A mixed-method evaluation of video interaction guidance (VIG) delivered by early-years workers in a socially disadvantaged urban community

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Abstract

Purpose – *The transition to parenthood can pose challenges for women and men, and these are heightened in the context of social disadvantage (e.g. poverty, deprivation, social exclusion, housing instability and disabilities). There is mounting evidence that video-feedback approaches can provide a valuable buffer against such adverse outcomes. This study aims to evaluate the acceptability and preliminary clinical impact of video interaction guidance (VIG), delivered by health visitors and community support workers in a socially disadvantaged London borough, selected due to its multiple indices of deprivation predicting child and maternal adversity.*

Design/methodology/approach – *The study followed a non-randomised, before-and-after evaluation design. Health visitors and community support workers were trained in VIG delivery following the VIG Association-UK protocol. Families with infants under 12 months were conveniently recruited and received six weekly home-based sessions of VIG. The primary outcome was the acceptability of the intervention, assessing parents' experiences using semi-structured interviews post-intervention. Clinical outcome measures were recorded pre-and post-intervention to yield preliminary evidence on intervention effectiveness.*

Findings – *In total, 23 families partook in the study, of which 19 completed the pre- and post-VIG quantitative analysis and 6 also completed the post-VIG qualitative interviews. Qualitative analyses documented high rates of acceptability and perceived improvement in family well-being. Preliminary outcome data indicated that completing the VIG intervention was associated with decreased parental anxiety and depression and increased parental confidence, parent-infant relationship quality, as well as an improvement in infant social and emotional development. However, the selective nature of convenience sampling limits the generalisability of the findings. The non-randomised design of the evaluation implies that findings can only be interpreted as preliminary evidence of intervention effectiveness. These considerations are addressed in the discussion.*

Originality/value – *The results of this study provide preliminary evidence of the acceptability and effectiveness of VIG delivery by health visitors and community support workers to new parents in socially disadvantaged urban communities. However, this study must be pursued further to be evaluated with larger, randomised samples to further explore the generalisability of VIG effectiveness in such settings.*

Keywords *Perinatal mental health, Early intervention, Social disadvantage, Urban community, Parent-infant relationship, Video feedback*

Paper type *Research paper*

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Received 5 August 2020
Revised 30 April 2021
4 July 2021
Accepted 5 July 2021

The authors would like to thank all those that contributed to the development and successful completion of this project: the families who generously gave their time to take part, the practitioners who trained in the VIG model, Hilary Kennedy and Monica Celebi for their wonderful and inspiring training and supervision and to our project partners – Health Education England, the Association for Video Interactive Guidance – UK, Whittington Health NHS Trust and Haringey Local Authority. *Funding:* Funding was provided by Health Education England (HEE) in 2016

Introduction

Becoming a parent in contexts of social disadvantage

The transition to parenthood can pose daunting challenges for men and women. New parents face multiple physical and psychological changes during the early years, including

a reorganisation of individual and couple identity into parental identity, restructuring and rebalancing of responsibilities and roles, the experience of fatigue and social isolation, all whilst navigating societal expectations, norms and judgements related to parenthood (Stern, 1995; Slade *et al.*, 2009; Ammaniti and Gallese, 2014; Lévesque *et al.*, 2020).

For families whose transition takes place within contexts of social disadvantage (e.g. poverty, housing difficulties, language and cultural barriers, limited support networks), there is an added risk of adversities impeding new parents' ability to recognise and respond sensitively to their baby's needs; this may, in turn, negatively impact the parent-infant relationship and infant's attachment style (Verhage *et al.*, 2016; Lee and Jackson, 2017). Children growing up in such adversity are more likely to experience social-emotional well-being difficulties and face similar types of social disadvantage to their parents in their adult life (Non *et al.*, 2016; Noonan and Fairclough, 2018; Scaramella *et al.*, 2008).

New parents living in contexts of social disadvantage may, thus, require additional support to develop or prioritise sensitive and attuned interactions with their children. The transition to parenthood is an opportune time to intervene early and provide this support, as parents are highly responsive to making positive changes in their lives (Condon *et al.*, 2004; Edvardsson *et al.*, 2011). This motivation, together with the high incidence of professional contact, makes that parenting interventions during the postnatal period can a critical time for professionals to engage with parents, intervene early, and prevent difficulties from developing or escalating.

