son to bed)" and another stated they wanted "faster appointments with less of a gap in between". In addition to timings, flexibility in modality was raised with respondents reportedly finding it "...difficult to talk openly on the phone at home". Some also described rote completion of outcome measures; "...[it] became easy to just put down the same answers each time... easy to mask how you were really feeling". However, three respondents stated they were grateful for the support they received; "I wouldn't be the mother I am today if I didn't receive TT support". Finally, at the 'service-level' staff changes were noted to have "disrupted my progress and meant that some of support was postponed or cancelled" suggesting the importance of robust processes to ensure care continuity for clients.

Part 2: Interviews

Five interviews were completed with male perinatal clients; three had completed treatment (reaching recovery) and two did not complete treatment. Four participants were white (three white British, one 'white other') and one was Asian British. Thematic analysis resulted in three overarching themes and seven subordinate themes. Figure 5 illustrates key superordinate and subordinate themes with coded illustrative quotes for all themes in table 4 (additional quotes; appendix 2D).

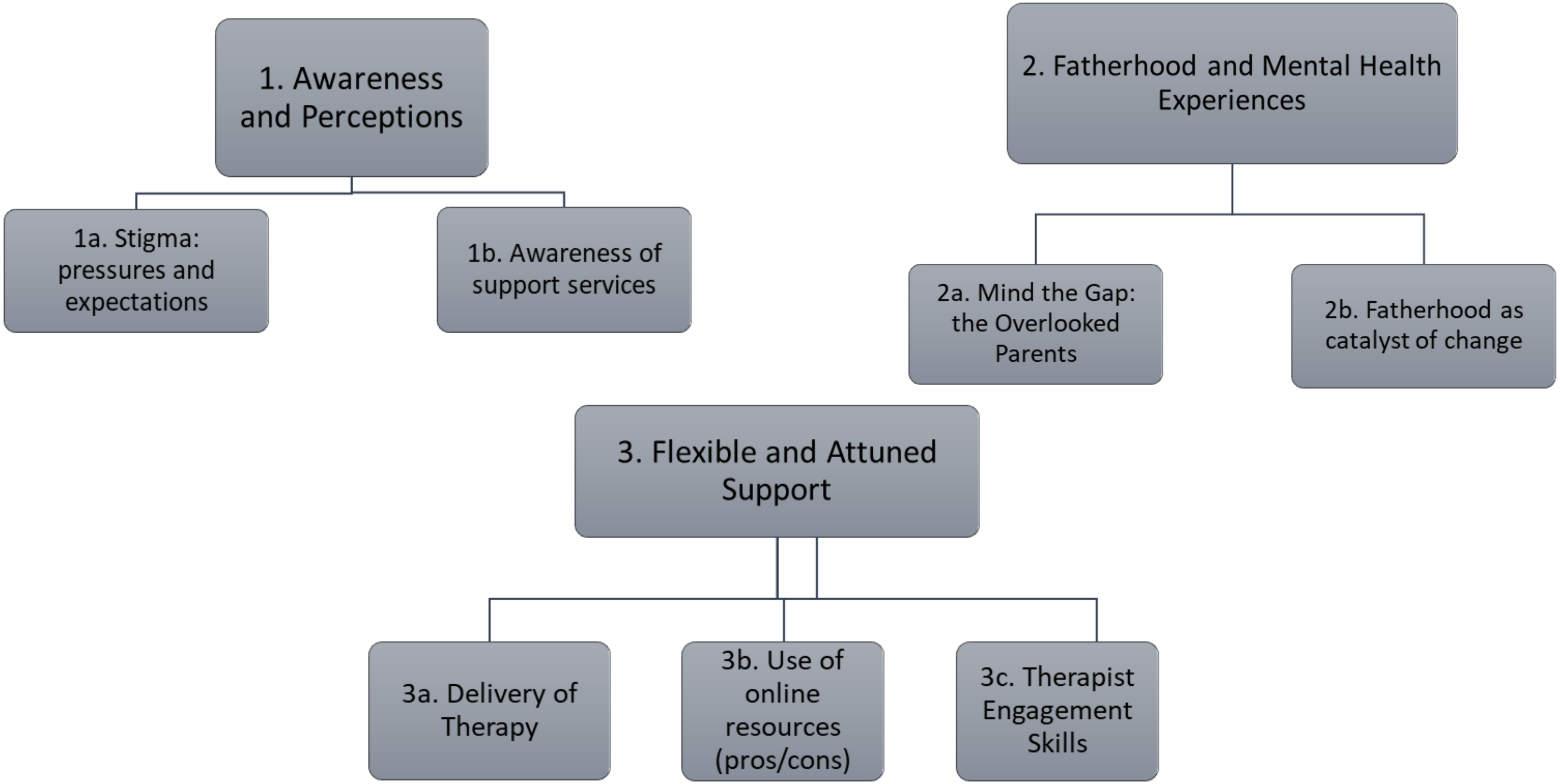

Figure 5. Interviews superordinate theme 1-3 and related subordinate themes

Theme 1: Awareness and Prejudiced Perceptions

Participants frequently described a lack of awareness of paternal PMH difficulties or of what support services were available to them and prejudiced beliefs about fatherhood and mental health due to stigma, social pressures and expectations. A legacy of male stereotypes regarding mental health and talking therapies (e.g., that men "hide things because they have to be strong"), was discussed by every participant (1a). For some, this meant suffering in silence for 10 years or more until they became a father, to avoid being perceived as "a moaner". Others spoke of struggling to meet perceived expectations to smoothly transition to fatherhood and the additional caring responsibilities on top of pressures to provide financially; "this is a…life changing event… I've got a child and that has just thrown a spanner into the works, like my whole routine" (see table 4). A barrier discussed by some was not knowing "where to go… I didn't know how to start the process" (1b). Several participants noted that increasing awareness of the struggles and support available for paternal PMH difficulties using positive, personally salient advertisements, would be a key facilitator to fathers accessing support; "if they could get some kind of advertisement… where men can sort of relate to it [this would help]".

Theme 2: Fatherhood and Mental Health Experiences

Fatherhood and related, unique mental health experiences was a theme touched upon by every participant. Within the subordinate theme (2a) of fathers being overlooked parents, was a feeling of being side-lined to the "supporting role" by healthcare services across the perinatal period. These included implicit perceptions of health visitors, midwives and other antenatal appointments not being "for" them, with one stating they felt lucky when their midwife actually "knew my name". This was despite feelings "there should be some...sort of check on...the man [too]” with another explaining their health visitor “never asked how I was”. One participant concluded that “the point is, there is no help for men”. Some also described the importance of wider support systems assisting their recovery or contributing to problems if this was lacking (table 4).

In addition to the backdrop of feeling marginalised by healthcare services, participants spoke of the level of representation of fatherhood-specific materials and therapy content when accessing BTT. Those who completed treatment noted fatherhood-related experiences were regularly raised in conversation with their therapists. However, those who did not complete treatment stated that this was not brought up beyond the assessment call and that materials used did not feel relevant, for instance; “the videos...they were like daily stress stuff... that [was] not what's relating to me”. Others said they felt the resources used in their treatment did not match their experiences closely enough, for instance, only including first-time fathers’ perspectives; “that transition from first to second [child] is a whole new ballgame”. However, one participant described seeking out written examples of fathers’ experiences, stating that “reading the stories [of fathers]...on their website... helped me more than reading modules”.

Finally, many participants spoke of the transition to fatherhood as being a catalyst of change (2b). Reported difficulties in transitioning to fatherhood, triggering a decline in mental health, included an inability to use old coping strategies, e.g., “I probably hit the bottle too much...as a single lad”, increasing irritability due to a lack of sleep; “when [son] was born...I wasn't getting any sleep at all”, and unaddressed trauma from the birth itself; “he didn’t need to come into the world the way he did... there was a lot of anger there and...horrible thoughts”. However, participants also described the significant motivation they gained from transitioning to fatherhood to reach out for help; “I’ve struggled…probably for the last 10 years…but he gave me the reason to seek help”.

Theme 3: Flexible and Tailored Support

The theme of flexible, tailored support was discussed by every participant. Some participants preferred short, infrequent phone calls, particularly those who had flexible employment, whereas others cited a perceived lack of face-to-face appointments as a reason for their disengagement (3a). Similarly, the use of online resources was discussed positively by those who completed treatment as it allowed for continuity of the support they received, but burdensome by those who did not (3b). There was, however, a consensus in therapist engagement skills deemed necessary to effectively foster engagement across participants (3c). These skills included active listening, getting clients on board early in initial contacts and adapting to the clients’ individual needs and preferences such as adjusting pace or the directness of intervention approaches (see table 4).

Table 4.

Table of Representative Quotes for Superordinate and Subordinate Themes

1. Awareness and Perceptions

1a. Stigma: pressures and expectations

‘Men don’t/shouldn’t talk’

“...I think that's what blokes are scared of. I don't wanna be a moaner... I don't want people to think I’m a drip”

“I know men, they don't speak easily. They...hide things because they have to be strong.”

Transition to fatherhood: permission to struggle?

“Before I had a child I didn't know that a father needs support as well”

“it was a colleague of mine...he would call me ...and say, ‘...I really feel for you...this postnatal depression it’s for fathers as well’”

“...becoming a father...you should be enjoying the time you spend with your kids... I was struggling...my girlfriend says I was horrible to live with”

“This is a...life changing event... I've got a child and that has just thrown a spanner into the works, like my whole routine, schedule, everything. I did not expect it”

Pressures/Expectations: Provider and supporter role

“...my wife’s not well. So you now have to take responsibility, kids...everything”

"I had a new job and I was a bit like 'I don't know how this is all going to work now' and then he was breech and he nearly died"

[balancing faith and fatherhood]: "till 11:00 o'clock... somebody has to hold him while we do whatever we need to do for the day...I have to do, like, my prayers... by the time it finishes, it's 1:00 o'clock in the morning"

1b. Awareness of support services

How to access support

"I didn't know where to go to... I didn't know how to start the process and I think that needs to be made a bit more common knowledge"

"you hear about all these like therapists, you can see online or stuff like that but like people need to see it like...in shops"

"if they could get some kind of advertisement where it, where men can sort of relate to it [this would help]"

What Talking Therapies can do

"...I think I wasn't fully understanding what therapy was going to be"

"it's a marketing and advertising problem"

[when advertising the service]: "...if they could get some kind of advertisement... where men can sort of relate to it... once, I guess, the idea is out there..." [it would help awareness]

2. Fatherhood and mental health experiences

2a. Mind the gap: the overlooked parents

Feeling marginalised

"It's a very interesting experience having...[a child], from a...male perspective, because there are very, very few areas of in society where you are marginalised"

"a little part of me that was slightly jealous of my wife for the attention she got with her mental health..."

"there should be some...sort of check on...the man [too]"

"I think especially the health visitors visits I think they're too far apart... they [health visitors] never asked how I was"

"the midwife's appointments weren't for me, I was there but you know... luckily they knew my name!"

"The focus was made mainly on my wife, I was very much in the supporting role... there's a certain element of just, you know, 'keep going'"

"I think especially the health visitors visits I think they're too far apart... they [health visitors] never asked how I was"

Access to wider support

"If we didn't have our friends around then raising this one, would have been an absolute nightmare, but because we had the support system of friends and family, yeah, it weren't that bad"

"I'm from [South Asian Country]... We got a completely different culture... [people there] live in combined families...there's always someone there to support you. Someone's always there to look after the child... Here, it's not like this."

Relatability of resources

"...it was just the videos and reading the stories...on their website...of other people and what they've gone through... I think now that kind of helped me more than reading modules"

	“I came away feeling like, I could be a great mother… and it's also written for people… having their first child… but that transition from first to second is a whole new ball game. Certainly, neither of the Dads stories were… with them having their second kid” “maybe creating more resources that were geared towards dads, is probably the only thing that that I could I could definitively say would help” “they sent me videos that didn't work… wasn't related to me anyway, and then they sent me for the CBT. This wasn't related too… but then the videos they said they were like daily like stress stuff, like if you're stuck in traffic and if you have deadlines to achieve, I said, ‘that is not what's relating to me’”
2b. Fatherhood as catalyst of change	
	Avoidance/previous strategies no longer an option “when my son was born…I knew in myself that there was something wrong… I think I felt not OK, for… a long time, I hid it… doing other things; on the drink and that” “going back in the day when I first started struggling, I didn't speak to anybody you know. I probably hit the bottle too much you know, as a single lad. You know. I just went to parties all the time”
	Child(ren) as motivators “You need to get your head straight for your kids…especially for dads, you've got people who rely on you. Who need you, not financially or, they just need you there straight” “I’ve struggled for a while probably for the last 10 years…But he gave me the reason to seek help. It wasn’t about me anymore it was about him” “he made me wanna seek help because I wanted to be better and…healthier for him”

“he comes first, no matter what we do now”

3. Flexible and attuned support

3a. Delivery of therapy

Modality and Timing

[belief that] “talking therapies was all online anyway”

“I would still prefer…being face to face, being away from…your environment”

“being self-employed … I've found it very simple, but then my…schedule is very flexible”

“…for me just to take a 30-minute phone call, is just so much easier than me having to… take half a day off work, or a full day and then I'm like losing money…”

3b. Use of online resources (pros/cons)

Easy access and support continuity

“I have 12 months on my… online thing to go back and check on that if I do have a bit of a rubbish day … I just end up trying to do the exercises that they gave me”

“having the stuff…you could go back to…the videos…just knowing that is in your pocket…if I was having bit of a bad day…I’d just go and read that for a bit…because… just knowing you'd had that there was easier”

Burdensome

“For me, personally, the things that they were asking me to do, I didn’t feel was relevant to me”

“I was asked to do a lot of online spiel before the meetings… I simply could not dedicate time to doing that.”

3c. Therapist engagement skills

Active listening

“She was amazing. She listened to absolutely everything I had to say”

“You actually you felt like he understood and he actually cared... speaking to him then made me open up to my wife more”

“[if] nobody's interested, then, what's the point... I feel like I'm wasting their time...I said...’you know what? Let's end this’”

Adapting to clients’ needs/preferences

[adapting pace of support] “...sometimes I don't really understand the exercises and I tried to do my best, he would always wait, he would always explain it”

“it might be worth the...professional suggesting a pace”

[preferring direct approach] “...I could roll off...10 bad things that I've had happen that week but she would turn it around and be like, ‘right what's good?’ And she was very eye opening... I think a lot of men will recognise negative points and failures before they even see the bigger picture”

[wanting active, problem-solving strategies early on] e.g., “...something active thing I can do that will make me feel better at independent of my own efforts.”

Fostering therapeutic alliance early

“I personally had a really good experience for the guy... after about the second session like I really started feeling better”

“I'm not gonna get anything out of it. Because I've seen the first three sessions... So why waste resources?... why am I wasting NHS’s money?”

Discussion

Phase 1

Attrition Rates and Treatment Type

Dropping out of treatment early (22%) and non-attendance at assessments (15%) were the primary non-completion reasons, with rates for the latter being broadly in-line with previous research findings suggesting 12.6% failed to attend triage assessments (Binnie & Boden, 2016). Non-treatment-completing perinatal clients were attending just four appointments on average with BTT before discharge. This indicates the importance of early appointments and considered treatment step assignments to promote engagement. This echoes prior findings suggesting widening attrition rates from initial referrals the further along treatment pathways patients get when accessing primary mental healthcare (Grant et al., 2012; Tunks et al., 2023).

Statistically significant gender differences in treatment completion status were observed for step 2 (primarily guided self-help) interventions and more therapist-led step 3 Cognitive Behavioural Therapy (CBT) interventions. The finding that male perinatal clients were more likely to complete low intensity step 2 interventions and female clients more likely to complete step 3 CBT interventions are in line with previous research suggesting men may prefer psychological treatment focused on information sharing over emotion sharing (such as group therapy) and women preferring more emotion-focused 1:1 approaches (Liddon et al., 2018; Tamres et al., 2002).

