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**Article:**

Bird, Philippa K, Hindson, Zoe, Dunn, Abigail Christina orcid.org/0000-0002-7871-8413 et al. (4 more authors) (2023) Implementing the Maternal Postnatal Attachment Scale (MPAS) in universal services:Qualitative interviews with health visitors. Wellcome Open Research. 85. ISSN: 2398-502X

<https://doi.org/10.12688/wellcomeopenres.17551.1>

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## RESEARCH ARTICLE

# REVISÉ Implementing the Maternal Postnatal Attachment Scale (MPAS) in universal services: Qualitative interviews with health visitors [version 2; peer review: 2 approved]

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**V2** First published: 11 Mar 2022, 7:85  
<https://doi.org/10.12688/wellcomeopenres.17551.1>

Latest published: 06 Jan 2023, 7:85  
<https://doi.org/10.12688/wellcomeopenres.17551.2>

## Abstract

**Background:** A secure parent-infant relationship lays the foundations for children's development, however there are currently no measurement tools recommended for clinical practice. We evaluated the clinical utility of a structured assessment of the parent-infant relationship (the Maternal Postnatal Attachment Scale, MPAS) in a deprived, multi-ethnic urban community in England. This paper answers the question: what are health visitors' views on the parent-infant relationship, and experiences of piloting the MPAS? It explores the barriers and facilitators to implementation, and complements the paper on psychometric properties and representativeness reported in Dunn *et al* (2022).

**Methods:** Semi-structured interviews were conducted with 11 health visitors and data were analysed using thematic analysis.

**Results:** Health visitors saw identification and support of the parent-infant relationship as an important part of their role, and reported benefits of the MPAS, including opening conversation and identifying and reporting concerns. Challenges included timing and workload, the appropriateness of language, perceived intrusiveness and understanding of the questions, and the length of the tool. Suggestions for improvements to the tool were put forward.

**Conclusions:** The experiences, benefits and challenges identified help to explain results in Dunn *et al*, and the wide-ranging challenges identified would hinder assessment of the parent-infant relationship in routine practice. Further work with health professionals and

## Open Peer Review

Approval Status

	1	2
<b>version 2</b> (revision) 06 Jan 2023		 <a href="#">view</a>
<b>version 1</b> 11 Mar 2022	 <a href="#">view</a>	  <a href="#">view</a>

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2. **Trecia A. Woudes** , University of Auckland, Auckland, New Zealand

Any reports and responses or comments on the article can be found at the end of the article.

parents has been undertaken to co-produce an acceptable, feasible and reliable tool for clinical practice.

### Keywords

parent-infant relationship, attachment, child development, infant mental health, qualitative, mother-infant dyad



This article is included in the [Born in Bradford](#) gateway.

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**Author roles:** **Bird PK:** Conceptualization, Formal Analysis, Investigation, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing; **Hindson Z:** Conceptualization, Formal Analysis, Investigation, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; **Dunn A:** Conceptualization, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing; **Cronin de Chavez A:** Formal Analysis, Writing – Original Draft Preparation, Writing – Review & Editing; **Dickerson J:** Conceptualization, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing; **Howes J:** Writing – Original Draft Preparation, Writing – Review & Editing; **Bywater T:** Conceptualization, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing

**Competing interests:** No competing interests were disclosed.

**Grant information:** This work was supported by the Wellcome Trust through a Biomedical Resources Grant to the Born in Bradford Study [101597, <https://doi.org/10.35802/101597>]. This study has received funding through a peer review process from the National Lottery Community Fund as part of the A Better Start programme. Authors PKB, ZH, AD, JD and TB were also supported by the NIHR CLAHRC Yorkshire and Humber ([www.clahrc-yh.nihr.ac.uk](http://www.clahrc-yh.nihr.ac.uk)). JD and TB were supported by the NIHR ARC Yorkshire and Humber (<https://www.arc-yh.nihr.ac.uk/>).

*The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.*

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**How to cite this article:** Bird PK, Hindson Z, Dunn A *et al.* **Implementing the Maternal Postnatal Attachment Scale (MPAS) in universal services: Qualitative interviews with health visitors [version 2; peer review: 2 approved]** Wellcome Open Research 2023, 7:85 <https://doi.org/10.12688/wellcomeopenres.17551.2>

**First published:** 11 Mar 2022, 7:85 <https://doi.org/10.12688/wellcomeopenres.17551.1>

**REVISED Amendments from Version 1**

The points below summarise amendments made to version 1 of the paper.

**Background:**

Additional information has been added to clarify the findings presented in the linked quantitative paper (Dunn *et al.*, 2022).

Additional information has been added to explain why the 3–4 month health visitor check was chosen for implementation of the MPAS pilot.

**Methods:**

Information has been added on the researchers' backgrounds and why this is important.

**Discussion:**

An additional limitation has been added on the lack of information on health visitor backgrounds and ethnicity

**References:**

The linked paper presenting quantitative data on the MPAS pilot (Dunn *et al.*, 2022) is now published and available here: <https://wellcomeopenresearch.org/articles/7-88>. We have also updated this reference throughout the paper.

**Any further responses from the reviewers can be found at the end of the article**

## Introduction

A secure parent-infant relationship lays the foundations for children's socio-emotional development (Cassidy *et al.*, 2013; Fearon *et al.*, 2010; Fernald *et al.*, 2013; Stams *et al.*, 2002). This is increasingly recognised in policy and service provision guidelines in the UK and internationally (NICE, 2012; NICE, 2015; NICE, 2020). Early identification of, and intervention to support, mothers who are struggling to develop an appropriate relationship with their infant has been identified as a priority for health visiting in the UK (Public Health England, 2021). However, no tools are currently recommended for assessing the relationship between parents and infants under 12 months, a developmentally critical time period for attachment (NICE, 2015).