Promising evidence of early-year interventions

There is considerable evidence that parenting interventions during can prevent and diminish parenting difficulties, including those that use cognitive behavioural therapy, those with an attachment focus, and those that are based on social learning theory (Menting, Orobio de Castro and Matthys, 2013; Reyno and McGrath, 2006; Thomas and Zimmer-Gembeck, 2007). In a meta-analysis of 88 attachment-based early interventions, treatments that specifically focussed on promoting parental sensitivity and increasing infant attachment security were found to be highly effective (Bakermans-Kranenburg *et al.*, 2003). Overall, early-year parenting interventions can lead to significant benefits to parental well-being, the parent-infant relationship, and infant development (Morrison *et al.*, 2014; Rayce *et al.*, 2017).

Amongst the increasing number of early interventions available, video-feedback interventions (VFI) are gaining widespread recognition for their effectiveness in improving parent sensitivity, behaviour, and attitudes and promoting attachment security for young children at risk due to a range of difficulties (Fukkink, 2008; O'Hara *et al.*, 2019). VFI is now recommended by the National Institute for Health and Care Excellence for parents and carers of infants at risk of attachment difficulties, as may be the case for new parents in contexts of disadvantage (NICE, 2012, 2015). VFI can be delivered by health visitors and community support workers (Morrell *et al.*, 2009), which may provide a preferable cost-effective alternative given their established relationships with parents as providers of universal services.

What is video interaction guidance?

This study focusses on a short-term, strengths-based, client-centred VIF called video interaction guidance (VIG). VIG is carried out in the home and encourages parents to watch and reflect on video clips of naturally occurring successful interactions with their babies whilst exploring areas they have identified as concerns (Kennedy *et al.*, 2011). The VIG practitioner takes a short video (5–10 min) of the parent-child interaction and selects clips to highlight moments of attuned interactions which also relate to the parents' goals. These clips are then shown to parents in a "shared review", carefully exploring them together to support

parents in recognising positive interactions and actions with their child (Kennedy *et al.*, 2011). Through seeing their own attuned responses, parents can start observing and understanding how important these experiences are for their child, themselves, and their developing relationship. At the heart of VIG lies the concept of cooperative intersubjectivity – the sharing of experience and social understanding (Trevarthen, 1979; Stern, 1995) – meaning every conversation values its two subjects equally, whether adult to adult (VIG practitioner to parent) or adult to child. At all times, practitioners are attentive to parents and receive their concerns. Parents and infants both thrive when they enjoy getting to know each other, read each other's signals and develop together. VIG also roots itself in Bowlby's (1969) attachment theory by promoting repeated patterns of sensitive reflective interaction which foster secure attachment, allowing the optimal development of infants' emotional and behavioural regulatory function (Beebe *et al.*, 2010; Tronick, 2007; Panksepp, 1998). Finally, VIG draws from mediated learning theories by helping parents recognise babies' need for a break ("rupture") and gentle re-attunement to their new emotional state ("repair") (Vygotsky, 1962; Wood *et al.*, 1976; Tronick, 1989).

Considering VIG's promising evidence as a video-feedback approach, this small-scale, non-randomised, mixed-methods study aims to explore the acceptability and preliminary clinical impact of health visitors and community support workers in delivering VIG to new parents in a socially disadvantaged urban community. This study adds to the literature by including measures of parental stress/anxiety and reflections of parents' experience of VIG (O'Hara *et al.*, 2019). It specifically addresses the following factors [1]:

- Ease of recruitment, rate of participation/retention and reasons for attrition.
- VIG's preliminary effectiveness in improving clinical outcomes, as measured quantitatively by increased parental sensitivity, improved bonding with their infants and parental self-efficacy, decreased parental stress and the development of informal networks and community connections for the families taking part.
- Acceptability is measured by parents' qualitative experience of the intervention.

Methods

The project took place from March 2016 to April 2017 and was conducted in an ethnically diverse, inner borough of London (UK) with multiple indices of deprivation – including elevated levels of family homelessness, children living in poverty, children in care, and A&E attendance for infants.

Training the video interaction guidance guiders

Prior to commencing the evaluation, seven front-line early-year staff (4 health visitors and 3 family support workers) completed the accredited VIG association-UK (AVIGuk) two-day introductory training. The training process then continued in practice with trainees learning VIG with their first families under the close supervision of an accredited supervisor. The supervision took place over 15 one-hour sessions divided by a mid-point review training day. The fidelity of both training and delivery of the VIG method was quality assured and monitored by AVIGuk. All the VIG practitioners delivered a course of six weekly VIG sessions (one session per week over six weeks), as recommended by AVIGuk.