Referral Patterns

Overall, referral patterns into and out of BTT did not highlight barriers as clients were more likely than not to complete treatment regardless of the referral source, except for those referred by secondary care providers. However, these clients only accounted for around 3% of encounters in the period examined. Similarly, only 4% of perinatal clients were referred out of BTT, including those returned to the original referrer or GP. Nevertheless, it is possible that expectations to refer oneself may constitute an access barrier, given this was the principal referral method. For instance, previous qualitative research found reliance on self-referral to NHS TT services constituted an access barrier for clients, particularly those from low-income backgrounds (Thomas et al., 2020).

Taken together, the quantitative review suggests female and male perinatal clients do not significantly differ overall in their likelihood of completing treatment, and those that do complete treatment have better than average recovery rates compared to overall BTT clients. However, male perinatal clients may be more likely to complete a low intensity (step 2) intervention and in fewer appointments on average than their female counterparts. Additionally, more can be done to increase referrals from other primary healthcare providers who are increasingly involved with parents in the perinatal period.

Phase 2

Despite the separate analysis of survey and interview data, similarities in themes emerged. This included a desire for greater awareness of support (including accessing support and therapeutic processes); flexible and attuned support; and for continuity of care and wider support information.

Current thematic findings align closely to those reported in a systematic review of perceived barriers and facilitators to accessing primary mental healthcare services in the UK (Tunks et al., 2023). Specifically: mental health perceptions and stigma-related barriers to help-seeking; support service awareness and understanding of processes;

and healthcare professional-client interaction. Also raised in both survey and interviews were the use of online materials and routine outcome measures which was described by some participants as burdensome, leading to rote completion and frustration with the service. Previous research has also highlighted mechanical administration of routine outcome measures as a barrier to effective engagement in IAPT and recommended adopting more collaborative, conversational and in-session outcome measurement to better personalise therapy delivery (Faija et al., 2022).

The unique experiences of fatherhood and its complex relationship with mental health was the other additional exclusive theme generated through interviews. The two subordinate themes spoke to the increasingly documented perceptions of being the overlooked parent by healthcare professionals (Baldwin et al., 2019; Bateson et al., 2017; Darwin et al., 2021; Darwin et al., 2017; Hodgson et al., 2021) and the unique challenges and motivations brought about by the transition to fatherhood (Baldwin, 2015; Baldwin & Bick, 2017).

Finally, how male perinatal clients receive psychological interventions appeared important and supported phase one findings suggesting a greater proclivity for brief, guided self-help interventions. Findings particularly indicated preferences for an early focus on active problem-solving strategies. In their systematic review, Sagar-Ouriaghli et al. (2019) found that incorporating active problem-solving elements, role models to communicate information, psychoeducation, signposting services, and content building on positive male traits (e.g., responsibility and strength), could significantly improve mental health service utilisation in men. The prototype willingness model (PWM; Gerrard et al., 2008) suggest two pathways of decision-making; a reasoned process (based on rational, analytical processing) and a social reaction process (based on prototype images of those completing the behaviour they are contemplating and the degree with which they align themselves with these prototypes). Previous research has shown that men's willingness to engage in mental health help-seeking behaviours was influenced by their attitudes and prototype similarity (Juillerat et al., 2023). For example, the interview-derived subtheme of overlooked parents (by professionals and relevance of therapeutic materials) aligns with this social reaction processing in identifying with relatable prototypes.

Implications and Conclusions

The main implications of findings from the current study centre on the role of BTT and similar NHS TT services as key primary mental healthcare providers for parents in the perinatal period. This is particularly true for male perinatal clients for whom this is currently the only free and nationally available service offering evidence-based psychological perinatally-prioritised treatment. Continued outreach to other perinatal primary care providers to improve referral rates into the service and awareness of support options, increasing flexibility in support provision and making adaptations to content and delivery of therapy so it is of greater relevance to perinatal clients to engage them early in the care pathway, will likely aid access and engagement with BTT service. This is important as perinatal clients that do complete treatment have markedly better recovery outcomes than average BTT clients and for male perinatal clients this can be achieved at lower intensity interventions and in fewer sessions.

Limitations

There are several limitations to note. Firstly was a reliance on retrospective views of access barriers from participants who had progressed far enough in BTT to consent to be contacted for research. Therefore, it was not possible to investigate barriers that may prevent people from being referred, referring themselves and/or attending initial appointments. Similarly, of the five interviews conducted, three had completed treatment and described positive experiences of support from BTT so perspectives of additional access and engagement barriers may have been missed. Finally, focusing primarily on men and fathers risked omitting the experiences of same-sex female non-birthing partners who often face similar challenges such as lack of dedicated support for the non-birthing parent, and some additional difficulties including navigating a poorly socially defined parental role (Howat et al., 2023).

Dissemination and Recommendations

The recommendations detailed in table 5 were shared in a presentation to BTT senior management, research, and stream leads. A separate meeting was arranged with the Perinatal Service Lead (TL) to share findings and recommendations in greater detail.

Table 5.

Recommendations for service improvement based on study findings

Improvement area	Recommendation domain (**Client-, therapist- or service- level**)	Recommendation details
Access		
	Awareness (**client and other professionals/ services**)	Continue out-reach work to primary care services to increase their confidence in signposting and referring to BTT and asking mothers, and particularly fathers, about their mental health on multiple occasions pre- and postnatally. Re-sharing the rationale for increasing access to psychological therapies for parents in the perinatal period, particularly new/expectant fathers, and the findings of this study may help. This suggestion echoes the updated perinatal positive practice guideline recommendation to "provide active outreach to the perinatal community and parents to improve awareness and increase access" (p7; O'Mahen et al., 2023) Consider options for advertising BTT services via social media and/or physical advertisements in areas frequently used by perinatal clients (such as maternity units or GP waiting rooms). Ideally these should highlight the scope of the service and methods of access (including self-referral or requesting any perinatal healthcare provider to make a referral on their behalf) in lay language.
	Stigma (**client, therapist and service level**)	Find ways to increase integration of role-models in advertising materials to boost representation for both male and female clients (to normalise perinatal mental health support). Particularly important for male clients. This could be achieved by including pictures and normalising/encouraging quotes in physical advertisements from parents of different sexes/ethnicities/religions who have previously accessed the service and put in GP surgeries and maternity units (for example). These could be in leaflet form and shared by other primary healthcare professionals, for instance.

		Further outreach work to primary care providers to encourage their confidence in making referrals to the service on behalf of their clients as those referred by primary care services are likely to do as well in treatment as self-referrals. This could subsidise self-referrals in case there is a reliance on these which for this population in particular could be a barrier to support-seeking due to pervasive stigma around mental health and parenthood (Reupert et al., 2021).
	Service-level processes	Consider reviewing perinatal labelling procedures to confirm they are accurate and comprehensive, particularly for male perinatal clients, to ensure they are not being overlooked or omitted.
Engagement		
	Therapy type/delivery style (**therapist and service-level**)	Consider increasing the prioritisation of male perinatal clients, particularly for step 2 interventions, and increasing flexibility around treatment options and timing of treatment for female perinatal clients. So, in treatment decision appointments, discuss with female perinatal clients the pros/cons of waiting longer for step 3 input as there is some evidence to suggest it could be more efficacious, or if possible, giving female perinatal clients priority for step 3 CBT (if, for instance, they do not have long maternity leave or are already back in work). Likewise, for male perinatal clients, share pros/cons e.g., findings that other male perinatal clients were more likely to complete step 2 interventions than step 3 treatments and the wait will be shorter though being clear they may still prefer to wait as this is still an individual choice, as it is also for treatment modality (e.g., phone, Teams or face-to-face appointments). Bring active 'solution-focused' elements into work with male perinatal clients as early as possible in line with evidence from previous studies on increasing engagement for male psychological therapy clients (Sagar-Ouriaghli et al., 2019) Review processes to ensure maximum continuity of care should there be a period of staff turnover change.

Attuned and flexible support (**therapist and service-level**)	Options for increasing flexibility in therapy delivery modality and timings of appointments made available for perinatal clients (via flexible processes and staff training to enhance flexible delivery). Staff training to increase confidence in empowering clients to request to change therapy type, therapist, timing or frequency of appointments may be important. Where possible, build in flexibility in requirements in completing routine outcome measures and online materials or homework where this is presenting as a barrier to engagement such as clients reporting a lack of time to complete these or evidence of rote completion (i.e., selecting the same responses for items every time). Encouraging therapists to relax cancellation/DNA policies and more follow-ups for perinatal clients may help ease engagement barriers due to increased appointments and/or caregiving responsibilities. (see perinatal positive practice guidance on this point; O'Mahen et al., 2023). Staff training to emphasise the importance of developing early therapeutic and task alliance for perinatal clients and support staff to continue to utilise engagement skills of active and compassionate listening and meaningful collaboration. Ensure processes for completing routine outcome measures and therapy materials remain flexible enough to encourage engagement and do not become a burden in the context of significant time constraints during this period.
Fathers in mind (**therapist and service-level**)	Consider embedding into assessment and early treatment protocols discussion of fatherhood status for all male clients with a perinatal label and incorporating this into formulations and treatment delivery. This may encompass training for staff to increase confidence in asking about parenthood (permission to discuss difficulties and will form key part of formulation, regardless of presenting problems). Staff training could be delivered to increase awareness of unique challenges facing perinatal clients, but particularly focusing on male perinatal clients (e.g., including transition to fatherhood, pressures/expectations to provide, additional identity factors such as adhering to religious practices

	etc). Broader encouragement could be given to staff to attend perinatal-specific supervision spaces to further enhance understanding of unique challenges and adaptations required for perinatal clients.
Wider support (**service-level**)	Increase links with universal NHS services which offer perinatal support for first time (and subsequent birth) parents e.g., Health Visiting and midwifery services to share knowledge and increase confidence in making referrals to the services. Potentially through one-off training sessions for staff in these services. Consider creating a signposting package of parenting support and resources in local area to send out to all perinatal clients who access the service. This may include signposting to services like SHaRON to increase peer support, particularly for those clients lacking a wider support system.
Stigma (engagement barrier – **service-level**)	Increasing the amount and diversity of father's experiences in the materials and resources may help to reduce stigma and increase relatability of resources. Including signposting to groups specifically supporting fathers in the local area will also assist in reducing the impact of stigma and gaining access to other role-models. Consider the feasibility of running a group intervention just for perinatal clients to allow for shared experiences. This may be more acceptable for male perinatal clients with the evidence suggesting greater preferences for group interventions in male clients (Liddon et al., 2018).

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Theoretically Driven Research Project (TDRP)

Interpretation bias in maternal postnatal anxiety: perinatal content-specificity of ambiguous stimuli

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Abstract

Background: Postnatal anxiety is under-studied in comparison to postnatal depression, yet evidence suggests it can influence caregiving behaviours, such as responding less sensitively to infant cues. Negatively biased interpretations of ambiguous information could represent a cognitive processing mechanism between anxiety and parenting behaviours. Aims: To explore maternal interpretation biases in those with high or low postnatal anxiety and the content-specificity of potential biases by comparing general and caregiving-related ambiguous scenarios. To additionally examine the relationships of postnatal depression symptoms and perinatal anxiety subtypes within ambiguous interpretations.

Methods: This online cross-sectional study compared 53 mothers with high anxiety and 62 with low anxiety (*N*=115). Measures included screening scales for perinatal anxiety (PASS) and depression (EPDS), and the Recognition Test paradigm for interpretative biases of ambiguous scenarios.

Results and Conclusions: High maternal postnatal anxiety was associated with more negative interpretation biases, but this did not significantly differ by ambiguous scenario type, i.e., general (less personally-salient) or caregiving-specific (more personally-salient) ambiguous scenarios. Postnatal depression symptoms significantly contributed to the variance explained (7%) in interpretation bias indices but there was no difference by subscale of perinatal anxiety. Addressing general interpretation biases in perinatally anxious mothers may present an effective intervention target, however, further research into content-specificity and the profiles of perinatal processing biases is still needed.

Introduction

Perinatal Anxiety

Estimates suggest up to 1 in 5 women/birthing people will experience perinatal mental health (PMH) difficulties during pregnancy or the first year post-birth (i.e., the 'perinatal period'; NHS, 2019; Royal College of Obstetricians and Gynaecologists, 2017). However, most research into PMH has focused on postnatal depression (PND) with perinatal anxiety receiving far less dedicated attention (Leach et al., 2017; Matthey et al., 2003; Silverwood et al., 2022). Perinatal anxiety is a heterogenous term, encompassing a range of anxiety conditions such as GAD, OCD and phobias, including tokophobia or 'fear of childbirth' (Ayers et al., 2024). Yet, perinatal anxiety is at least as common as PND, affecting around 15-20% of mothers/birthing people (Fawcett et al., 2019; Shorey et al., 2018).

Concerningly, perinatal anxiety has been linked to increased risk of suicide, eating disorders, and greater risks of birth complications and pre-term births (Dennis et al., 2017; Dowse et al., 2020; Howard et al., 2014). Further implications include neurobiological changes in maternal brains (Noriuchi et al., 2019; Pawluski, 2024), worse paternal mental health including increased anxiety and depression (Philpott et al., 2019, 2022) and increased risks of poorer outcomes for offspring, including the development of emotional problems (Lawrence et al., 2019; Rees et al., 2019).

Maternal Anxiety, Parenting Behaviours, and Child Outcomes

In addition to the personal costs of PMH difficulties are broader systemic implications. For instance, a London School of Economics report found that 72% of the estimated £8.1bn cost of maternal mental health problems related to the adverse impact on child outcomes (Bauer et al., 2014). These include greater likelihood of socio-emotional and behavioural difficulties, cognitive development impairments and parent-child attachment issues (Howard & Khalifeh, 2020; Stein et al., 2014). Ecological system's theories (e.g., Bronfenbrenner, 1979, 1992) highlight the significance of characteristics of the caregiving environment within a child's early development. As such, a wealth of empirical evidence has indicated a key mechanism of influence between maternal mental health and child outcomes concerns disrupted attachment formation through poorer maternal sensitivity to their child's needs (Howard & Khalifeh, 2020; Radoš, 2021; van IJzendoorn & Bakermans-Kranenburg, 2019). Furthermore, evidence indicates that high anxiety specifically can undermine parental attunement and sensitive responsiveness to their infant (Della Vedova et al., 2023; Nicol-Harper et al., 2007; Stevenson-Hinde et al., 2013).

Anxiety and Cognitive Processing

In a review mapping the pathways between maternal anxiety and parenting behaviours, Yatziv et al., (2021) proposed a model detailing stages of neurocognitive processing of infant cues and subsequent parental responses within dynamic mother-infant interactions (figure 1). The model utilises Ainsworth and colleague's (1974) description of the process of sensitive responsiveness as: noticing an infants' cue, interpreting their needs, and responding in a timely and sensitive way (Mesman & Emmen, 2013). Also highlighted is the modulating roles of emotional reactions and self-regulatory strategies within this reciprocal process (figure 1).