There are a number of different approaches to measuring the parent-infant relationship, including questionnaires to understand the maternal experience and observation of maternal and infant behaviour (Gridley *et al.*, 2019; Lotzin *et al.*, 2015). However, there is a lack of robust measures validated in the UK, and recent reviews have concluded that none of the available measures are recommended for clinical use due to inadequate evidence on the psychometric properties and clinical utility (Mathews *et al.*, 2019; Wittkowski *et al.*, 2020). A detailed overview of these measurement approaches is provided in Dunn *et al.* (2022).

In the UK, health visiting is a universal nursing service providing home visits to support mental health, parenting and infant development. Equivalent roles in other countries may be a public health nurse, or child and family health nurse. There is substantial variation in how health visitors assess the parent-infant relationship, with unstructured observation and

professional judgement commonly used (Appleton *et al.*, 2013; Wilson *et al.*, 2010). This also means that no routine data are available to understand the prevalence of attachment concerns in the population and drive action. There is a need for a short, clinically relevant and valid tool for use in universal services (Nunes *et al.*, 2014).

A pilot of implementation of the Maternal Postnatal Attachment Scale (MPAS), a structured quantitative assessment of the parent-infant relationship, took place in universal health visiting services in a deprived and ethnically diverse urban area. The pilot was part of Better Start Bradford, a 10-year programme funded by the National Lottery Community Fund to promote the health and development of children aged 0–3 in an area of Bradford, a city in the north of England. The majority of the pilot area is within the 10% most deprived areas in England and the population is ethnically diverse, with 49% of new mothers from Asian/Asian British Pakistani backgrounds, 25% White British, 5% Asian/Asian British Bangladeshi, 4% White other, and 18% from other ethnic backgrounds<sup>1</sup> (Dickerson *et al.*, 2016).

The MPAS (Condon & Corkindale, 1998) was selected by a team of clinical specialists and the evaluation team as the most appropriate tool based on a scoping/rapid review of the current literature and expected clinical utility. MPAS is a self-complete measure of maternal affect towards the infant, designed to be completed by mothers of infants between birth and 12 months. Further information on the tool is provided in Dunn *et al.* (2022). The 3–4 month health visitor contact is offered as an additional universal contact by health visiting in Bradford (it is not nationally mandated) and was identified as a clinically useful and feasible time-point for assessment.

The evaluation of the pilot assessed the clinical utility of the MPAS in routine health visiting care in a deprived, multi-ethnic urban community in Bradford, UK. This is the second of two linked papers describing the quantitative and qualitative findings. The first (Dunn *et al.*, 2022) presented an introduction to MPAS and quantitative findings on the measure's psychometric properties and the number of health visitors who used the tool, the number of eligible women and rates of completion over the study period. Findings showed that the tool has limited validity for assessing mothers' affective bond to their infant, suggesting that it is not robust enough to recommend ongoing use in the Bradford context. During the study period, 95% of health visitors working in the pilot area used the tool, and MPAS was completed with 37% of eligible women in the sample.

This second paper reports the qualitative component of the evaluation, and further discussion of the findings from both papers. The aim of the qualitative study was to understand health visitors' views on the parent-infant relationship and their experience of using MPAS, to develop recommendations for future use. This included understanding:

<sup>1</sup> Numbers do not sum to 100 due to rounding

- How health visitors conceptualised the parent-infant relationship and their role in supporting it.
- Health visitor experiences of using the MPAS with mothers.
- Future service development needs to improve measurement of the parent-infant relationship, including training and use of the MPAS.

## Methods

### Background

Health visitors were asked to administer the MPAS to all mothers at the 3–4-month home visit as a pilot in an area of Bradford (May 2017–May 2018). Health visitors received training on the parent-infant relationship, administration of the MPAS and scoring responses at the start of the pilot. Mothers were asked to self-complete the MPAS, although health visitors supported completion where required. If they had limited understanding of English, a bilingual health visitor or interpreter administered the tool with the health visitor present.

### Participants

Semi-structured interviews were conducted with 11 female health visitors out of the 37 working in the pilot area. Health visitors were provided with study information, including an explanation that interviews were voluntary, via their team leaders. Health visitors were then approached to take part in an interview. The group were selected purposively to include those working in different parts of the pilot area, with varied levels of use of MPAS, and bilingual professionals (Urdu language). We continued interviews until responses were repeating themes already discussed and until no further health visitors responded to invitations to interview. Although all interviewers were of the same gender as interviewees, there were differences in background and professional roles, and we were aware that this may have influenced the responses and whether people felt comfortable to discuss concerns.

### Interviews

The interview guide was piloted and amended prior to use (available on Harvard dataverse – see data availability section). Immediately prior to the interview, the researcher provided further detailed information on the study and informed written consent was obtained. Interviews were conducted in English and lasted approximately 40 minutes (10 face-to-face, 1 telephone). They were conducted after health visitors had been using the MPAS for 6 months (November 2017–January 2018). Interviews were transcribed verbatim, then anonymised (using a number for each participant) and stored securely on the server at Bradford Institute for Health Research. The anonymised data were used for analysis.

### Analysis

Thematic analysis was chosen to identify and report patterns within the data (Braun & Clarke, 2006). The coding frame was developed using emerging themes from the interviews, and a-priori themes from research questions and literature. Three researchers (PB, ZH and AC) independently read transcripts and identified themes. The researchers had different academic

backgrounds: public health (PB), anthropology (AC) and education studies (with early childhood) (ZH). As this may have shaped interpretation and identification of themes, this approach was adopted to improve completeness and include different perspectives. A shared coding frame was developed through comparison and discussion, and revised until a version was reached that included all key themes identified. Transcripts were coded independently by two researchers to improve quality of coding (PB and ZH). Findings were then analysed by theme, with identification of similarities and differences between respondents and quotes to illustrate themes. Transcripts and analysis were managed using NVivo 11 software (alternative open access software: QDA Miner Lite).