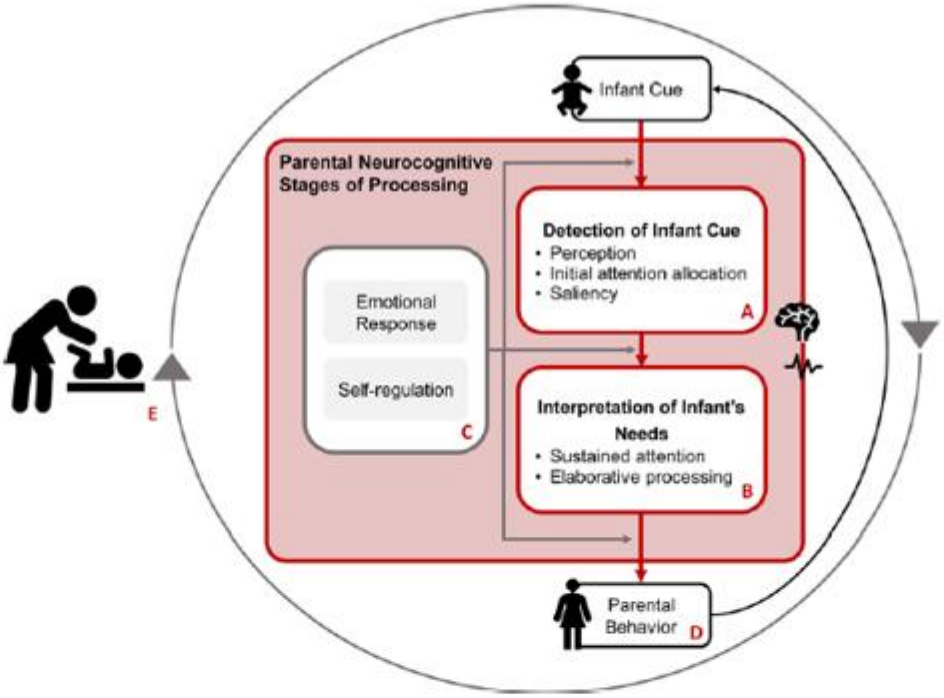

Figure 1. *Conceptual model of parental neural processing of infant cues (from Yatziv et al., 2021)*

Cognitive biases in information processing (boxes A and B in figure 1) form central tenets of cognitive theories of the aetiology and maintenance of affective conditions including anxiety (Beck & Clark, 1997; Mathews & MacLeod, 2005). Neuroimaging studies suggest parents preferentially process more affective stimuli, especially expressions of infant distress (Yatziv et al., 2021). Cognitive-behavioural research corroborates this through findings that anxious individuals display a hypersensitivity and preferential focus towards threat stimuli (box A; Barry et al., 2015; Van Bockstaele et al., 2014). Similarly, anxious individuals have been found to exhibit a tendency to negatively interpret neutral or ambiguous information (Eysenck et al., 1991; Mathews & Mackintosh, 1998; Mathews & MacLeod, 1985). Interpretation bias (box B) therefore refers to this inclination to make negative inferences from ambiguous information (Hirsch et al., 2016).

Research also suggests more negative cognitive biases are associated with stimuli salient to the clinical presentation (Pergamin-Hight et al., 2015). This personally-salient information can impact interpretations of ambiguous stimuli by directing individuals to focus on threatening, ‘disorder-congruent’ information, further reinforcing negative cognitions. In cognitive theories, this is referred to as the content-specificity hypothesis in which affective conditions can be distinguished by the specific disorder-congruent content of negative thoughts and beliefs (or ‘schemata’ e.g., thoughts of danger or threat in anxiety; Beck & Clark, 1988). For instance, individuals with social anxiety have been found to exhibit more negative interpretations for ambiguous cues within social contexts than other interpersonally-irrelevant ambiguous information (Wilson & Rapee, 2005).

Interpretation Bias in Maternal Anxiety

Few studies have investigated interpretation bias in the perinatal period. Some have focused on PMH difficulties and interpretations of infant emotion expressions (Webb & Ayers, 2015), with one study finding that mothers with higher anxiety were more likely to rate neutral infant faces as being sad (Gil et al., 2011), indicating a negative bias. In a study examining the associations of interpretation bias with symptoms of anxiety, depression and repetitive negative thinking, Hirsch et al., (2020) found that more negative interpretation biases were significantly associated with all three constructs. Though, there was no difference between pregnant and non-pregnant women in degree of biased interpretation of pregnancy-specific (personally-salient) or general ambiguous scenarios (Hirsch, et al., 2020). However, differences in content-specificity across levels of anxiety were not explored. In a postnatal sample Challacombe et al., (2007) found that mothers with higher state and trait anxiety scores demonstrated greater negative interpretation biases on caregiving-related ambiguous scenarios than those scoring lower on anxiety measures, though they did not also include general ambiguous scenarios.

There remains a gap in our understanding of the profile of interpretation bias in anxious mothers/birthing people in the postnatal period when compared to non-anxious controls. In particular, whether there is evidence of context specificity in interpretation biases of caregiving-salient situations compared to non-caregiving everyday scenarios. As interpretation biases play a central role in the maintenance of anxiety, they constitute key therapeutic intervention targets (Gober et al., 2021) so understanding how best to address these within perinatal anxiety presentations is essential.

Aims and hypotheses:

This study aimed to compare interpretation biases of mothers/birthing people with high and low perinatal anxiety in the first year postnatally across caregiving-specific and general ambiguous scenarios. Secondary aims were to investigate the relationships between both depression and subtypes of perinatal anxiety with interpretation biases. The principal research hypotheses were:

- H_1: Highly anxious mothers/birthing people will display a greater overall negative interpretation bias when presented with ambiguous scenarios compared to those with low anxiety.
- H_2: Specifically, highly anxious mothers/birthing people will show a greater negative interpretation bias for caregiving-specific ambiguous scenarios over generic ambiguous scenarios, compared to those with low anxiety.

Methods

Ethics

The study was sponsored by Oxford Health NHS Foundation Trust and was granted ethical approval through the Yorkshire & The Humber - Bradford Leeds Research Ethics Committee HRA sub-committee (24/YH/0097; appendix 3A).

Study Design

To test the above hypotheses the study employed a cross-sectional design with a comparison group of participants with sub-threshold anxiety scores.

Measures

Demographics

A demographic questionnaire was included to confirm study eligibility and capture the following characteristics:

- Mother/birthing person's age
- Age of youngest child
- Ethnic background
- Relationship status
- Perinatal experiences (i.e., whether primiparous or multiparous, experiences of miscarriages/loss, birth trauma)
- Self-reported mental health experiences
- Accessed psychological support in the last 12 months (yes/no)

Anxiety Measure: Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2014)

The PASS is a 31-item scale measuring prenatal and postnatal anxiety. In the current study, the first item was adjusted to remove the word ‘pregnancy’ from the original “worry about the baby/pregnancy”. No other items were adjusted. Participants rate the frequency with which they have experienced each item on a 4-point scale in the past month from ‘0’ = ‘not at all’, to ‘3’ = ‘almost always’. Scores ≥26 have been found to reliably identify individuals at risk of perinatal anxiety issues (Somerville et al., 2015). The PASS has 4 subscales: (1) general worry and specific fears, (2) perfectionism, control and trauma, (3) social anxiety and (4) acute anxiety and adjustment. The measure has good validity and reliability (Somerville et al., 2014). The internal consistency within the current sample was excellent, with Cronbach’s alpha (α) =.95.

Depression Measure: Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)

The 10-item EPDS has been widely used to screen for depression in the postnatal period. Respondents rate the frequency with which they have experienced each item in the last week on a 4-point scale (0-3), with qualitatively different statements for each scale across items. There is a maximum score of 30, with scores ≥13 considered indicative of PND symptoms (Matthey et al., 2017). The EPDS has been found to have good validity and internal consistency (Cox et al., 1987; Teissedre & Chabrol, 2004). Within the current sample, Cronbach’s alpha (α) = .86 indicated very good reliability.

Interpretation Bias: Recognition Test (RT)

The Recognition Test (Eysenck et al., 1991; Mathews & Mackintosh, 2000) was used to assess interpretation bias. The RT paradigm used here mirrors that detailed in Hirsch et al., (2020). It contains two phases: an encoding and a recall phase. In phase one (encoding phase), 20 titled ambiguous scenarios were presented to participants followed by a comprehension question after each to check understanding. Eleven of these scenarios were 'general', everyday situations (e.g., riding on a bus) and nine were caregiving-specific scenarios (e.g., attending a parent-baby group), each 'story' was left deliberately ambiguous in valence (table 1: examples, appendix 3B: full list). The order in which scenarios were presented remained consistent for all participants but were randomised between scenario type so that each type did not appear more than twice in a row.

Table 1.

Examples of Recognition Test items (both general and caregiving-specific)

RT: Scenario type	**Recognition items (interpretation statements)**			
	Positive target	**Negative target**	**Positive foil**	**Negative foil**
RT: General Title: The Bus Ride - *"You get on a bus and find an empty seat next to one that has a rip in it. At the next stop several people get on that you vaguely recognise, but they sit together and the seat next to you remains vacant.*	"The seat next to you remains empty because it looks damaged"	"The seat next to you is empty because no one wants to sit with you"	"The person in the seat next to you talks to you in a friendly way"	"The person in the seat next to you makes a rip in the fabric"
RT: Caregiving-specific Title: The Parent-Baby Group – *"Whilst at a parent-baby group, your baby starts to cry. You make efforts to comfort your baby. You notice two parents begin speaking with each other. After a few moments, one of them comes over to talk to you and you find out what they thought about your efforts to calm your baby."*	"They say they thought you are trying your best to comfort your baby"	"They suggest you are taking too long to comfort your baby"	"They say they like the shoes you are wearing"	"They say they do not like the group facilitator"

In phase two (recall phase), only the titles of the ambiguous scenarios were presented along with 4 interpretation statements to resolve scenario ambiguity. Participants were asked to rate how similar in meaning each statement was to the original story associated with the title. Of the four interpretations, two were target statements accurately resolving the ambiguity, with one each positively and negatively valanced. The other two statements were positive and negative foils (i.e., resolutions not consistent with the scenario), included to indicate general biases. Again, presentation orders of statement types varied for each scenario but remained consistent across participants.

Similarity ratings of interpretation statements utilised a 4-point Likert scale (1 = 'very different in meaning' – 4 = 'very similar in meaning'). As such, higher scores indicated more positively biased interpretations (greater similarity ratings). The RT has been validated as a measure of interpretation bias (Salemink & Van Den Hout, 2010) and is opaque in its testing purpose, thus reducing risk of participant bias and selection bias (Krahé et al., 2016). Reliability analysis in the current study revealed excellent internal consistency; Cronbach's alpha (α) = .92.

Material Development: Experts-by-Experience

General ambiguous scenarios were drawn from previous studies using this paradigm (e.g., Hirsch, et al., 2020a; Hirsch et al., 2020b). However, postnatal caregiving-specific scenarios were developed through interviews with experts-by-experience (EBE), including mothers (both with and without experience of PMH difficulties) and professionals working in PMH services. To identify relevant topic themes, four informal interviews with EBEs were conducted. Scenario themes, based on interview data, related to caregiving schemata including infant-focused appraisals, parenting self-efficacy or self-esteem appraisals, and social/interpersonal appraisals. Following this, 14 scenarios were developed and, in three further EBE interviews and a pilot survey, assessed for acceptability, comprehension, and resolution statement plausibility to check scenario ambiguity (determined by approximate equity in positive and negative statement selections). Based on piloting feedback, scenarios were adapted and narrowed to a final nine in the current study.

Participants

Recruitment of participants was via volunteer sampling utilising social media advertising (appendix 3C: recruitment poster). Initial approval was granted to recruit via clinical services, but project delays and service capacity issues removed this recruitment option. Inclusion criteria included, being over 18-years-old, UK-based, having a baby between 3-12 months old, and sufficient (self-reported) English proficiency. Exclusion criteria was having a baby with significant additional needs as this may have reduced the relevance of and identification with caregiving scenarios presented within the RT.

Participants were split into two groups based on their anxiety screening scores. The ‘high anxiety’ group were those who scored above 26 on the Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2014; Somerville et al., 2015). The ‘low anxiety’ group were thus comprised of those who scored below threshold on the PASS and were used as comparators. No eligibility criteria were set regarding previous or current mental health experiences. The EPDS (Cox et al., 1987) was used to explore the relationship of perinatal-specific depression with interpretation bias, separate to anxiety.

Procedure

Data were collected at one time-point via Qualtrics from participants in the first year of their babies’ lives (up to 12 months postnatally). The survey took around 40 minutes to complete on average. An interpretation bias index score was calculated for each participant within the RT paradigm (see Hirsch et al., 2020).

An anonymous link to the survey and QR code was included in study advertisements. Study information and consent forms were presented first with participants only able to progress to the main study measures if full consent was indicated. Participants were given the option to leave their email address if they wanted to be updated on study findings at the end of the project. It was made clear this was not a requirement, that email addresses would not be linked to study data, and they would be stored separately to data for the rest of the survey. In total, 117 respondents opted to share their email addresses.

Data Analysis

All statistical analyses were performed using SPSS software (v29). All assumptions for planned statistical tests were checked for violations and no data-translations or non-parametric alternative tests were required (appendix 3D).

Power analyses

The few previous studies investigating interpretation bias within PMH have either not reported effect sizes, or the focus of the study has been much broader (e.g., Challacombe et al., 2007; Hirsch et al., 2020), making it difficult to extrapolate a target effect size by which to power this study. As such, an estimated medium effect size selected. A-priori power analysis was conducted using G*Power software (Faul et al., 2009) based on finding a significant interaction. Analyses indicated a total sample size of 86 participants would be required to find a medium effect size (f=.25), with 80% confidence (type 2 error) and allowing for a 5% error margin (type 1 error). A base target of 45 participants in both anxiety groups (90 total participants) was set to ensure this minimum sample size was met.

Primary objectives

To test the study hypotheses, a two-way mixed ANOVA was conducted to ascertain effects of level of anxiety and specificity effects of ambiguous scenarios on interpretation bias. Interpretation bias index scores were treated as the outcome variable, anxiety group (high or low) as the between-subjects predictor and ambiguous scenario type (caregiving-specific or generic) as the within-subjects factor.

Secondary objectives

Two separate hierarchical multiple regressions investigated the association of depression with interpretation bias and secondly to explore associations with different sub-types of perinatal anxiety with interpretation bias indices as measured by subscales of the PASS.

Results

Descriptive Statistics

In total, data for 115 participants were eligible for inclusion in analyses (appendix 3E: participant exclusion flow diagram). Sample demographics are shown in table 2. All participants identified as female, 80% were aged between 30-40years old, most (97%) described being in a committed relationship (married or co-habiting), and the vast majority of the sample were White British (94%). Over half the sample were primiparous, with a quarter of these reporting they had experienced previous perinatal loss and a further quarter stating they had a difficult/traumatic birth. Over a third of multiparous participants reported previous traumatic births (37.5%) and over half reported experiencing perinatal loss (52.9%). Overall, approximately a third of the sample self-reported experiences of previous perinatal loss or birth trauma. Chi square tests indicated no significant differences between anxiety groups within any of the demographic categories. Mean anxiety scores on the PASS suggested high levels of anxiety in the sample, with a total sample mean (27.7) just above the cut-off score of 26 (Somerville et al., 2015).

Table 3 details the mental health characteristics of the sample, including self-report and perinatal anxiety and depression screening scores. A majority of the sample self-reported experiencing anxiety prior to birth (61%) or at the time of the study (64%). However, less than half the sample (46%) scored above the cut-off for symptoms of perinatal anxiety (Somerville et al., 2015). By contrast, the self-reporting and screening scores for depression symptoms were closely aligned with 27% scoring 13 or higher on the EPDS (Cox et al., 1987), and 29% self-reporting experiences of depression. Despite a significant proportion reportedly experiencing at least one mental health condition (76%), less than a third indicated they had accessed mental health support in the previous year (30%).

Table 2.

Sample characteristics and descriptive statistics for measures and interpretation bias by anxiety group

	High Anxiety (*n*= 53)	**Low Anxiety** (*n*= 62)	**Totals** (N=115)
Demographics		*N*	
Age *(years)*			
18-29	9	7	16 (13.9%)
30-39	40	52	92 (80%)
40-49	4	3	7 (6.1%)
Ethnicity			
White British	48	60	108 (93.9%)
White any other	4	2	6 (5.2%)
Mixed (White & Black Caribbean)	1	0	1 (0.9%)
Asian (Chinese)	1	0	1 (0.9%)
Relationship status			
Married	28	43	71 (61.7%)
In relationship (cohabiting)	24	17	41 (35.7%)
Single	1	2	3 (2.6%)
Baby's Age *(months)*			
3-6	22	24	46 (40%)
6-12	31	38	69 (60%)
Perinatal Experiences			
First child (primiparous)	30	42	72 (62.2%)
Previous miscarriage/ loss	22	20	42 (35.5%)
Difficult/ traumatic birth	20	14	34 (29.6%)
Parent to other children	20	20	40 (24.3%)
Twin+ parent	0	0	0
Measures		**Mean** (*SD*)	
PASS (anxiety measure)	**40.91** (*13.31*)	**16.42** (*6.41*)	**27.7** (*15.91*)
EPDS (depression measure)	**12.43** (*4.51*)	**6.42** (*3.95*)	**9.2** (*5.17*)
RT (bias) all items	**0.38** (*0.72*)	**0.77** (*0.75*)	**0.59** (*0.76*)
RT (bias) caregiving-specific items	**0.43** (*0.71*)	**0.76** (*0.82*)	**0.61** (*0.79*)
RT (bias) general items	**0.35** (*0.83*)	**0.78** (*0.78*)	**0.58** (*0.83*)

Abbreviations: PASS = Perinatal Anxiety Screening Scale; EPDS = Edinburg Postnatal Depression Scale, RT = Recognition Test

Table 3.

Mental health characteristics of sample (self-reported and screening scores)

Variables	***N* = 115**	***n* (%)**
Anxiety prior to birth*	Yes	70 (60.9%)
	No	43 (37.4%)
	Not sure/ prefer not to say	2 (1.7%)
Current mental health difficulties / experiences*	Anxiety	73 (63.5%)
	Depression	33 (28.7%)
	Birth trauma	23 (20%)
	PTSD	15 (13%)
	Generalised Anxiety Disorder (GAD)	18 (15.7%)
	Phobia(s)	9 (7.8%)
	Obsessive Compulsive Disorder (OCD)	6 (5.2%)
	Eating disorder	5 (4.3)
	Other *(including psychosis, panic, complex trauma, bipolar disorder, tokophobia)*	12 (10.4%)
	Blank	28 (24.3%)
Accessed mental health support previously*	Yes	34 (29.6%)
	No	80 (69.6%)
	Prefer not to say	1 (0.9%)
Perinatal Anxiety Screen Scale (PASS)† scores	Above 26†	53 (46.1%)
	Below 26	62 (53.%)
Edinburgh Postnatal Depression Scale (EPDS)† scores	Above 10†	49 (42.6%)
	Below 10	66 (57.4%)

all self-reported items

†screening scale scores for perinatal anxiety and postnatal depression. Suggested clinical cut-off scores of 26 for the PASS (Somerville et al., 2015) and 10 for the EPDS (Matthey et al., 2003) were used to categorise the likely presence of anxiety or depression, respectively.

Primary analyses

Missing data

To ensure a meaningful interpretation bias index score based on sufficient ratings, a minimum completion rate of 80% was set. In final analyses, three respondents had less than 100% (but greater than 80%) complete datasets. Missing interpretation ratings were recorded as ‘0’ to ensure the final interpretation bias indices for these participants were calculated on the means of the items they had rated.

Anxiety, Ambiguous Scenario Specificity, and Interpretation Bias

Interpretation bias index scores were calculated by subtracting mean ratings for negative targets from mean ratings for positive targets, thus negative index scores indicated a negative interpretation bias. A two-way mixed ANOVA was conducted to examine the effects of anxiety level (high or low) and ambiguous scenarios specificity (caregiving-specific or general) on interpretation bias scores following assumptions analysis (appendix 3E).

There was no statistically significant interaction between anxiety level and ambiguous scenario type on interpretation bias indices, *F* (1,113) = .828, *p*=.365, partial η2 =.007. Similarly, there was no statistically significant difference in the main effect of interpretation bias index scores by type of ambiguous scenarios, *F*(1, 113) = .282, *p* = .596, partial η2 =.002. However, analysis of the main effect for anxiety level was statistically significant, *F*(1, 113) = 7.82, *p* = .006, partial η2 = .065 (figure 2). Pairwise comparisons were calculated with 95% confidence intervals (CI). The means of interpretation bias index scores for high and low anxiety groups were .387 (*SE* = .101) and .772 (*SE* = .093), respectively. So, the high anxiety group mean index score was -.384

lower than the comparison group (lower CI -.657, upper CI -.112), indicating a greater negative interpretation bias for those with high anxiety (irrespective of scenario type).

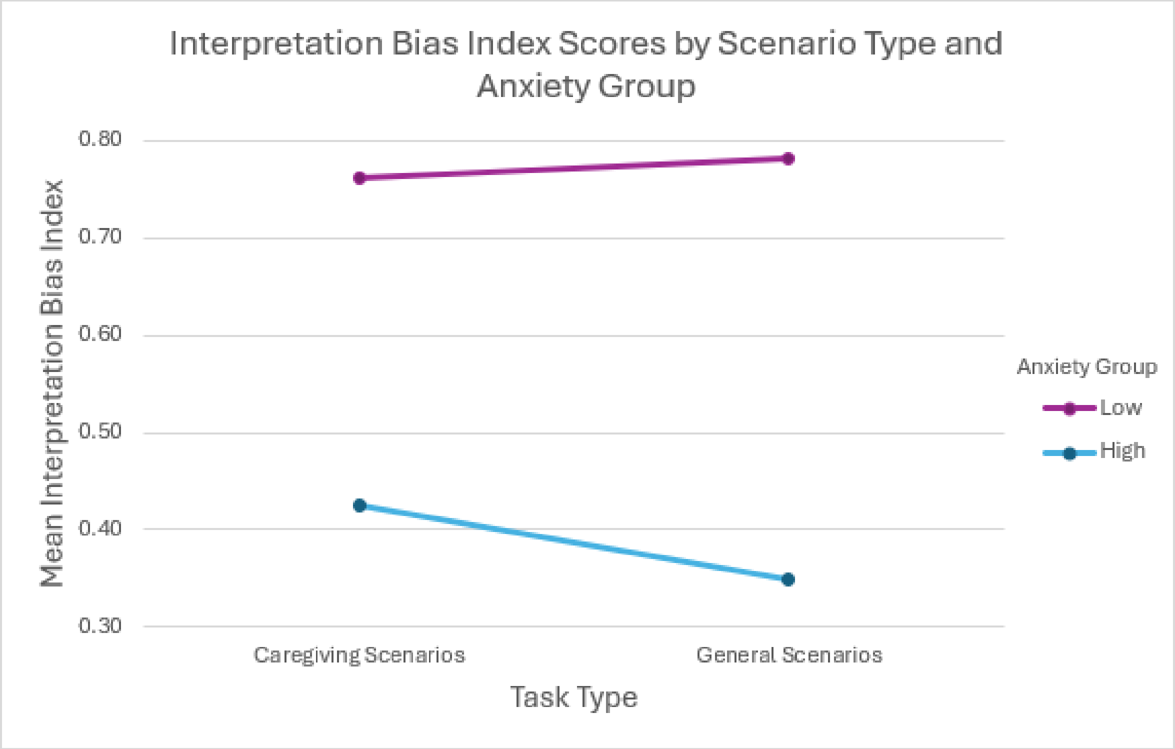

Figure 2. *Main effect of mean interpretation bias index by scenario type and anxiety group*

Figure 3 shows mean ratings for positive and negative foils to explore general valence preferences by anxiety group. Lower ratings indicate lower perceived similarity in meaning to the ambiguous scenario. Paired t-tests indicated a statistically significant difference between the foil statements, *t*(114) = 6.270, *p* <.001, with greater similarity ratings for positive (*m*=1.864) than negative (*m*= 1.610) foil statements observed in the whole sample. Independent t-tests found no statistically significant differences between anxiety group and overall valence biases from foil statements *t*(112) = -1.175, *p* =.243, suggesting there was no general negative response bias for either anxiety group.

Secondary analyses

Postnatal Depression and Interpretation Bias

A hierarchical multiple regression was conducted using total anxiety scores on the PASS with combined interpretation bias index scores for both ambiguous scenario types. Anxiety was entered into the model first following findings of a significant association between anxiety group and interpretation bias. Depression scores (EPDS) were entered in the next step to determine additional variance explained by depression. The full model (see table 4), containing both anxiety scores and depression scores to predict overall interpretation bias indices (model 2), was statistically significant, $R^2 = .141$, $F(2,112) = 9.205$, $p < .001$; adjusted $R^2 = .126$. Furthermore, the addition of depression to the prediction of interpretation bias scores (model 2) led to a statistically significant increase in R^2 of .070, $F(1, 112) = 9.155$, $p = .003$. Indicating that postnatal depression (as measured by the EPDS) accounted for 7% of the variance in interpretation bias index scores.

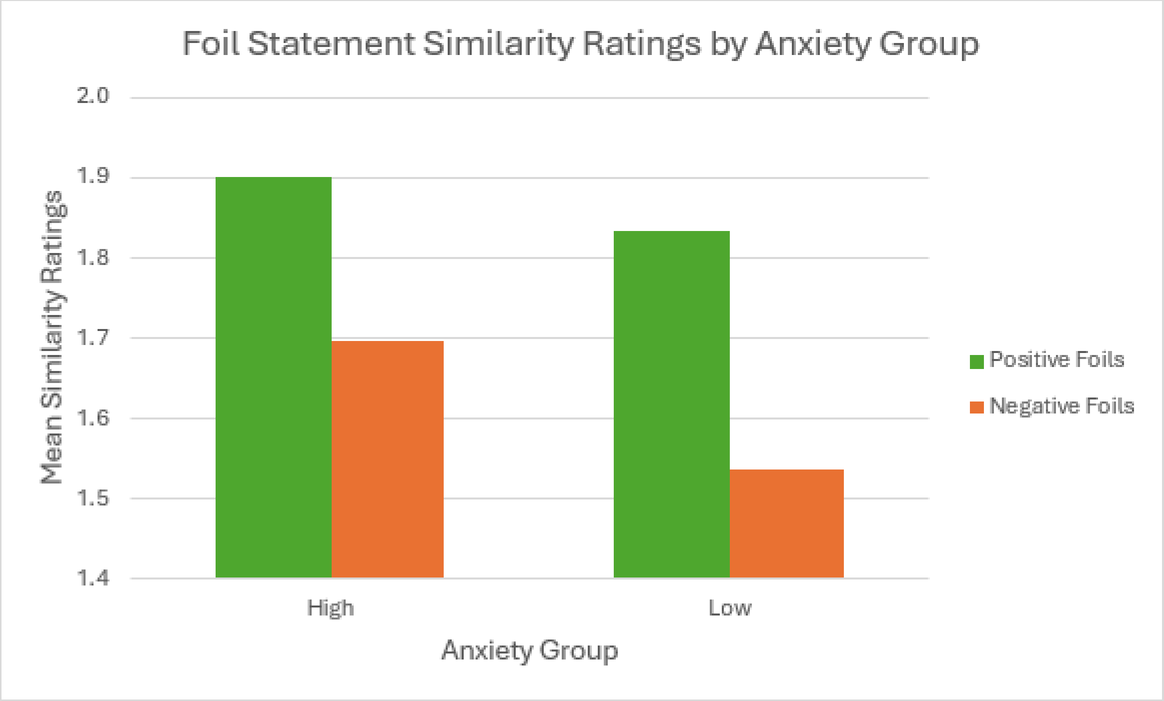

Figure 3. *Similarity ratings of foil statements by anxiety group (to indicate general valence tendencies by group)*

Table 4.

Hierarchical Multiple Regression Predicting Interpretation Bias by Postnatal Anxiety and Depression scores

	Interpretation Bias			
	Model 1		Model 2	
Variable	B	β	B	β
Constant	.95**		1.10**	
Anxiety	-.013*	-.266	.000	.004
Depression			-0.56*	-.378
R^2	.071		.141	
F	8.63*		9.21*	
ΔR^2	.071		.070	
ΔF	8.63*		9.16*	

Note. N=115. *p<.05, **p<.001.

Perinatal Anxiety Subtypes and Interpretation Bias

A second hierarchical multiple regression explored whether there were differential relationships with interpretation bias by the four perinatal anxiety subscales of the PASS; (1) general worry and specific fears, (2) perfectionism, control and trauma, (3) social anxiety and (4) acute anxiety and adjustment. As subscales one and four were highly correlated (r = .801), these were entered together in step one, followed by subscale 2 in step two and subscale 3 in step three. The full model with all three groups of subscales (model 3) was not statistically significant, R^2 = .077, F(4, 110) = 2.285, p = .065; adjusted R^2 = .043. Neither the additions of perfectionism, control and trauma (subscale two) in model 2, or social anxiety (subscale three) in model 3, significantly increase the variance explained in interpretation bias; R^2 < .000, F(1, 111) = .010, p = .922 (model 2), R^2 = .001, F(1, 110) = .161, p = .689 (model 3).

Discussion

This study aimed to compare postnatally anxious mothers in their interpretations of ambiguous scenarios to those low in anxiety, and to investigate the effect of the specificity (personal saliency) of these scenarios by comparing caregiving-specific to general scenarios. Consistent with hypothesis 1 (H_1), highly anxious participants had significantly more negative interpretation bias indices compared to those with low anxiety. However, this was not dependent on the type of scenario in which the ambiguity occurred, with no significant differences between caregiving-related and general scenarios. In other words, contrary to our second hypothesis (H_2), there was no evidence supporting greater negative interpretation biases for caregiving-related scenarios over broad, non-parenting situations.

Given the high co-occurrence of depression with anxiety in PMH problems (Howard et al., 2014), it was also important to establish the role of depression in this postnatal sample. Findings suggest that PND symptoms significantly and additionally contributed to the variance explained by anxiety in interpretation bias scores, though the variance explained was modest (7%) and likely impacted by the anxiety items on the EPDS measure. Finally, subscales of perinatal anxiety on the PASS, including general worry; perfectionism, control and trauma; social anxiety; and acute anxiety and adjustment (Somerville et al., 2014) were not separately, significantly associated with interpretation bias.

The finding of more negative interpretations of ambiguous scenarios in mothers with high anxiety compared to those with low anxiety, is consistent with the expansive empirical evidence intrinsically associating anxiety with biased interpretations (e.g., Everaert et al., 2023; Mathews & Mackintosh, 2000; Mathews & MacLeod, 2005). It also contributes to the accumulating evidence of this nexus across developmental stages from childhood (Creswell et al., 2005; Klein et al., 2019) into parenthood (Hirsch et al., 2020; Challacombe et al., 2007).

However, the lack of support for increased negative interpretations of ambiguous caregiving-relevant (content-specific) scenarios over non-caregiving scenarios appears inconsistent with previous research. Evidence would suggest that highly personally-salient information leads to greater biases in processing for different anxiety conditions (Feng & Hirsch, 2023; Pergamin-Hight et al., 2015; Z. Zhang et al., 2024). This also seems at odds with cognitive theories of affective conditions asserting cognitions biased to disorder-congruent negative schemata are central to the maintenance of anxiety (Beck & Clark, 1988; Beck & Haigh, 2014).

With perinatal anxiety encompassing a range of anxiety conditions during the perinatal period (Ayers et al., 2024), it may be that the amalgamation of anxiety presentations in this study diluted any content-specificity effects. However, another study exploring multiple cognitive biases (attention, interpretation, and memory) in relation to tokophobia in a pregnant sample, also found a lack of content-specificity in interpretations of ambiguous information related to childbirth (Beal et al., 2023). Accordingly, even in specific perinatal anxiety presentations, such as tokophobia, biased interpretations of ambiguous stimuli do not appear strongly associated with increased self-relevance of stimuli.