### Ethics

The study followed a protocol. Health visitors received information in advance of being approached for an interview, followed by an informed consent process at the start of interviews. They were informed that participation was voluntary and that they could stop at any point. Confidentiality was protected through removal of names from the data prior to analysis. Data are stored securely at the Bradford Teaching Hospital. The Health Research Authority confirmed that this study is considered to be service evaluation, not research, and as such did not require review by an NHS Research Ethics Committee (HRA decision 60/88/81). However, we have adhered to all ethical principles in the conduct of this evaluation study and written informed consent was obtained from all participants prior to qualitative interviews being undertaken.

### Results

Five themes were identified, with corresponding sub-themes: 1) Health visitors' role and the parent-infant relationship; 2) Assessment of the parent-infant relationship; 3) Benefits of using MPAS in clinical practice (with sub-themes of promoting dialogue; identifying and recording concerns); 4) Challenges of using MPAS in clinical practice (with subthemes of timing and workload, appropriateness and understanding of questions, length and repetition, scoring and referrals, and English competency); and 5) Suggestions to improve assessment and support of the parent-infant relationship.

#### 1) Health visitors' role and the parent-infant relationship

During the interviews, health visitors stressed the importance of a healthy parent-infant relationship. Descriptions of what this meant included interaction with the baby, being attentive (including being 'in tune' and responsive parenting), and developing bonds and affection with the baby. Respondents commonly referred to a strong parent-infant relationship laying the foundations for child health and wellbeing:

Well, I think it's absolutely crucial you know, right from pregnancy obviously we promote it, but it's crucial to get that parent relationship right really to give that infant, that baby, the best start in life. (Health Visitor [HV] 10)

Health visitors noted their role in facilitating a positive parent-infant relationship and described approaches used,

including the provision of additional support (e.g. 'listening visits'), information or signposting to other services. Some of the respondents felt that health visitors have a unique opportunity to assess and support the parent-infant relationship, as home visits help to understand the wider family context:

I think we have lots of influence because when we go into the family home, we're not just assessing what that parent-infant relationship is in isolation, we're looking at everything. The parent-infant relationship might be strained but that might be because of drug use or finances or domestic abuse or lots of things. So, by assessing where areas of concern are and putting early interventions into place... we're indirectly influencing that relationship. (HV8)

## 2) Assessment of the parent-infant relationship

Assessment of the parent-infant relationship was generally considered an important part of practice. Health visitors stressed the importance of observation and listening, describing how careful observation of body language, eye contact, and feeding provides insights:

I think observation, it's got to be observation.... Yes, parents sometimes tell us how they are feeling, but sometimes it's the non-verbal communication that is slightly better, it's the way they behave, the way they handle, the way they look at the baby. (HV1)

Several respondents advocated for open or interactive discussions rather than a questionnaire, due to concerns that mothers would answer structured questions as they believe they should, rather than honestly. Training, experience and the development of a strong relationship with mothers were considered key enablers for observation and discussion.

All respondents reported using MPAS to some extent, ranging from some to all 3–4-month contacts. Reasons given for not using it every time included the mother being unwilling, insufficient time, or inappropriateness given the circumstances. Several health visitors suggested that MPAS should be used only after building a trusting relationship:

I wouldn't want to use this with a family in... a busy clinic when I've never met that family before. I think it's something that you use alongside with your relationship building skills and it's to be used at a time when the family trust you and [are] able to discuss their feelings. (HV4)

## 3) Benefits of using MPAS in clinical practice

### *Promoting dialogue*

MPAS was viewed by many as a useful conversation-starter around the parent-infant relationship. Some indicated the conversation prompted by using MPAS was as valuable, if not more so, than the MPAS answers themselves.

For some families it's a good way of opening conversations and also a good way of asking mums to think about their relationship with the baby. And it gives

us a way of, you know, mum might after doing the questionnaire have some questions and it gives us a way of exploring that more. (HV8)

### *Identifying concerns*

Several health visitors reported that MPAS questions were helpful to 'probe' understanding of the parent-infant relationship, to identify concerns and to confirm health visitors' own observations. Some reported that MPAS led to identification of unexpected issues or concerns, such as low mood:

There was one mum with low mood, but she required listening visits, and I don't know this little bit of digging [MPAS] brought it to the forefront. (HV10)

### *Recording concerns*

Some health visitors suggested that MPAS provided a structured way to record parent-infant relationship information. A minority suggested that MPAS was helpful for case management and recording conversations, particularly with parents they had concerns about. One suggested it was useful as a way to evidence clinical practice and demonstrate the worth of health visiting.

This sort of gives you the opportunity to put it all on paper if you know what I mean and then it's documented. Whereas we'd just say that we've assessed it and that is it. And it was satisfactory or it was good or it wasn't good, you know. But this sort of gives you that tool where all the questions are there and we've done the MPAS and there are no concerns. (HV11)

## 4) Challenges of using MPAS in clinical practice

### *Timing and workload*

There was a feeling that MPAS was 'yet another tool', with other assessments in place that would already pick up concerns, e.g. maternal mood. Health visitors noted that the 3–4 month contact was already information-heavy for parents, and thought that completing the MPAS at this point was burdensome for both themselves and the respondents:

If you go in and someone's tired and they've got a young baby they don't want to be doing a form do they? (HV6)

### *Appropriateness of questions*

Most of the health visitors commented that some MPAS questions were irrelevant or inappropriate, either due to the timing of asking or differences in cultural norms. For example, item 9 ("When I have to leave the baby" with response options for feelings of sadness or relief) was not relevant to some mothers at 3–4 months who had not had time away from their infant. There was no 'not applicable' option or space to provide context to responses.