Given the significant increase in variance explained in interpretation bias by depression, it is possible that greater similarity ratings to negative interpretation statements were resultant of slower, reflective processing systems driven by depressive schemata compared to quick, automatic threat-detection systems driven by anxiety

(Beck & Haigh, 2014; Pergamin-Hight et al., 2015; boxes A and B in figure 1). Nevertheless, in their study, Beal et al. (2023) found that the only cognitive bias significantly associated with fear of childbirth was interpretation bias, thus suggesting a unique role for biased interpretations within perinatally anxious samples. Similarly, interpretation bias modification training has been found to be effective in reducing worry in anxious perinatal samples (Hirsch et al., 2021).

This study adds to a small but growing research base failing to find evidence of content-specificity in interpretation bias for anxious perinatal populations (Hirsch et al., 2020; Beal et al., 2023). These conclusions are far from definitive, however, as the role of variables not measured in these studies is yet to be determined. It is possible, for example, that the significant biological and neuropsychological changes occurring in the transition to motherhood (i.e., 'matrescence'; Orchard et al., 2023) may globally impact neurocognitive processing at this time, in addition to moderating factors such as emotion regulation abilities (figure 1; Yatziv et al., 2021).

Limitations

The inclusion of only one measure of interpretation bias through the RT, whilst validated and often used as a 'manipulation check' in interpretation bias modification interventions (Salemink & Van Den Hout, 2010), is a limitation of this study. Though the opacity of the paradigm reduces researcher biases, it does not allow for idiosyncratic interpretations (Hirsch et al., 2016). Similarly, whilst every effort was made to create relatable caregiving scenarios (self-relevant) written in first-person (self-referent; Feng & Hirsch, 2023) and participants instructed to imagine themselves within the given situation, it is not possible to establish how strongly participants identified with each scenario. Nor were we able to account for any moderating effects of self-regulatory abilities within the current sample. Furthermore, the lack of diversity in the current sample may also limit the generalisability of findings as most participants were white British and in stable relationships. Thus, the role of social support may be useful to explore going forward.

Future Directions

Future studies investigating cognitive processing biases in the context of maternal anxiety may benefit from including a comparison group of non-parent matched controls to further explore content-specificity of interpretations of caregiving-salient ambiguous scenarios as well as personal relevance ratings following scenario presentations. Additionally, studies should seek to include measures of emotion regulation and perceived social support to explore moderating affects within anxious cognitive processing. Validating findings of minimal content-specificity effects in interpretation biases within maternal anxiety would help guide clinical practice by determining the respective utility of targeting global cognitive biases or specific processing of perinatally-relevant information.

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Executive Summary

Study Title: ***Interpretation bias in maternal postnatal anxiety: perinatal content-specificity of ambiguous stimuli***

Background

Mental health difficulties during pregnancy and the first 1-2 postnatal years (i.e., the 'perinatal period') is an area of increasing attention in both research and policy, leading to the creation of specialist perinatal mental health services around the UK in recent years. This is because researchers and policy makers have become more aware of the potential wide-ranging negative impacts of unmet perinatal mental health needs, not just for parents but for the long-term development of their children too. Similarly, up to 1 in 5 women/birthing people may experience a mental health condition in this period, so unfortunately it is also relatively common. However, a lot of the research to-date has focused on postnatal depression, with anxiety receiving less attention, despite being just as (if not more) common at this time.

There is evidence suggesting anxiety in the postnatal period can impact how mothers (as this is who most research has focused on) interact with their baby such as being less 'in-tune' with their baby's cues or needs, leading to mothers responding less sensitively to these. How anxiety may interfere with parents' abilities to respond sensitively to their baby's needs and signals, is therefore an important area to explore. Theories of anxiety, referred to as 'cognitive' or 'cognitive-behavioural' theories, suggest that what we pay attention to and how we interpret information from the world around us can be influenced by anxiety and in turn, the more we pay attention to threats and interpret information in negative or threatening ways, the more anxious we will feel. So, these negatively biased ways of thinking are thought of as both causes and maintenance factors in anxiety. It may be these thinking patterns underlie links between mothers' anxiety and interruptions to their abilities to respond sensitively to their child's signals.

The present research focused on exploring the way women/birthing people with high anxiety interpret unclear (ambiguous) information. It sought to understand if anxiety in a sample of postnatal mothers/birthing people was associated with more negative interpretations of ambiguous situations. Additionally, whether increased personal relevance of the ambiguous situation to mothers/birthing made a difference to tendencies to interpret the situation more negatively or not. In other words, whether anxious mothers/birthing people were more likely to negatively interpret ambiguous parenting situations than general, non-parenting scenarios.

What was done?

To test this, 115 mothers (all identifying as female) with baby's aged 3-6 months old, completed an online study. In the survey, participants answered screening questions to identify symptoms of postnatal anxiety and postnatal depression. They also read through twenty short stories about common situations, in which the conclusions remained ambiguous (unclear). There were two types of stories; those which related to parenting situations, and those related to everyday (non-parenting) scenarios. Participants then had the story titles presented again along with 4 suggested statements, two of which resolve the ambiguity in the story ('targets') and another two statements which did not offer ambiguity resolutions ('foils'). In each statement pair (i.e., targets and foils), one statement was positive in tone, and one was negative. Participants rated how similar in meaning these statements were to the original story, these ratings were used to calculate an 'interpretation bias index' score (with lower scores indicating tendencies to interpret unclear situations more negatively than positively).

What were the findings?

Participants were mostly White British (94%), in relationships (married or co-habiting; 98%) and between the ages of 30-39 (80%), with most babies aged between 6-12 months old at the time of the study (60%). Statistical analyses indicated that mothers with high anxiety were more likely to negatively interpret the ambiguous situations compared to those with low anxiety scores. However, the type of stories (i.e., whether they were specific to parenting or general situations) did not appear to make a difference to interpretation bias scores. Depression symptoms were also significantly related to interpretation bias, explaining around 7% of the variance in scores (above that of anxiety scores). However, subtypes of postnatal anxiety (including general worry and specific fears, perfectionism, control and trauma, social anxiety, and acute anxiety and adjustment) did not significantly differ from one another in their relationship with interpretation bias scores.

What are the implications?

This was the first study (to our knowledge) that has compared how mothers who are high in postnatal anxiety tend to interpret ambiguous situations which are either highly personally-relevant or less personally relevant. In other anxiety conditions, such as social anxiety, more negative interpretations are often found for ambiguous situations that are more relevant to the specific worries of an individual (such as whether others are making negative judgements of them in social interactions). However, postnatal anxiety does not appear to have the same content-specific associations with biased interpretations. So, contrary to our expectations, anxious mothers were not more likely to negatively interpret unclear situations related to parenting their child (such as interpreting one's baby pulling an ambiguous face when trying new foods) compared to non-parenting situations (such as interpreting the significance of the seat next to you on a bus remaining empty after acquaintances get on).

As such, therapeutic interventions which address broad tendencies to interpret any ambiguous situation negatively may be as effective as those tailored to anxious parenting-specific thoughts. However, there is more research needed to validate these findings and explore the role of other factors which may influence interpretations such as abilities to regulate emotions and the impact of social support, ideally within more diverse research samples.

Connecting Narrative

The four research projects I had been involved in prior to clinical psychology training, all sat under the broad umbrella of developmental psychology, in particular areas of attachment, social learning, parent-child interactions and language development. This was probably born from the fact that developmental psychology was my first ‘true love’ experience within the wider world of psychology, which in turn was driven by my experiences growing up with a Health Visitor for a mother. This interest was consolidated by my pre-training experience as an assistant psychologist in a fledgling perinatal mental health service. So, I chose to conduct three doctoral research projects rooted within developmental psychology focusing on the parents (i.e., primary caregivers) perspective. In particular, the key transitional years going into parenthood and those critical early years of development for their offspring.

The daunting task of narrowing down to projects which were both motivating and *feasible* (this being the operative word) was not made any easier by knowing where my interests lay. Excited conversations about the prospects of using head-worn cameras with built in tracking and coding technology to examine infant-parent interactions was indicative of the difficulty I had in selecting projects which would meaningfully contribute to the evidence base whilst allowing me to successfully undertake all other tasks of clinical training. Indeed, this was reflected in my project approval panel feedback for my TDRP, recommending I significantly strip-back the proposal and re-focus. It ended up being the only project in which the scope remained relatively focused with both other studies somewhat falling victim to my expansive tendencies and desire to “answer it all”.

Nevertheless, a consistent thread emerged through my projects of picking apart the idiosyncrasies of psychological experiences in parenthood for individuals with young families. In my systematic review this encompassed weaving together multifaceted, dynamic and systemic factors contributing to parental wellbeing (or lack thereof) when families are faced with the unexpected diagnosis of childhood hearing loss, now diagnosable from birth due to universal newborn hearing screen programmes. In my TDRP, there was a more literal examination of specificity effects within mothers' interpretation biases of ambiguous situations, which were either related to parenting experiences (highly personally salient) or everyday non-parenting situations (less personally salient). Finally, in my SIP I had the pleasure (and sometimes, sadness) of hearing the first-hand, profoundly personal experiences of parents accessing support from a primary mental health care service. I heard in interviews and read in survey responses specifically what helped these parents of young children to engage with mental health support at this deeply turbulent time in early parenthood as well as what barriers remain to overcome to access this support.

Lastly, as I have an arts background (history, English literature, politics and psychology were my A-level subjects of choice), adjusting to the scientific approach required to complete these projects has been a long, slow process but a very rewarding one. I can now say I am firmly of the belief that you can and should combine the creative with the methodical within research. Nonetheless, it feels fitting to indulge my love of the written arts once more in the following reflections on each of my projects to close out this scientific endeavour.

Project reflections (*and their alternative chapters names*):

SRL (*Lost at sea*)

To mix metaphors; for so long this project felt like wading through treacle when attempting to narrow the focus and to synthesise the literature. There is a skill in selecting a topic ripe for a systematic review which hits the sweet spot of just enough papers to draw out empirically useful information but not too much that you'd still be synthesising on your 80th birthday. This skill was lacking early on but has developed significantly with hindsight. Picking one or two specific variables within a well-defined population, for example, is one such learning point. I eventually found my way back to shore, somewhat spluttering, with the excellent guidance and 'rubber-ring-throwing' of Dr Matthew Hotton.

TDRP (*Rome was not built in a day, and neither was this project)*

This project was first conceived in early 2022 but was not completed until early 2025, undergoing many iterations, research material development stages and supervisor line-up changes. At times, developing the ambiguous scenarios felt an impossible tasks, but again with guidance from Dr Fiona Challacombe, I was able to emerge from the rabbit hole and see the bigger picture once more. Despite frustrations in delays and falling in and out of love with this project, I now feel proud of the result and feel that above all others, it will have the most sustained influence on my clinical practice.

SIP (*Rein it in!*)

This was the first project I completed and the first in which I realised that undertaking a study based on a passion can carry significant drawbacks as it intensifies those tendencies to want to answer *every* question. This is especially true when a service is so eagerly engaged with the prospect of assistance in analysing their data. It also taught me that as much as I enjoy narrative in clinical work, I feel more at home with quantitative research. Nevertheless, it allowed me to talk animatedly to anyone and everyone about the interviews I undertook with inspiring fathers, and I regularly hold their words in mind in clinical practice to this day.

All three projects have taught me the value and necessity of stepping back and regularly sound-boarding difficulties with supervisors to avoid getting lost in details that are interesting but perhaps stray from original aims.

What next?

Unsurprisingly, post-training I have opted to continue employment within my specialist placement team in a Maternal Mental Health Service. This is also a service in its infancy so the research skills I have gained through the above projects will absolutely be put to good use. I am already planning an audit to prove our utility as a service, and separately I hope to publish or otherwise disseminate findings from the above projects.

Acknowledgements

Firstly I would like to extend my gratitude to all the participants and expert-by-experience consultants who graciously dedicated their time and insight for these research projects.

Furthermore, for their guidance, patience, and flexibility I want to extend my heartfelt thanks to the wonderful research supervisors variously involved in these projects; Dr Fiona Challacombe, Dr Matthew Hotton, Dr Alex Lau-Zhou and Dr Fin Williams, and also my external supervisors whose knowledge and support were equally invaluable; Professor Colette Hirsch, Dr Alice Brady, Louisa Dosanjh, Tejal Ladwa, and Grace Jell. It has been a long road but your insight and understanding mean more to me than you will ever know. Similarly, a special thank you also goes to Dr Neil Carrigan, your wisdom and kindness are unparalleled. I could not have asked fo a better course tutor.

To the wonderful cohort of Oxford DClinPsy 2021, thank you for sharing knowledge, empathy and a heartfelt willingness to get everyone to the end. Similarly, if you are really lucky in life, you will meet a handful of good people you can call close friends. Through this doctorate, I have been extraordinarily lucky to have met my soul-sisters and my coven. Aleks, Lucy and Holly, your wit, knowledge, passion, compassion and cracking choice in teaching snacks, are the foundation of a lifelong friendship and the bedrock of this thesis, ever propping me up as I limp over the finishing line. You have supported me in every conceivable way and I could not be more serious when I say I would not have been able to do this without you. Also to Milly and Helena, thank you for bearing with me as I became even worse than usual in responding to messages and keeping updated on developments in your lives. I am more eager than ever to spend time with you both again going on daft adventures and debating life, love, and politics.

My lovely tight-knit family, I appreciate you for being my rock, especially my long-suffering Mum and Dad for getting me to this point and riding the many ups and downs with me. Your thoughtfulness and boundless love drives me in my quest to support others as you both have done as my incredible parents and in your long careers in the NHS. To my wonderful brother Sam, you have always inspired me with your kindness, intelligence and fantastic sense of humour, it will be a honour to join you in the ranks of 'Dr Crawford'. Lastly my lovely Simon, you have managed to support me from all parts of the globe over the last 3+ years. Thank you for graciously weathering the many storms and reminding me to eat, drink, and move (and for mostly letting me off the DIY duties). I love you dearly.

And finally, to Bilbo, my lovely little rescue cat (my shadow and full-time office companion). A Hobit's Tale (*or tail*) this is not, but still, you have been a light to me in the darkest of places and hold such a special spot in my heart because of it.

For Tess, you will be ever loved and missed.

Appendices

1: Systematic Review of the Literature (SRL)

Appendix 1A – PROSPERO record

Link to PROSPERO record:
https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022348350

Appendix 1B – SRL Basic Search Strategy (v2, post librarian consultation)

Child concept

((child* OR infant* OR infancy OR preschool* OR pre?school OR baby OR babies OR pediat* OR paediat* OR adoles* OR “young person” OR “young people” OR teenage*) adj4 (deaf* OR “hearing loss” OR “hard of hearing” OR “hearing impair*” OR “cochlear implant*” OR “hearing aid*” OR “hearing disorder*” OR “hearing disab*”)).ti,ab.

AND

Family concept

(family OR families OR parent* OR caregiver* OR caretaker* OR carer* OR mother* OR father* OR maternal OR paternal OR mum OR mom OR dad* OR sibling* OR guardian* OR brother* OR sister* OR “family member*” OR grandparent* OR relatives).ti,ab.

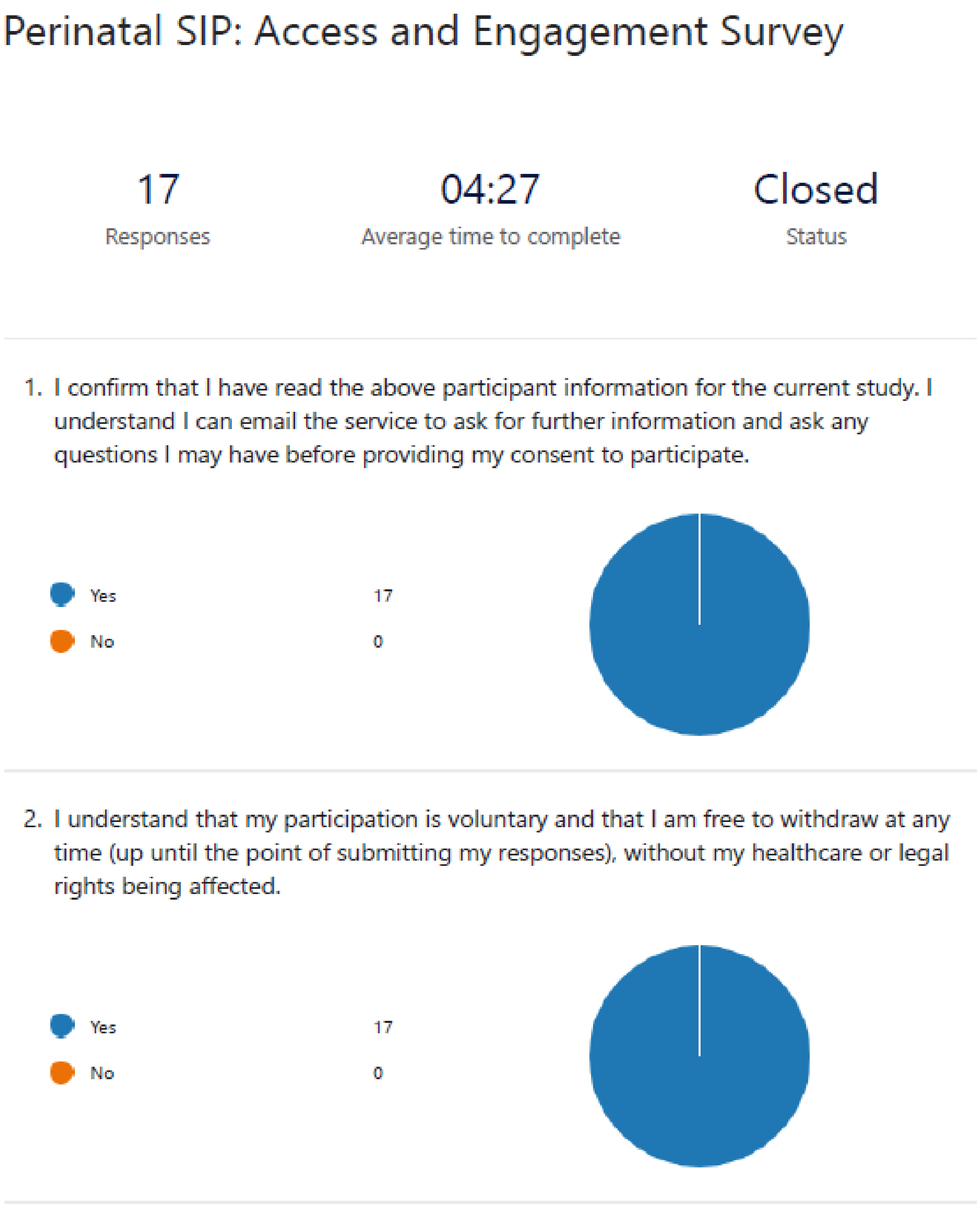
AND

Psychological concept

(resilien* OR well?being OR psycholog* OR depress* OR anxiety OR anxious OR stress* OR distress OR emotion* OR “positive psycholog*” OR “quality of life” OR QoL OR “family needs” OR coping OR adapt* OR adjust*).ti,ab.

2: Service Improvement Project (SIP)

Appendix 2A – Microsoft Forms Survey Questions and Responses



Perinatal SIP: Access and Engagement Survey

17	04:27	Closed
Responses	Average time to complete	Status

1. I confirm that I have read the above participant information for the current study. I understand I can email the service to ask for further information and ask any questions I may have before providing my consent to participate.

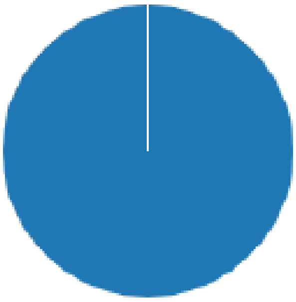
●	Yes	17
●	No	0

2. I understand that my participation is voluntary and that I am free to withdraw at any time (up until the point of submitting my responses), without my healthcare or legal rights being affected.

●	Yes	17
●	No	0

3. I understand how my data will be stored and that the information I provide may be used to support other research in the future, and may be shared anonymously with other researchers.

●	Yes	17
●	No	0



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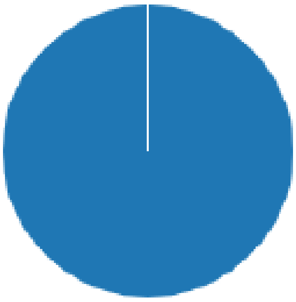
4. I agree to take part in this survey.

●	Yes	17
●	No	0



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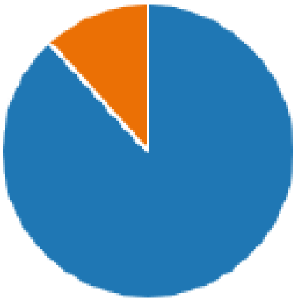
5. What gender do you identify as?

●	Woman	15
●	Man	2
●	Non-binary	0
●	Prefer not to say	0
●	Other	0



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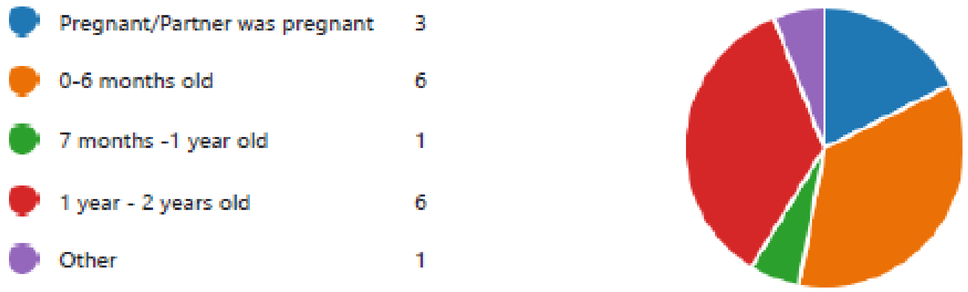
6. What age was your youngest child(ren) when you first accessed Talking Therapies for support?



---

7. Approximately when did you seek support from Talking Therapies?

17
Responses

Latest Responses

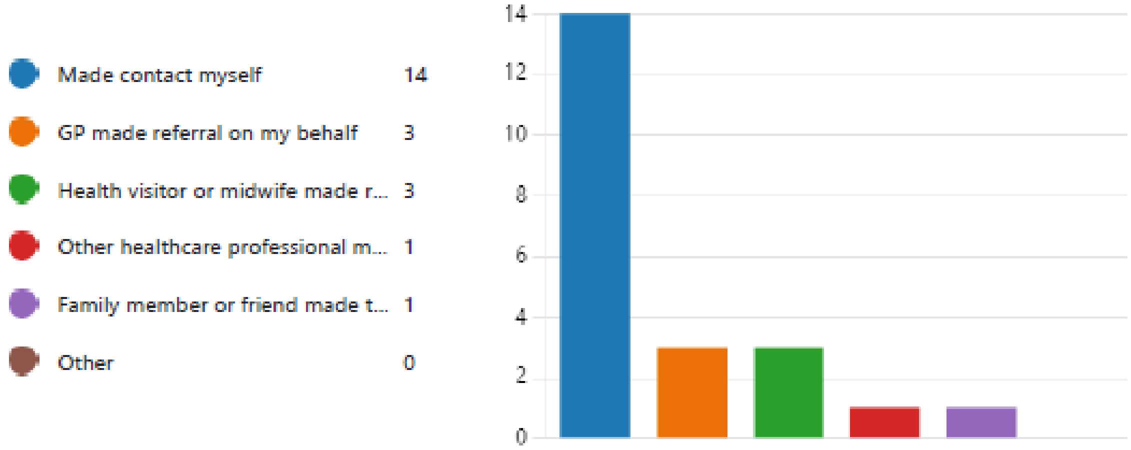
"April 2022"

"18 months "

"When I was 4 months pregnant "

5 respondents (29%) answered **Month** for this question.

8. How did you request support from Talking Therapies?

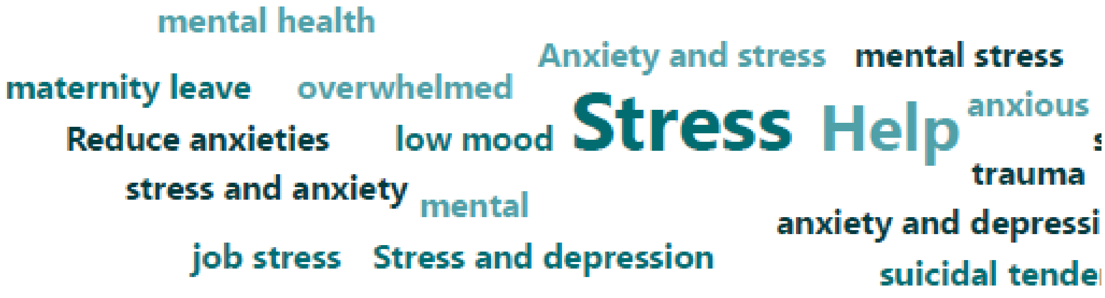


9. In a few words, what were you hoping Talking Therapies could support you with at the time?

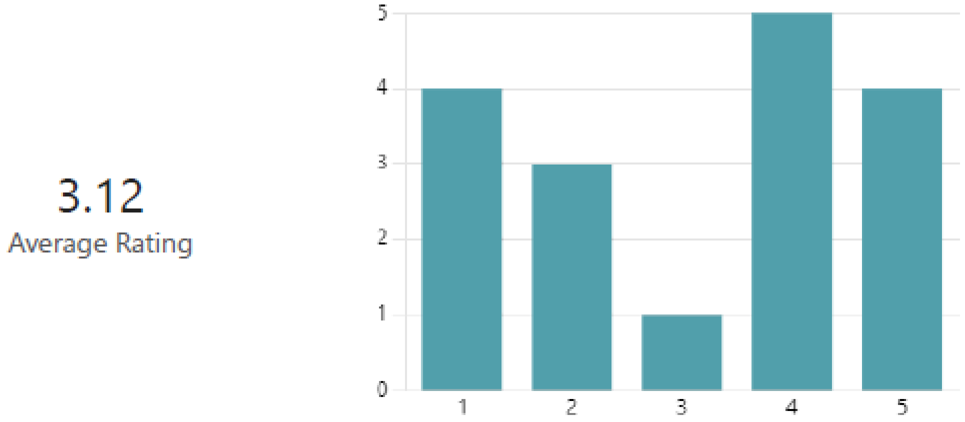
17
Responses

Latest Responses
"Reduce anxieties "
"Birth trauma"
"Anxiety "

5 respondents (**29%**) answered **Stress** for this question.



10. On a scale of 1-5, how much did you feel you received the support you needed at the time (with 1 being 'not at all', and 5 being 'completely met my needs')?


3.12
Average Rating

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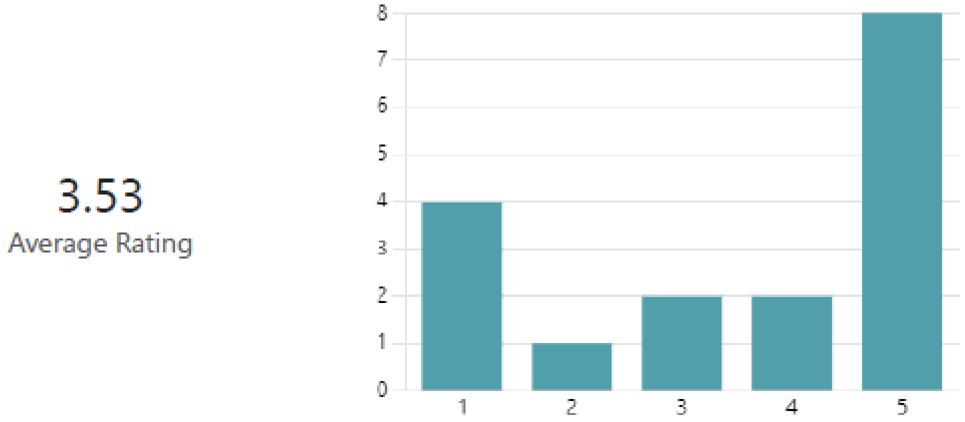
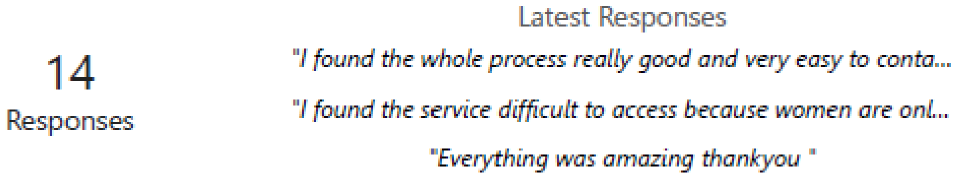
11. How accessible did you feel Talking Therapies was when you wanted to get support on a scale of 1-5 (with 1 being 'very difficult', and 5 being 'very easy to access')?


3.53
Average Rating

12. Are there any areas that could be improved to help people who are pregnant/their partner is pregnant or who have a child under 2 years old access support from Talking Therapies, and if so, what might help?


14
Responses

Latest Responses

"I found the whole process really good and very easy to conta...

"I found the service difficult to access because women are onl...

"Everything was amazing thankyou "

Appendix 2B – Interview Schedule

Perinatal Fathers Interview Schedule

1. Confirm name, DOB and gender identity?
2. Confirm, when did you roughly access Berkshire Talking Therapies for support?
    a. How old was your child(ren) at the time?
3. What was your understanding of the support Berkshire Talking Therapies could offer before you were in contact with them?
4. What were your overall experiences of Berkshire TT? *Prompts:*
    a. Positives?
    b. Challenges?
5. (***If disengaged***) What do you think led to you not seeing through the support offered to you at the time? *Prompts:*
    a. Personal factors?
    b. TT factors?
6. (***If completed***) What do you think led to you seeing through the support offered to you at the time? *Prompts:*
    a. What was helpful?
    b. What else might've contributed?
7. Access and Engagement: *Reflecting on your own experience…*
    a. What do you think might be barriers to more father's accessing support through Berkshire TT (and similar services) in the first 2 years of their child's life?
        i. *Follow-ups around **perceptions of professionals**?*
        ii. *Follow-ups around **perceptions they had** of seeking support?*
    b. What do you think would help keep fathers who did seek support engaged with Berkshire TT (and other similar services)?
        i. *Follow-ups around **relevance** of support for fathers in perinatal period*
8. Are there any other comments you'd like to make or advice you would give to other fathers struggling with their mental health?
    a. Do you have any advice to practitioners supporting fathers?