Specially a woman who has a colic baby that cries, and cries, and cries... It can be normal for a woman when that baby is just a knot of scream to have a bit of 'me time' for a couple of hours and to be quite honest on the answer and say: well actually no I

enjoy not being with him for that two hours but when I go back to them and it was lovely. I would find that perfectly normal. (HV3)

Concerns were raised that questions seemed intrusive, especially if friends or relatives are in the room when health visitors ask the questions. Some suggested that mothers could feel their parenting was being assessed or feel afraid their baby would be taken away, so would not answer honestly:

I think they maybe think that you...you're like questioning them and they're gonna get a mark out of a 10 for being good parents. (HV2)

### ***Understanding of questionss***

Many health visitors found that MPAS uses complex or ambiguous terminology, often needing further explanation. Some questions were perceived as emotive and mothers appeared shocked or uncomfortable. For example, in question 15 (about things mothers have had to give up because of the baby), inclusion of the word 'resent' in the responses was criticised. Other questions were thought to be open to interpretation in different ways. For example, in question 17 stating that taking care of the baby is a 'heavy burden of responsibility' could be considered normal or interpreted in a negative sense. One health visitor related an incident when the meaning of question 14 (about thinking of the baby as 'my own') was misinterpreted by a mother, causing alarm that the baby could have been switched.

Response options were also considered confusing, with the difference between options difficult for mothers to understand. Several health visitors mentioned that they adapted the wording to improve understanding:

Sometimes without thinking you have to change your language. So you might say 'very frequently, occasionally or almost never'... So then you maybe refresh it to 'do you feel really proud of your baby, not very proud of your baby, or you're not proud at all of your baby you don't ever feel proud', you know. So you obviously use terminology that people understand a bit better. (HV5)

### ***Length and repetition***

Completion time varied considerably, depending on the amount of additional explanation, discussion and follow-up required. Most health visitors thought that MPAS was too long and that questions were repetitive.

It's 19 questions, I mean if they say 'no, no, no' for example or they've never had concerns then it's fine, but if you start elaborating and saying what do you mean, how do you feel, then obviously it starts taking more time, because then you can't just ask the question and not explore it further. (HV1)

### ***Scoring and referrals***

Scoring the MPAS was considered complex and time consuming. Health visitors did not report using the MPAS scores to refer mothers to further services either because few had low scores in the range for concern, or due to a perceived lack of

appropriate services in the area. Health visitors also reported concerns about the validity of scores, due to skipping questions or concerns that mothers were answering as they felt they should rather than as they really felt.

### ***Women with low levels of English competency***

For women with low levels of English language competency, MPAS assessments were conducted by a bilingual health visitor using a transliterated version provided by the research team (Urdu) or with an interpreter (nine other languages). Health visitors reported that the complex concepts and terminology were not easily translatable into a readable format in other languages.

Urdu or a language like that is quite black and white... 'resent', for example, there's quite a few ways to describe that word. Whereas in Urdu it's 'do you like your baby, or you hate your baby?'. It's, that's kind of it, there's no middle, happy, balance type thing... so it's quite hard to translate. (HV1)

Working with interpreters posed challenges, including loss of privacy, which may have affected responses to sensitive questions, and additional time requirements. Health visitors also had concerns that interpreters were not familiar with the concepts and felt unsure whether parents had been given an equivalent interpretation.

There's times when they're speaking a bit longer and I'm just thinking 'can you just tell me, you know, what you're saying to her?' You know, what is this discussion about? Because... they've got no training on what these questions mean, interpreters. (HV3)

### ***5) Suggestions to improve assessment and support of the parent-infant relationship***

Health visitors generally felt it was important to include an assessment of the parent-infant relationship in their clinical practice. Some suggested that they would like to continue using a tool to guide this assessment - to open discussion, provide questions and a score:

This is the first bonding and attachment kind of tool that we've had, or I've had any experience with. And I do think that we do need something like that as health visitors. Particularly I think because all professionals are becoming more aware of bonding and attachment... So it is something that we do need. (HV7)

When asked about continuing using the MPAS specifically, there was a mixed response. Some were enthusiastic, with just one health visitor suggesting they would not change anything about MPAS, apart from its introduction to mothers. Others were concerned due to the reasons outlined above, and most felt that MPAS could be improved.

Several health visitors expressed a preference for a shorter questionnaire, with repetitive items removed and the option to skip non-applicable questions. They also suggested simpler wording and clearer response categories, with more positively framed questions. Some suggested simplifying the scoring system using a Likert scale or a pictorial approach. Several

suggested an approach that used more open questions and discussion:

It needs to be simplified - it doesn't need things like, very incompetent, moderately incompetent, moderately competent, competent... I get tongue tied before I've finished it and I'm almost exhausted with it at the end of this because there's all these sections following on from the questions. (HV5)

A suggestion was also made to use MPAS only with a subset of women with a concern, identified during clinical practice or through use of a brief screening question:

I think using something universally is always challenging and difficult. And people's understanding of things will vary. But for some people this could, say if you noticed something or mum disclosed something, you could use it in terms of 'actually we've got this questionnaire which might help us hone in on where the problems are'. (HV8)

## Discussion and conclusions

Health visitors play a crucial role in identifying issues in the parent-infant relationship and intervening early. However, there are currently no recommended tools to assess this relationship and guide provision of appropriate support. We explored the use of one potential measure, the MPAS, in universal health visiting in a deprived and ethnically diverse area of the city of Bradford, UK. The qualitative component of the evaluation explored health visitors' views on the parent-infant relationship and their experience of using MPAS. The findings highlighted that the universal home visiting service provides a unique opportunity to identify parent-infant relationship concerns, and health visitors saw this as an important part of their role. Some health visitors believed observations to be the best method to assess the parent-infant relationship, with questionnaires being difficult to administer effectively, especially if they had not yet established a relationship with a mother. However, some did value the MPAS as a prompt to open conversations, probe concerns, and improve recording. Whilst some thought that the MPAS confirmed their observations, others reported that it helped to identify issues they had not expected to find, although they were not always aware of appropriate services to refer to. Challenges in using the MPAS in clinical practice were reported, including the length of time taken to administer it, the complexity of the language and the intrusiveness of some questions. These were exacerbated when translation was used. Health visitors' suggestions to improve this assessment included a shorter tool with more user-friendly language.

There were some variations in health visitor conceptualisation of the parent-infant relationship, with some suggesting that measurement was not required in addition to existing mental health tools. Whilst depression and poor parent-infant relationships are frequently comorbid, they are distinct (Brockington *et al.*, 2006).

Many health visitors expressed a preference for observational tools to assess the parent-infant relationship. Although

such observational tools do exist, such as the CARE-Index (Crittenden, 1981; Svanberg *et al.*, 2013) there are disadvantages, including high training costs and time-consuming administration, which would be challenging given the context of reduced budgets and capacity in health visiting (Bryar *et al.*, 2017; Glasper, 2017). Concerns have also been raised about the reliability and validity of unstructured observations (Appleton *et al.*, 2013; Kristensen *et al.*, 2017; Wilson *et al.*, 2010). For routine practice and research, there are potential benefits to a structured approach to minimise bias and improve consistency of reporting. Structured tools may also uncover issues that had not been observed - in this pilot, some health visitors reported that they had identified concerns that they had not expected using the structured MPAS.

The study location of Bradford enabled us to explore specific challenges of administering the MPAS tool with mothers with varying levels of education and English language ability. This provided insight that is relevant for areas with diverse populations. Some study limitations were identified. First, we tried to recruit health visitors who had not used the MPAS in the pilot period, as well as those who did. However, all the health visitors who opted to take part had used the tool to some extent (some to a very limited extent), which reduced our understanding of reasons for non-use. Second, we are unable to consider the role of health visitor backgrounds or ethnicity in their responses. Health visitors provided some background information during interviews, but we did not ask all health visitors to identify their ethnicity. It has become clear that this information could have been helpful to improve understanding and should be collected and reported carefully to protect anonymity in future research in this area. Finally, although health visitors' reflections on mother's reactions to the tool provided useful insights, it would be useful to also interview mothers to gain further information on acceptability in the next phase of this work.

## The clinical utility of MPAS in practice: combined discussion of quantitative and qualitative findings

The overall approach used in the pilot, with close, collaborative work between the service and evaluation team, had a number of benefits. In terms of methods, partnership working facilitated a study that was both rigorous and practice-driven with consideration of operational questions. The partnership approach between the evaluation team and clinical managers also facilitated considerable impact from the study on clinical practice. As a result of working together on the pilot, considerable changes were made to local policy and practice for health visitors in Bradford.

Previous research on tools to measure the infant relationship have provided high quality evidence on the psychometric properties, although studies have often not been conducted in real-world settings, limiting understanding of how tools would work in practice. To our knowledge, this is the first real-world study of clinical utility in practice. Other studies have focussed on utility for health visiting but included limited validation of the tool. This qualitative study and its complementary quantitative study (Dunn *et al.*, 2022) provides evidence on the clinical utility of MPAS that is both methodologically

rigorous and grounded in real world clinical practice. Together they revealed concerns about the utility of the tool in practice in this community.

Health visitors interviewed felt that the parent-infant relationship was important, and generally considered assessment of the parent-infant relationship to be an important part of practice. However, quantitative findings showed that only half of mothers (52%) of the 833 mothers who had a 3-4-month health visitor contact during the pilot had been offered the MPAS (Dunn *et al.*, 2022). Whilst this showed that they can integrate an assessment of the parent-infant relationship into their practice, the large number of significant challenges identified in interviews is likely to contribute to the relatively low uptake.

The quantitative analysis indicated that the contextual psychometric properties of the MPAS are not robust enough to recommend ongoing use in the Bradford context. The lack of a stable factor suggests that there was no underlying construct that the women in this study were able to relate to the questions. The qualitative findings elucidate the issues specific to the use of the MPAS tool in the real world, including the difficult marking scheme, complexity of language and difficulties understanding and interpreting questions, especially where women had language needs. The multiple and considerable challenges to using the tool led to inconsistency in the way the MPAS was used and limited utility for clinical practice. Some health visitors reported avoiding using the tool with mothers when they had concerns about their understanding, which could exacerbate health inequalities. These help to explain why the MPAS tool did not work well in real-life clinical practice in a diverse, multi-ethnic urban area. Health visitors also highlighted contextual challenges, especially time constraints during appointments, suggesting that any tool introduced to practice needs to be short and user friendly.

Our pilot evaluation has a number of implications for policy, practice and research. In Bradford, deprivation, high levels of health needs, language requirements and cultural differences meant that the tool was tested in a challenging context. In this sense, the location is ideal for a pilot as it is important that any tool to measure parent-infant relationship has clinical utility in diverse populations with high levels of deprivation. Key issues highlighted are of relevance to other urban, multi-ethnic and deprived areas.

Assessment and support for the parent-infant relationship is widely recognised as important. Recent UK guidance has identified the need to ‘develop reliable and valid screening assessment tools for attachment and sensitivity that can be made available and used in routine ... settings’ (NICE, 2015). The use of a structured tool enhances the reliability and validity of identification of parent-infant relationship concerns, and quantification of needs. The MPAS was developed on a strong theoretical foundation and has been validated in a range of settings. However, this evaluation provides evidence that the use of MPAS without adaptation would not be valid, acceptable, or feasible in clinical practice in an area with high levels of deprivation and ethnic diversity such as Bradford.

In conclusion, our linked quantitative and qualitative studies aimed to assess the clinical utility of the MPAS when piloted in health visiting services in Bradford. This study collated qualitative insights from health visitors to understand their views on the parent-infant relationship, their experience of using the MPAS, and develop recommendations for future use in practice.

Overall, our collaborative approach with service providers demonstrated the importance of partnership, both in terms of methodological rigour in a real-world setting, and in terms of impact. Health visitors welcomed the opportunity to discuss the parent infant relationship and there were benefits to using a structured tool. However, there were considerable challenges that hinder implementation of the MPAS in a valid and reliable way – both in terms of the complexity and length of the tool itself and the context that health visitors are working in.