Appendix 2C – Survey Quotes

All quotes for content analysis themes from perinatal access and engagement survey

Theme Level	Main theme	Quote (and sub-category)
Client level		
	Support and process awareness	<u>**Referral process awareness**</u> "Making people more aware of self referral...I had friends who gave birth around the sa[m]e time who had never used these sort of services and were surprised when I suggested self referral" "I have used the service previously and had a good relationship with my midwife that [sic] meant I could be open about my mental health and she supported the referral" <u>**Wider support information**</u> "signposting to any charaties [sic] or groups that could provide respite or free play" <u>**Service support clarity**</u> "I found the service difficult to access because women are only supported up until 12 months... and then there isn't any more support offered"
Therapist level		
	Attuned support	<u>**Grateful for support**</u> "I found the whole process really good and very easy to contact" "everything was amazing thank you" "I wouldn't be the mother I am today if I didn't receive TT support. Thank you" <u>**Attuned therapy delivery**</u> "More tailored support and availability of support"

		"Initially only had support from employability coach which was not the service I needed most" "stop pressuring people into saying they are depressed" "I thought you could help with social anxiety as I was told but the whole conversation was based on how depressed I am" "...I got a low score as I didn't tell them I was struggling with depression"
Service level		
	Flexibility of support	**Flexible therapy timings** "I struggled with... fitting the sessions in with a one-year-old... and not being able to get childcare for that certain therapy session" "availability and prompt handling [of] appointment[s] with cancellations being handled well" "times available to talk were a bit tricky (as it was around the same time I was putting my son to bed)" "faster appointments with less of a gap in between" "Difficult to make appointments" **Flexibility of Processes** "...[it] became easy to just put down the same answers each time... it was easy to mask how you were really feeling, or it just didn't quite fit how I was feeling" "...tasks and homework you have to do make you feel even more anxious and a failure when you don't complete it" "...exacerbates the anxiety and reinforces the feeling of disappointment"

	Flexible therapy modality "...I found it difficult to talk openly on the phone at home"
Care continuity	"I accessed talking therapies at a time where there were staff changes... I felt that [it] disrupted my progress and meant that some of my support was postponed or cancelled"

Appendix 2D – Additional illustrative interview quotes

Appendix D. Table of Additional Representative Quotes for Superordinate and Subordinate Themes

1. Awareness and Prejudiced Perceptions

1a. Stigma, expectations and permission to struggle

‘Men don’t/shouldn’t talk’

“…I think that's what blokes are scared of. I don't wanna be a moaner. I don't wanna be like, you know I don't want people to think I’m a drip”

“I know men, they don't speak easily. They…hide things because they have to be strong.”

“I think there's there is this stigma around blokes to not…talk… you don't display your feelings, you don't display your emotions… you gotta put on that brave face.”

Permission to struggle

“Before I had a child I didn't know that a father needs support as well”

“it was a colleague of mine…he would call me …and say, ‘…I really feel for you…this postnatal depression it’s for fathers as well’”

“I think that all men now just need to just go [to therapy], especially Dads, because I know…what my kids are all like…they’re hard work!”

“[parenthood:] it's a massive adaption [adaptation]… something to say to people [might be]; ’You’re doing a good job’…or ‘it's OK to be worried, it's OK to be upset’”

Transition to fatherhood

"...becoming a father...you should be enjoying the time you spend with your kids... I was struggling...my girlfriend says I was horrible to live with"

"This is a...life changing event... I've got a child and that has just thrown a spanner into the works like my whole routine, schedule, everything. I did not expect it"

Pressures/Expectations: Provider and supporter role
"the first time round [birth of first child] it took me a very long time to be able to talk about it without becoming quite emotional... it was hard... because everyone wants to know your birth story, which...wasn't a huge amount of fun for me to talk about or to tell multiple times" [due to traumatic birth]

"...my wife's not well. So you now have to take responsibility, kids...everything"

"I had a new job and I was a bit like 'I don't know how this is all going to work now' and then he was breech and he nearly died"

"I just panicked and I said... 'I'm not worried about my sleep, but my pain is not right'... I was worried about 'I'm going to lose my job'"

[balancing faith and fatherhood]: "till 11:00 o'clock... somebody has to hold him while we do whatever we need to do for the day...I have to do, like, my prayers... by the time it finishes, it's 1:00 o'clock in the morning"

1b. Awareness of support services

How to access support
"I didn't know where to go to... I didn't know how to start the process and I think that needs to be made a bit more common knowledge"

"you hear about all these like therapists, you can see online or stuff like that but like people need to see it like...in shops"

What Talking Therapies can do
"...I think I wasn't fully understanding what therapy was going to be"

[Wanting an easy-fix and maybe not being aware that it wouldn’t be]: “it's all very free form and amorphous which in the early days [which] I found a bit a bit challenging...I don't know whether it would be worth saying that upfront to people”

[when advertising the service]: “...if they could get some kind of advertisement... where men can sort of relate to it... once, I guess, the idea is out there...” [it would help awareness]

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2. Fatherhood and mental health experiences

2a. Mind the gap: the overlooked parents

Feeling marginalised

“It it's a very interesting experience having [a child], from a...male perspective, because there are very, very few areas of in society where you are marginalised”

“little part of me that was slightly jealous of my wife for the attention she got with her mental health first time round, which is absurd, of course, isn't it?”

“there should be some...sort of check on...the man [too]”

“we went into A&E at one point cause it just got more than I could handle... I was a bit surprised that no one asked about me which sounds so self-centred when you say it out loud... because she'd been admitted, she was the patient. The focus was on her and she needed the help... it would have seemed logical at some point if someone had gone and said ‘let's see if he's alright, because he's been dealing with that, that doesn't seem like an easy thing to deal with’. At that point I probably would have, if someone had said ‘do you need some help?’ I probably would have said ‘yes, please!’ and that would have been, you know a positive... outcome”

“I think paternity leave should be like, longer”

“Something [helpful] could be around that that, that anxiety talk about being a new dad”

Access to wider support

“If we didn’t have our friends around then raising this one, would have been an absolute nightmare, but because we had the support system of friends and family, yeah, it weren’t that bad”

“Having your friends around, we both have jobs, we have our own property. We don’t have to worry about being kicked out. I have a friend who is worried about being evicted. His wife is pregnant... I can't imagine the stress that he's going through”

“...it was covid and I think they were supposed to be some courses where they asked the parents to come in and guide them so that all was cancelled...there should be courses where both parents should go and they should be made aware of... it's not just one, both can go through it” [perinatal mental health difficulties]

“I'm from [South Asian country]... We got a completely different culture... [people there] live in combined families...there's always someone there to support you. Someone's always there to look after the child... Here, it's not like this.”

Relatability of resources

“someone like Talking Therapies need to get...real life experiences”

“I think it was just the videos and reading the stories because on...their website...of other people and what they've gone through...I think now that kind of helped me more than reading modules”

“I came away feeling like, I could be a great mother... and it's also written for people, it feels like, having their first child... but that transition from 1st to 2nd is a whole new ballgame. Certainly neither of the Dads stories were... with them having their second kid”

“they sent me videos that didn't work, wasn't related to mine anyway, and then they sent me for the CBT. This wasn't related too. So I said like, ‘I'm not gonna get the help...I want’”

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"they sent me videos that didn't work, wasn't related to mine anyway, and then they sent me for the CBT. This wasn't related too. So I said like, 'I'm not gonna get the help…I want'"

2b. Fatherhood as catalyst of change

Avoidance no longer an option

"when my son was born, that was when I kind of, I knew in myself that there was something wrong… I think I felt not OK, for… I'd say well over 10 years. …for a long time, I hid it for… doing other things; on the drink and that"

"I've struggled for years really if I'm honest. This [having a child] was just a kick in the teeth"
"going back in the day when I first started struggling, I didn't speak to anybody you know… I just went to parties all the time"

Child(ren) as motivators

"You need to get your head straight for your kids…especially for dads, you've got people who rely on you. Who need you, not financially or, they just need you there straight"

"I've struggled for a while probably for the last 10 years…But he gave me the reason to seek help. It wasn't about me anymore it was about him"

"he comes first, no matter what we do now"

Child(ren) as motivators

"You need to get your head straight for your kids…especially for dads, you've got people who rely on you. Who need you, not financially or, they just need you there straight"

“I’ve struggled for a while probably for the last 10 years…But he gave me the reason to seek help. It wasn’t about me anymore it was about him”

“he comes first, no matter what we do now”

3. Flexible and tailored support

3a. Delivery of therapy

Modality and Timing

[belief that] “talking therapies was all online anyway”

“I think they gave you three options…I could do it over video or I could go in and see them in person or I could do it over the phone. Because [of] working and having him like, the phone calls were the best option for me”

“I would still prefer and say that and being face to face, being away from…your environment…I could have, you know, finished work an hour early…and then still being able to come back, feed my boy, help bath him…put him to bed…and still had that hour where I could completely open up and have no ‘bleurgh’ [work/emails] in front of me or ‘bleurgh’ going on, I was just with that person”

“…maybe being a bloke, being someone maybe who can't talk about things… I just [said], ‘yeah. Whatevs. That'd be fine’” [when selecting a support option]

“being self-employed cause if I wanted to take the afternoon off to do some of it, I could… I've found it very simple, but then my…schedule is very flexible”

“…for me just to take a 30 minute phone call, is just so much easier than me having to… take half a day off work, or a full day and then I'm like losing money…”

“the intervals for the calls wouldn't have been enough for me to talk it through to my satisfaction, so having [my wife] there to talk it through…very handy”

3b. Use of online resources (pros/cons)

Easy access and support continuity

"I have 12 months on my... online thing to go back and check on that if I do have a bit of a rubbish day I do go 'Ohh shall I just check it?' and then I just end up trying to do the exercises that they gave me"
"having the stuff...you could go back to...the videos...just knowing that is in your pocket...if I was having bit of a bad day...I'd just go and read that for a bit...because... just knowing you'd had that there was easier"
"...you eventually...realise that [you have to do the work] and you know the Silver Cloud app helps with that. You should realise 'OK now the key is understanding my own mentality and then deciding what to do about it, myself'"

"once I'd been given access to Silver Cloud and was sort of chuntering through it, I just didn't need the calls...I wasn't quite clear on what function they provided me. I was doing stuff. I was doing the work."

Burdensome

"For me, personally, the things that they were asking me to do, I didn't feel was relevant to me"

"I was sent documents, online assessments things. ...You didn't know what you had done or hadn't done if you hadn't written it down [with] the way the website was formatted"

"...they sort of said 'well you need to do this work; you need to set time aside to do this ready for the next meeting'. I said, 'well, I'm sorry then, I'm not going to be able to do that because... I can't give that time now"

"I was asked to do a lot of online spiel before the meetings... I simply could not dedicate time to doing that."

3c. Therapist engagement skills

Active listening

"She was amazing. She listened to absolutely everything I had to say"

"You actually felt like he listened, and he actually cared, so that was quite, quite reassuring"

"You actually you felt like he understood and he actually cared... speaking to him then made me open up to my wife more"

	“the support I received great; it was, it was compassionate, it was constructive” “If I'm frustrated, I need to tell you or let my frustrations out so you understand… [if] you don't let me finish and then tell me ‘…we're not covering this or this is not part of it’ then why was I put on this therapy?” “[if] nobody's interested, then, what's the point… I feel like I'm wasting their time…I said…’you know what? Let's end this’”
	Adapting to clients’ needs/preferences [adapting pace of support] “…sometimes I don't really understand the exercises and I tried to do my best, he would always wait, he would always explain it” “it might be worth the…professional suggesting a pace” [preferring direct approach] “…I could roll off…10 bad things that I've had happen that week but she would turn it around and be like, ‘right what's good?’ And she was very eye opening… I think a lot of men will recognise negative points and failures before they even see the bigger picture” [wanting active, problem-solving strategies early on] e.g., “…something active thing I can do that will make me feel better at independent of my own efforts.” “Don't give them…only four options you can select from. Give them a text box as well [to say] ‘if you think this doesn't apply then please put something in because we want to help you’” “if I just had a phone call once every three weeks, I think I would have just gone ‘oh, what's the point?’ but because I was given tasks and I think well for me… keep keeping me busy, keeps me in line… the blunt way of saying it is, ‘don't let the man go bored’”
	Fostering therapeutic alliance early “I personally had a really good experience for the guy…I thought he was brilliant. I think I felt better talking to him than I did do doing the exercises … after speaking to him after about the second session like I really started feeling better”

[importance of taking time to explain the options and process] “It was all explained. Once it was explained, it’s quite...simple” “...that [not feeling listened to] doesn't give me the confidence to carry forward… let me tell you like what I'm feeling. Then you can tell me ‘...what you said is not what we provide’” “I'm not gonna get anything out of it. Because I've seen the first three sessions… So why waste resources?… why am I wasting NHS’s money?”

3: Theoretically Driven Research Project (TDRP)

Appendix 3A – HRA Approval Letter and Letter of Favourable Opinion

Miss Ellen Crawford
Trainee Clinical Psychologist

Email: approvals@hra.nhs.uk
HCRW.approvals@wales.nhs.uk

Oxford Health NHS Foundation Trust
Oxford Institute of Clinical Psychology Training and Research,
Isis Education Centre, Warneford Hospital
Headington, Oxford
OX3 7JXN/A

23 April 2024

Dear Miss Crawford

HRA and Health and Care

Study title:	**Exploring the profile of interpretation bias in maternal postnatal anxiety**
IRAS project ID:	**324032**
Protocol number:	**not applicable**
REC reference:	**24/YH/0097**
Sponsor	**Oxford Health NHS Foundation Trust (OHFT)**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?

HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **324032**. Please quote this on all correspondence.

Yours sincerely,

Hayley Henderson

Approvals Manager

Email: approvals@hra.nhs.uk

Yorkshire & The Humber - Bradford Leeds Research Ethics Committee
NHSBT Newcastle Blood Donor Centre

Holland Drive
Newcastle upon Tyne
NE2 4NQ

Telephone: 02071048083

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

23 April 2024

Miss Ellen Crawford

Trainee Clinical Psychologist

Oxford Health NHS Foundation Trust

Oxford Institute of Clinical Psychology Training and Research,

Isis Education Centre, Warneford Hospital

Headington, Oxford

OX3 7JX

Dear Miss Crawford

Study title:	**Exploring the profile of interpretation bias in maternal postnatal anxiety**
REC reference:	**24/YH/0097**
Protocol number:	**not applicable**
IRAS project ID:	**324032**

The Proportionate Review Sub-committee of the Yorkshire & The Humber - Bradford Leeds Research Ethics Committee reviewed the above application on 23 April 2024.

Ethical opinion – Favourable Opinion

On behalf of the Research Ethics Committee (REC), the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Good practice principles and responsibilities

The UK Policy Framework for Health and Social Care Research sets out principles of good practice in the management and conduct of health and social care research. It also outlines the responsibilities of individuals and organisations, including those related to the four elements of research transparency:

1. registering research studies
2. reporting results
3. informing participants
4. sharing study data and tissue

Confirmation of Capacity and Capability (in England, Northern Ireland and Wales) or NHS management permission (in Scotland) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

All research should be registered in a publicly accessible database and we expect all researchers, research sponsors and others to meet this fundamental best practice standard.

It is a condition of the REC favourable opinion that **all clinical trials are registered** on a public registry before the first participant is recruited and no later than six weeks after. For this purpose,

‘clinical trials’ are defined as:

- clinical trial of an investigational medicinal product
- clinical investigation or other study of a medical device
- combined trial of an investigational medicinal product and an investigational medical device
- other clinical trial to study a novel intervention or randomised clinical trial to compare interventions in clinical practice.

A 'public registry' means any registry on the WHO list of primary registries or the ICMJE list of registries provided the registry facilitates public access to information about the UK trial.

We will publish your research summary for the above study on the research summaries section of our website, together with your contact details, no earlier than three months from the date of this favourable opinion letter.

Where a deferral is agreed, a minimum research summary will still be published in the research summaries database. At the end of the deferral period, we will publish the full research summary.

Should you wish to provide a substitute contact point, make a request to defer, or require further information, please visit: Research summaries - Health Research Authority (hra.nhs.uk)

If you have not already included registration details in your IRAS application form you should notify the REC of the registration details as soon as possible.

Publication of Your Research Summary

We will publish your research summary for the above study on the research summaries section of our website, together with your contact details, no earlier than three months from the date of this favourable opinion letter. Where a deferral is agreed, a minimum research summary will still be published in the research summaries database. At the end of the deferral period, we will publish the full research summary.