Based on the findings from this paper, and Dunn *et al.* (2022), although there were benefits to piloting the MPAS, there were also challenges. There remains a gap for a robust, valid measure to assess parent-infant relationships in routine practice, at least in Bradford. Based on this, we have coproduced a tool with health visitors, service staff and with input from parents, using the learning from this pilot, and are testing it in routine care.

## Data availability

### Underlying data

The data (transcripts of 11 interviews with health visitors) are stored securely by Born in Bradford (BiB) at the Bradford Institute for Health Research (BIHR). Data sharing is not applicable to this article, because the interviewees did not give permission for their data, collected during the service evaluation (not research), to be shared. However, restricted access to an anonymised data set will be considered on a case by case basis, dependant on the relevance of the research question and its’ ability to be answered using the existing data.

Before you contact BiB, please make sure you have read our [Guidance for Collaborators](#). The decision for restricted access will be made by our BiB Executive Committee, which reviews proposals on a monthly basis, and we will endeavour to respond to your request as soon as possible. You can find out about all of the different datasets which are available [here](#). If you are unsure if we have the data that you need please contact a member of the BiB team ([borninbradford@bthft.nhs.uk](mailto:borninbradford@bthft.nhs.uk)).

Once you have formulated your request please complete the ‘Expression of Interest’ form available [here](#) and email the BiB research team ([borninbradford@bthft.nhs.uk](mailto:borninbradford@bthft.nhs.uk)). Please indicate clearly that you are applying for the restricted dataset used in this article. If your request is approved, we will ask you to sign a [collaboration agreement](#); if your request involves biological samples, we will ask you to complete a [material transfer agreement](#).

## Extended data

Harvard Dataverse: Implementing the Maternal Postnatal Attachment Scale (MPAS) in universal services: Qualitative interviews with health visitors. <https://doi.org/10.7910/DVN/EKXB5L> (Bird, 2022).

This project contains the following extended data

- A copy of the interview guide

Data are available under the terms of the [Creative Commons Zero “No rights reserved” data waiver](#) (CC0 1.0 Public domain dedication).

## Acknowledgement

The authors would like to state that this manuscript was published as a pre-print and available at <https://doi.org/10.1101/2021.11.30.21267065>.

## References

- Appleton JV, Harris M, Oates J, *et al.*: **Evaluating health visitor assessments of mother-infant interactions: A mixed methods study.** *Int J Nurs Stud.* 2013; **50**(1): 5–15.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Bird P: **Implementing the Maternal Postnatal Attachment Scale (MPAS) in universal services: Qualitative interviews with health visitors.** Harvard Dataverse, V1, 2022.  
<http://www.doi.org/10.7910/DVN/EKXB5L>
- Braun V, Clarke V: **Using thematic analysis in psychology.** *Qual Res Psychol.* 2006; **3**(2): 77–101.  
[Publisher Full Text](#)
- Brockington IF, Aucamp HM, Fraser C: **Severe disorders of the mother-infant relationship: Definitions and frequency.** *Arch Womens Ment Health.* 2006; **9**(5): 243–251.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Bryar RM, Cowley DS, Adams CM, *et al.*: **Health visiting in primary care in England: A crisis waiting to happen?** *Br J Gen Pract.* 2017; **67**(656): 102–103.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Cassidy J, Jones JD, Shaver PR: **Contributions of Attachment Theory and Research: A Framework for Future Research, Translation, and Policy.** *Dev Psychopathol.* 2013; **25**(4 Pt 2): 1415–1434.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Condon JT, Corkindale CJ: **The assessment of parent-to-infant attachment: Development of a self-report questionnaire instrument.** *J Reprod Infant Psychol.* 1998; **16**(1): 57–76.  
[Publisher Full Text](#)
- Crittenden PM: **Abusing, neglecting, problematic, and adequate dyads: Differentiating by patterns of interaction.** *Merrill-Palmer Q.* 1981; **27**(3): 201–218.  
[Reference Source](#)
- Dickerson J, Bird PK, McEachan RR, *et al.*: **Born in Bradford's Better Start: An experimental birth cohort study to evaluate the impact of early life interventions.** *BMC Public Health.* 2016; **15**(1): 711.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Dunn A, Bird PK, Endacott C, *et al.*: **The feasibility of an objective measure of the parent-child relationship in health visiting practice: assessment of the Maternal Postnatal Attachment Scale [version 1; peer review: 1 approved, 1 approved with reservations].** *Wellcome Open Res.* 2022; **7**: 88.  
[Publisher Full Text](#)
- Fearon RP, Bakermans-Kranenburg MJ, van IJzendoorn MH, *et al.*: **The significance of insecure attachment and disorganization in the development of children's externalizing behavior: A meta-analytic study.** *Child Dev.* 2010; **81**(2): 435–456.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Fernald A, Marchman VA, Weisleder A: **SES differences in language processing skill and vocabulary are evident at 18 months.** *Dev Sci.* 2013; **16**(2): 234–248.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Glasper A: **Are health visiting and school nursing in crisis?** *Br J Nurs.* (Mark Allen Publishing), 2017; **26**(14): 826–827.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Gridley N, Blower S, Dunn A, *et al.*: **Psychometric Properties of Parent-Child (0-5 years) Interaction Outcome Measures as Used in Randomized Controlled Trials of Parent Programs: A Systematic Review.** *Clin Child Fam Psychol Rev.* 2019; **22**(2): 253–271.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Kristensen IH, Trillingsgaard T, Simonsen M, *et al.*: **Are health visitors' observations of early parent-infant interactions reliable? A cross-sectional design.** *Infant Ment Health J.* 2017; **38**(2): 276–288.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Lotzin A, Lu X, Kriston L, *et al.*: **Observational tools for measuring parent-infant interaction: A systematic review.** *Clin Child Fam Psychol Rev.* 2015; **18**(2): 99–132.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Mathews TL, Emerson MR, Moore TA, *et al.*: **Systematic Review: Feasibility, Reliability, and Validity of Maternal/Caregiver Attachment and Bonding Screening Tools for Clinical Use.** *J Pediatr Health Care.* 2019; **33**(6): 663–674.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- NICE: **Social and emotional wellbeing: Early years.** NICE Public health guideline [PH40]. NICE, 2012.  
[Reference Source](#)
- NICE: **Children's attachment: Attachment in children and young people who are adopted from care, in care or at high risk of going into care.** NICE guideline [NG26]. NICE, 2015.  
[Reference Source](#)
- NICE: **Antenatal and postnatal mental health: Clinical management and service guidance.** NICE Clinical guideline [CG192]. NICE, 2020.  
[Reference Source](#)
- Nunes O, Pires M, Brites R, *et al.*: **Maternal Post-Attachment Scale: Validation Studies to the Portuguese Population.** *Eur Health Psychol.* 2014; **16** Supp(Suppl).  
[Reference Source](#)
- Public Health England: **Early years high impact area 1: Supporting the transition to parenthood.** GOV.UK, 2021.  
[Reference Source](#)
- Stams GJ, Juffer F, van IJzendoorn MH: **Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: The case of adopted children and their biologically unrelated parents.** *Dev Psychol.* 2002; **38**(5): 806–821.  
[PubMed Abstract](#) | [Publisher Full Text](#)
- Svanberg PO, Barlow J, Tighe W: **The Parent-Infant Interaction Observation Scale: Reliability and validity of a screening tool.** *J Reprod Infant Psychol.* 2013; **31**(1): 5–14.  
[Publisher Full Text](#)
- Wilson P, Thompson L, Puckering C, *et al.*: **Parent-child relationships: Are health visitors' judgements reliable?** *Community Pract.* 2010; **83**(5): 22–25.  
[PubMed Abstract](#)
- Wittkowski A, Vatter S, Muhinyi A, *et al.*: **Measuring bonding or attachment in the parent-infant-relationship: A systematic review of parent-report assessment measures, their psychometric properties and clinical utility.** *Clin Psychol Rev.* 2020; **82**: 101906.  
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

# Open Peer Review

Current Peer Review Status:  

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## Version 2

Reviewer Report 16 January 2023

<https://doi.org/10.21956/wellcomeopenres.20361.r53968>

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**Trecia A. Wouldes** 

Department of Psychological Medicine, University of Auckland, Auckland, New Zealand

I am happy to approve Version 2.

**Competing Interests:** No competing interests were disclosed.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

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## Version 1

Reviewer Report 01 August 2022

<https://doi.org/10.21956/wellcomeopenres.19408.r51479>

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**Trecia A. Wouldes** 

Department of Psychological Medicine, University of Auckland, Auckland, New Zealand

This qualitative study aimed to determine the challenges and acceptability reported by health visitors of using a structured assessment of the parent-infant relationship (the Maternal Postnatal Attachment Scale, MPAS). Semi-structured interviews were conducted with 11 health visitors and data from transcripts were analysed using thematic analysis. The results of this study were then discussed in relation to a quantitative study evaluating the psychometric properties of the MPAS also submitted for publication by members of this research group (Dunn *et al.*, submitted).

This was a very well-written article that provided some important information as to the challenges and acceptability of using the MPAS in clinical practice in an ethnically diverse, deprived population in the UK. Five themes were identified by the two researchers who independently coded the transcripts (PB and ZH). These included the importance the health visitors placed on evaluating the parent-infant relationship; concerns around the method of evaluating the parent-infant relationship (questionnaire vs observation); the benefits of the MPAS, especially in promoting a discussion around any concerns; the challenges of using a structured questionnaire during health visits; and recommendations of how the MPAS could be improved.

As in any qualitative study, the lens through which the data is evaluated is important, therefore, it would be useful to know the clinical and/or research background of the researchers who interpreted the data. Lacking also was a more in-depth description of the health visitors' ethnicity and background, other than simply their gender. As the authors reported, this was an ethnically diverse area so the ethnicity of the health visitors would be of particular importance.

Finally, as the discussion largely focused on using the quantitative and qualitative research to consider the clinical utility of the MPAS, it would be important to have access to both in evaluating the conclusions made by these authors.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

Not applicable

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** I am a developmental scientist. My research methods are predominantly prospective, longitudinal research with high-risk, ethnically diverse populations. Infant mental health and parent-infant relationships of high-risk families are a focus of my research, teaching and policy work.

**I confirm that I have read this submission and believe that I have an appropriate level of**

**expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.**

Author Response 03 Nov 2022

**Charlotte Endacott**, Born in Bradford, UK

**Reviewer comment:** This was a very well-written article that provided some important information as to the challenges and acceptability of using the MPAS in clinical practice in an ethnically diverse, deprived population in the UK. Five themes were identified by the two researchers who independently coded the transcripts (PB and ZH). These included the importance the health visitors placed on evaluating the parent-infant relationship; concerns around the method of evaluating the parent-infant relationship (questionnaire vs observation); the benefits of the MPAS, especially in promoting a discussion around any concerns; the challenges of using a structured questionnaire during health visits; and recommendations of how the MPAS could be improved.

**Author response:** We would like to thank the reviewer for their helpful review.

**Reviewer comment:** As in any qualitative study, the lens through which the data is evaluated is important, therefore, it would be useful to know the clinical and/or research background of the researchers who interpreted the data. Lacking also was a more in-depth description of the health visitors' ethnicity and background, other than simply their gender. As the authors reported, this was an ethnically diverse area so the ethnicity of the health visitors would be of particular importance.