Should you wish to provide a substitute contact point, make a request to defer, or require further information, please visit: Research summaries - Health Research Authority (hra.nhs.uk)

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

After ethical review: Reporting requirements

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
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study, including early termination of the study
- Final report
- Reporting results

The latest guidance on these topics can be found at https://www.hra.nhs.uk/approvals-amendments/managing-your-approval/.

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”).

Approved documents

The documents reviewed and approved were:

Document	*Version*	*Date*
Copies of materials calling attention of potential participants to the research [Recruitment Poster (social media sample)]	1.1	19 September 2023
IRAS Application Form [IRAS_Form_03042024]		03 April 2024
Letter from funder [Funding Confirmation Letter]	1	21 September 2023
Letter from sponsor [Sponsor approval letter]	1	26 March 2024
Letters of invitation to participant [Follow-up email]	1	04 December 2023

Non-validated questionnaire [Demographic Questions List]	1.2	12 March 2024
Participant consent form [Consent Form]	1.5	12 March 2024
Participant information sheet (PIS) [PIS]	1.8	23 January 2024
Research protocol or project proposal [Project proposal]	1.9	06 February 2024
Summary CV for Chief Investigator (CI) [CI CV]	1	15 August 2023
Summary CV for supervisor (student research) [Academic Supervisor CV]	1	01 April 2024
Validated questionnaire [Depression measure]	1	12 March 2024
Validated questionnaire [Anxiety measure]	1	12 March 2024

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at:

https://www.hra.nhs.uk/planning-and-improving-research/learning/

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

IRAS project ID: 324032	**Please quote this number on all correspondence**

Yours sincerely

Pp H Hend

Dr Sheila MacLennan

Chair

Email: bradfordleeds.rec@hra.nhs.uk

Enclosures: List of names and professions of members who took part in the review

Copy to: Ms Natalia JastrzÄ bska, Research and Development Department, Oxford Health NHS Foundation Trust

Yorkshire & The Humber - Bradford Leeds Research Ethics Committee

Attendance at PRS Sub-Committee of the REC meeting on 23 April 2024

Committee Members:

Name	*Profession*	*Present*	*Notes*
Mr Peter Atkinson	Consultant Ophthalmic Surgeon	Yes	
Dr Hanif Ismail	Patient and Public Involvement Manager	Yes	
Dr Sheila MacLennan (Chair)	Retired Clinical Director	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Ms Hayley Henderson	Approvals Manager

Appendix 3B – Recognition Test (RT) Ambiguous Scenarios

General Scenarios			
Title	**Scenario**	**Comprehension Question (Y/N)**	**Target and Foil Statements**
Redecorating the Living Room	You are redecorating your living room and need to pick a colour for the walls. You choose a colour you would not normally pick, and after the room has been painted, you are surprised by the result.	Are you redecorating your bedroom? **(N)**	**Positive Target:** You are surprised by how nice the room looks in that colour. **Negative Target:** You are surprised by how bad your colour choice was. **Positive Foil:** You bought some nice furniture for the living room. **Negative Foil:** While redecorating, you spilt a can of paint on the floor.
Your First Painting	You have taken up painting as a hobby and have just finished your first picture. You hang it on the wall when a group of friends visit. Later, you overhear your friends making remarks that make their opinion of your ability clear.	Did you leave the painting on an easel? **(N)**	**Positive Target:** You overhear your friends saying how much they liked your painting. **Negative Target:** You overhear your friends making critical remarks about your picture. **Positive Foil:** You overhear your friends saying how much they like your new curtains. **Negative Foil:** You overhear your friends making fun of something you just said.

The DIY Lesson	Your sink is broken and you have asked your friend, who is a plumber, to teach you how to fix it. They start teaching you and after a while, you can tell whether you will be able to make the necessary repairs.	Is your friend an electrician? **(N)**	**Positive Target:** You think you will be successful in fixing the sink **Negative Target:** You think you will be unable to repair the sink **Positive Foil:** You and your friend go for coffee after they have helped you **Negative Foil:** The plumbing in your house is very poor
Your Favourite Band	Your favourite band is coming to town and you would really like to see them. You don't want to go on your own and ask a friend if they want to come. Their reply confirms what you thought they would say.	Is your favourite band playing a gig in your town? **(Y)**	**Positive Target:** Your friend says they would like to see the band with you. **Negative Target:** Your friend says they don’t want to see the band with you. **Positive Foil:** The band is in town for several days. **Negative Foil:** The tickets sell out very quickly.
The New Sunglasses	You need some sunglasses, and luckily an optician close to your house has some offers. You decide to go and buy a new pair of sunglasses. You try a few frames on and decide to buy a pair on offer. You are wearing your new sunglasses when you meet an old family friend, and they comment on your taste.	Have you bought the most expensive pair of sunglasses? **(N)**	**Positive Target:** You meet your family friend and they mention that you have good taste and the new sunglasses are very stylish. **Negative Target:** You meet your family friend and they mention that you have poor taste in sunglasses. **Positive Foil:** You meet your family friend and they say they would like to go shopping with you as you are always nicely dressed.

			Negative Foil: You meet your family friend and they comment that they saw those sunglasses for a cheaper price in somewhere else online.
The Physiotherapy Appointment	You have been given some physiotherapy exercises to do. On your way to your next appointment, you think about the exercises you were able to do and know what the physiotherapist will think of your progress.	Did the physiotherapist ask you do to some exercises? **(Y)**	**Positive Target:** The physiotherapist will think you are progressing well **Negative Target:** The physiotherapist will think you have not made any progress **Positive Foil:** Your physiotherapy appointment is close to your partner's work **Negative Foil:** You think you will be late to your physiotherapy appointment
The Bus Ride	You get on a bus and find an empty seat next to one that has a rip in it. At the next stop several people get on that you vaguely recognise, but they sit together and the seat next to you remains vacant.	Were the people who got on strangers to you? **(N)**	**Positive Target:** The seat next to you remains empty because it looks damaged **Negative Target:** The seat next to you is empty because no one wants to sit with you **Positive Foil:** The person in the seat next to you talks to you in a friendly way **Negative Foil:** The person in the seat next to you makes a rip in the fabric
The Games Night	Your family is organising a games night. The first game is a trivia game which is played in teams. As you	Are you at a pub quiz? **(N)**	**Positive Target:** You will help your team do well in the trivia game **Negative Target:**

	remember previous events, you think you know what sort of contribution you will make to your team.		You won’t be much help to your team mates **Positive Foil:** You enjoy your family games nights **Negative Foil:** You generally don’t like trivia games
Waiting for Your Appointment	You've made an appointment at your doctor's surgery. You arrive a bit early to your appointment as you are meeting your partner soon after it. Several people come in after you but they are called in first and you need to leave very soon. You speak to the receptionist and can tell from her response whether she is sympathetic to your needs.	Are you meeting your mother soon after your GP's appointment? **(N)**	**Positive Target:** The receptionist at the GP apologises and reassures you that you will be called in next **Negative Target:** The receptionist at the GP seems unsympathetic and tells you to wait until you are called **Positive Foil:** The receptionist at the GP looks cheerful as she talks to another patient about their day. **Negative Foil:** The receptionist at the GP seems preoccupied with her own tasks and is inconsiderate to everyone
Shopping in the City	You have messaged an old friend telling them that you will be in their city for the weekend doing some shopping and would like to meet up. You have not seen each other for several months. It is Friday afternoon and your friend finally	Are you going to be doing some shopping over the weekend? **(Y)**	**Positive Target:** Your friend phones and says they would love to meet up with you this weekend **Negative Target:** Your friend eventually rings but seems reluctant to meet up with you this weekend **Positive Foil:**

	phones to let you know about their availability at the weekend.		Your friend meets you and you have an enjoyable picnic together **Negative Foil:** Your friend brings a new partner that you do not like
The Day Trip	Friends of yours have organised a day trip. You have been feeling quite low and wonder whether to join them. In the end, you decide to go along. Afterwards, you think back over the day and how going along made you feel.	Did you go on a day trip with your family? **(N)**	**Positive Target:** You felt better after going on the day trip **Negative Target:** Going on the day trip made you feel worse **Positive Foil:** The car journey went very smoothly **Negative Foil:** The car broke down on the way home
Caregiving Scenarios			
Title	**Scenario**	**Comprehension Question**	**Target and Foil Statements**
Going to a Wedding	It is a friend's wedding day and they have requested no children attend if possible. You decide to go along for a few hours as the venue is close and family are looking after your baby. Guests ask where your baby is. After you answer, they share their thoughts about you coming to the wedding alone.	Was it a friend's wedding you attended? **(Y)**	**Positive Target:** The guests tell you they are pleased you could come to the wedding. **Negative Target:** The guests suggest they do not agree with you coming to the wedding and leaving your baby at home. **Positive Foil:** The weather is really sunny for the wedding. **Negative Foil:**

			You were late getting to the wedding and nearly missed the start.
Baby's Weight Check	At a check-up, your health visitor mentions that your baby's weight gain appears to have slowed. They ask if baby is feeding as usual and you tell them that they are. You ask the health visitor if the slow in weight gain is concerning or not. They answer in the way you expect.	Did the health visitor weigh your baby? **(Y)**	**Positive Target:** The health visitor's response makes it clear that this is quite common and nothing to be concerned about. **Negative Target:** The health visitor's response makes it clear they think this could be serious so it will need monitoring closely. **Positive Foil:** The health visitor tells you she likes your baby's outfit. **Negative Foil:** The health visitor is late for your baby's check-up.
Checking on Baby	You wake in the night and check on your baby. You listen for your baby's breathing, but it is hard to hear it so you look over at them. In the dark, you can just see your baby's outline and that they are lying very still. You reach a conclusion on the reason for this.	Is your baby having a daytime nap? **(N)**	**Positive Target:** You conclude that your baby is sleeping soundly. **Negative Target:** You conclude that your baby may be unwell. **Positive Foil:** Your baby looks very cosy. **Negative Foil:** You can't find your glasses in the dark.
Introducing Baby to Work Colleagues	It is the first time you have taken your baby in to meet your work colleagues since they was born. Whilst there, you quickly go to the bathroom, leaving your baby with a	Did you take your baby into work? **(Y)**	**Positive Target:** You decide your relationship is good if your baby can be comfortable with you leaving them to go to the bathroom. **Negative Target:**

	good work friend. When you get back, it appears your baby did not notice you had left. You think about what this suggests about your relationship with your baby.		You decide your relationship is not good if your baby is comfortable with you leaving them to go to the bathroom. **Positive Foil:** Your work colleagues like your baby. **Negative Foil:** Your work colleagues don’t like being left with your baby.
Introducing Solids	The time has come to start introducing solid foods to your baby. One morning you are trying another new food when your baby makes a face. You think about what this means about your baby.	Were you feeding your baby milk? **(N)**	**Positive Target:** You think they are pulling a face due to experiencing an unfamiliar flavour. **Negative Target:** You think your baby does not like food and will be a fussy eater as they grow up. **Positive Foil:** Your baby likes sitting in the highchair at mealtimes. **Negative Foil:** You do not enjoy introducing solid foods to your baby.
The WhatsApp Message	You had a difficult day with your baby. Before going to bed, you message a parent WhatsApp group to ask if anyone has also experienced a similar challenging situation. In your message, you ask if they have any advice to share. In the morning you look at your phone and	Did you post about a story about your baby on social media? **(N)**	**Positive Target:** You receive lots of helpful advice and replies that others have experienced the same thing as you. **Negative Target:** Only a few parents respond to say they have experienced a similar challenge or to offer any advice. **Positive Foil:** You see on your phone that a friend has sent you a funny video. **Negative Foil:**

	you see what you had expected in response to your message.		Your phone did not charge overnight.
The Parent-Baby Group	Whilst at a parent-baby group, your baby starts to cry. You make efforts to comfort your baby. You notice two parents begin speaking with each other. After a few moments, one of them comes over to talk to you and you find out what they thought about your efforts to calm your baby.	Did you talk with a parent at the parent-baby group? **(Y)**	**<u>Positive Target:</u>** They say they thought you are trying your best to comfort your baby. **<u>Negative Target:</u>** They suggest you are taking too long to comfort your baby. **<u>Positive Foil:</u>** They say they like the shoes you are wearing. **<u>Negative Foil:</u>** They say they do not like the group facilitator.
Online Weaning Suggestions	You are searching the internet for information about weaning your baby to see if there is anything you should be doing differently. You read suggestions on a website that you trust. When comparing this to what you have been doing, you reach a conclusion as to how well you are managing.	Did you search for weaning advice? **(Y)**	**<u>Positive Target:</u>** After reading the information, you feel you are managing weaning your baby well. **<u>Negative Target:</u>** After reading the information, you do not feel you are not managing weaning your baby well. **<u>Positive Foil:</u>** You decide to get a nice coverall bib for your baby. **<u>Negative Foil:</u>** You think most of the weaning recipes sound much worse than yours.
Getting Baby to Sleep	When talking to another parent, you find that it takes much longer to get your baby to sleep at night than	Did you ask the health visitor for advice on sleep	**<u>Positive Target:</u>** Considering your baby and the health visitor's advice, you decide you are doing all you can to support your baby's sleep.

	theirs. You mention this to your health visitor who discusses some general sleep guidance with you. You think about your baby’s sleep habits and your ability to support this.	suits for your baby? **(N)**	<u>**Negative Target:**</u> Considering your baby and the heath visitor's advice, you decide you need to be doing more to support your baby's sleep. <u>**Positive Foil:**</u> Your health visitor suggests you look well considering you are not getting much sleep. <u>**Negative Foil:**</u> Your health visitor is not very helpful.

Appendix 3C – Social media recruitment poster

Oxford Health NHS Foundation Trust

University of Oxford

DO YOU HAVE A BABY AGED 3-12 MONTHS OLD?

We are looking for volunteers to take part in a research study looking at anxiety and the way we think in the postnatal period.

WHAT IS INVOLVED?

- One anonymous online survey:
  - Answering some questions about your mental health experiences
  - Reading & answering questions on different scenarios
- It should take between 25-40 minutes

YOU CAN TAKE PART IF...

✓ You are the birth parent

✓ Your baby is 3-12 months old (with no additional needs*)

✓ You **have** struggled with your mental health **OR**

✓ You **have never** struggled with your mental health

**please contact us if you have questions about this or anything else about the study*

TO TAKE PART:

*Click on the **link** in the post (https://psychiatryoxford.qualtrics.com/jfe/form/SV_39vFMDqaVQuLPuK) or scan the **QR code** below:*

You can complete it on any device

CONTACT

Email: ellen.crawford@stx.ox.ac.uk

Trainee Clinical Psychologist

HRA Ethics Approval REC: 24/YH/0097 (IRAS project ID: 324032)

version 2, 4.10.2024

Appendix 3D – Statistical Analyses Assumptions Testing

Two-way mixed ANOVA

Residuals were normally distributed and there was homogeneity of variances (*p* = .256). Three data-points were shown as outliers, but inspection of the data suggested no measurement or entry errors. As these points were just beyond the upper ends of the box and whisker plots, and all other assumptions were met, it was decided that transforming the data would not significantly reduce any risk of bias in this instance.

Hierarchical Multiple Regressions (analysis 1: anxiety and depression symptoms, analysis 2: anxiety [PASS] subscales)

For both hierarchical multiple regression analyses, assumptions of linearity were met through partial regression plots and a plot of studentized residuals against the predicted values. Similarly, there was independence of residuals for both analyses, as assessed by a Durbin-Watson statistic of 2.025 for the anxiety and depression scores regression and 1.744 for the anxiety subscales analysis. There was homoscedasticity for both full models, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, with tolerance values greater than 0.1 for both regression models. Additionally, there were no outliers or unusual data points for either test, with all studentized deleted residuals less than ±3 standard deviations, no leverage values greater than 0.2, and no values for Cook's distance above 1. Finally, the assumption of normality was met for both regression models, assessed through inspection of histograms and Q-Q plots.

Appendix 3E – Participant Exclusion Flow Diagram