**Author response:** This is a useful point. We have added some information to the methods section: *The researchers had different academic backgrounds: public health (PB), anthropology (AC) and education studies (with early childhood) (ZH). As this may have shaped interpretation and identification of themes, this approach was adopted to improve completeness and include different perspectives.*

It would have been very helpful to include discussion of the role of health visitor backgrounds and ethnicity. Unfortunately we did not ask participants to identify their background and ethnicity in the interviews. We would only want to report ethnicity as identified by participants themselves. We also had some concerns that reporting ethnicity could lead to identification of health visitors. However, this is an important point for us for us to consider for future research. We have therefore added this as a limitation:

*Second, we are unable to consider the role of health visitor backgrounds or ethnicity in their responses. Health visitors provided some background information during interviews, but we did not ask all health visitors to identify their ethnicity. It has become clear that this information could have been helpful to improve understanding and should be collected and reported carefully to protect anonymity in future research in this area.*

**Reviewer comment:** Finally, as the discussion largely focused on using the quantitative and qualitative research to consider the clinical utility of the MPAS, it would be important to have access to both in evaluating the conclusions made by these authors.

**Author response:** We agree that it is helpful to be able to read both the qualitative and quantitative papers together. The quantitative evaluation of the feasibility of MPAS in health visiting practice (Dunn et al 2022) is now published and available here:

<https://wellcomeopenresearch.org/articles/7-88>

We have also updated this reference throughout the paper.

**Competing Interests:** No competing interests were disclosed.

Reviewer Report 26 April 2022

<https://doi.org/10.21956/wellcomeopenres.19408.r49771>

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**Sharin Baldwin** 

<sup>1</sup> Warwick Clinical Trials Unit, University of Warwick, Warwick, UK

<sup>2</sup> London North West NHS Healthcare Trust, Harrow, UK

This is a well written paper on an important area of research. This paper discusses the implementation of the Maternal Postnatal Attachment Scale (MPAS) within the health visiting service in Bradford, used with mothers 3-4 months after birth. Eleven health visitors volunteered to participate in qualitative interviews and while a small number of health visitors thought the scale to be a useful tool, a number of challenges/ barriers were identified. This included language, interpretation of the questions, time constraints and lack of services to refer to following assessment.

While the authors stated that all health visitors were trained and used the MPAS, it would be good to have more detail, such as: how many were trained in total, how many used them fully, how many used them partially, and how many did not use them at all? Also, is there any data on how many mothers would have been eligible to be assessed using MPAS during that 6 month period, and how many were actually assessed using MPAS? Another aspect that remains unclear is that do all mothers receive a visit at 3-4 months? If not, what proportion do and why was this period chosen for the MPAS assessment? It would be good to mention fathers too and whether there is a need to have a tool that assesses parental-child interaction/attachment rather than just maternal, given that many fathers may be the main carer to their child or there could be both parents who are male.

Overall, I feel this is a very interesting article that would be of interest to health visitors and other health professionals working with parents and children.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

Not applicable

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Fathers' mental health, Perinatal mental health, Health visiting, evaluation of complex interventions, Mixed methods research

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

Author Response 03 Nov 2022

**Charlotte Endacott**, Born in Bradford, UK

**Reviewer comment:** This is a well written paper on an important area of research. This paper discusses the implementation of the Maternal Postnatal Attachment Scale (MPAS) within the health visiting service in Bradford, used with mothers 3-4 months after birth. Eleven health visitors volunteered to participate in qualitative interviews and while a small number of health visitors thought the scale to be a useful tool, a number of challenges/ barriers were identified. This included language, interpretation of the questions, time constraints and lack of services to refer to following assessment.

**Author response:** We would like to thank the reviewer for their helpful comments.

**Reviewer comment:** While the authors stated that all health visitors were trained and used the MPAS, it would be good to have more detail, such as: how many were trained in total, how many used them fully, how many used them partially, and how many did not use them at all? Also, is there any data on how many mothers would have been eligible to be assessed using MPAS during that 6 month period, and how many were actually assessed using MPAS?

**Author response:** We decided to present the quantitative information on use of the MPAS

in the linked paper by Dunn et al, which has now been published in Wellcome Open Research here: <https://wellcomeopenresearch.org/articles/7-88> . This includes quantitative information on the number of health visitors who used the MPAS, the number of women eligible and number who completed the MPAS assessment. We felt that it was better to present the quantitative and qualitative information in separate papers so that we were able to go into detail.

We have clarified this in paragraph at the end of the introduction:

*The first (Dunn et al., 2022) presented an introduction to MPAS and quantitative findings on the measure's psychometric properties and the number of health visitors who used the tool, the number of eligible women and rates of completion over the study period. Findings showed that the tool has limited validity for assessing mothers' affective bond to their infant, suggesting that it is not robust enough to recommend ongoing use in the Bradford context. During the study period, 95% of health visitors working in the pilot area used the tool, and MPAS was completed with 37% of eligible women in the sample.*

**Reviewer comment:** Another aspect that remains unclear is that do all mothers receive a visit at 3-4 months? If not, what proportion do and why was this period chosen for the MPAS assessment?

**Author response:** We have added information to the introduction after explanation about why the MPAS tool was chosen:

*The 3-4 month health visitor contact is offered as an additional universal contact by health visiting in Bradford (it is not nationally mandated) and was identified as a clinically useful and feasible time-point for assessment.*

Quantative information on health visitor contacts at 3-4 months is provided in the linked paper (Dunn et al).

**Reviewer comment:** It would be good to mention fathers too and whether there is a need to have a tool that assesses parental-child interaction/attachment rather than just maternal, given that many fathers may be the main carer to their child or there could be both parents who are male.

**Author response:** We agree that this would be very important – there is a lack of understanding of paternal attachment and mental health. There is an equivalent tool for fathers – the Paternal Postnatal Attachment Scale (PPAS), however unfortunately there are no universal health checks with fathers after birth in the UK, so it was not feasible to pilot this as part of this study. We were able to include a measure of attachment in the questionnaire that partners complete during pregnancy as part of the BiBBS cohort (Dickerson et al 2016 <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-3318-0>).

**Reviewer comment:** Overall, I feel this is a very interesting article that would be of interest to health visitors and other health professionals working with parents and children.

**Author response:** Thank you again for your helpful comments.

***Competing Interests:*** No competing interests were disclosed.

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