Recruitment and procedure

Given the budget, timeframe, and target population of the study, a convenience sampling approach was chosen. Participants were recruited from local health visiting and family support services. The newly trained VIG guiders invited families to take part universally within their allocated caseloads and accepted referrals by peers, the project manager, and

individuals from local children's centres. Families with infants aged one year or younger were eligible to take part. Families were excluded if there were any safeguarding concerns, parental substance misuse, and/or severe parental mental health difficulties. It was believed that recruiting families from professionals they knew would facilitate the intervention's uptake (Daro and Harding, 1999) and promote parents' openness and willingness to discuss their interactions with their baby with guiders.

The study aimed to provide evidence of the acceptability and preliminary clinical effectiveness of health visitors and community support workers in delivering VIG to new parents in socially disadvantaged urban communities. Written consent was sought from all participants. Non-English-speaking parents were offered an interpreter. The evaluation followed a before-and-after design with no matched control group. Quantitative outcome measures were collected by the VIG practitioner at two time points: baseline, prior to taking part in VIG (T1) and follow-up (T2; last VIG session). Qualitative data was collected following participation in the intervention (post-T2).

Quantitative data on participants' sensitivity and relationship to their infant, infant development and perceived parental confidence, anxiety and depression were collected with the following six questionnaires: ages and stages questionnaires: social-emotional (ASQ:SE; Squires *et al.*, 2002), keys to interactive parenting scale (KIPS; Comfort and Gordon, 2006), maternal/paternal postnatal attachment scale (MPAS/PPAS; Condon and Corkindale, 1998), maternal confidence questionnaire (MCQ; Parker and Zahr, 1985), patient health questionnaire (PHQ-9; Kroenke, *et al.*, 2001), generalised anxiety disorder questionnaire (GAD-7; Williams, 2014). The data was stored and analysed with SPSS, using parametric paired sample t-tests to test for the mean differences pre- and post-VIG intervention. Missing item data were coded and computed in subsequent analysis.

Qualitative data was collected through semi-structured telephone interviews conducted by staff involved in the intervention (VIG practitioners and supervisors, health visitors and family support service managers). The interview topic guide was constructed to obtain parents' detailed perspectives and experiences of the intervention, focussing on its acceptability, usefulness and relevance. The data was transcribed and analysed using inductive thematic analysis (Braun and Clarke, 2006). Transcript content was explored by a member of the evaluation team, who organised key areas into meaningful themes. Transcripts were coded according to these developed themes within the data. The coding was reviewed and refined, with similar themes being merged and sub-themes created where appropriate.

Sample

The sample consisted of 23 parents, 22 women and 1 male, ranging from ages 18 to 42 (M = 33, ±7.5). Participants disclosed information on age, household composition and income, ethnicity, English fluency, marital, education and employment status and current mental health and well-being. Table 1 presents detailed participant characteristics.

Results

Recruitment and retention

During the time of the evaluation, 28 families were approached to take part in the evaluation, of which 23 agreed, giving an 82% maximum rate of participation. Of the 23 families that consented, 4 dropped out of the evaluation, leaving 19 families to complete the pre- and post-VIG quantitative assessments. In total, 6 of those families also agreed to participate in the post-VIG qualitative interview. Reasons for dropping out included "no longer wanting to take part", "going on holiday", and "moving out of the borough". The sample sizes for each statistic are provided due to subsequent omitted data.

Table 1 Participant characteristics

Demographic	*Participants (n = 23 unless stated otherwise)*
Gender	
Female	22
Male	1
Age in years: M (SD)	33 (7.5)
Number of children in the household: M (SD)	1.55 (1.18)
Marital status (%, *n*)	
Living with or being married to a partner	65, 15
Single parent	30, 7
Race/ethnicity (%)	
Black African	28
White British	17
White European	11
White Albanian	6
White Canadian	6
White Turkish	6
Mixed British Indian	6
Bangladeshi	5
British Jewish	5
Asian Other	5
Mixed	5
Native English speakers (%, *n*)	54, 12
Claimed fluency in English (%, *n*)	90, 9
Total household income (%, *n*/20)	
£0–£9,000	25, 5
£27,000–£36,000	5, 1
£9,000–£18,000	25, 5
£36,000 or higher	45, 9
Education status (%, *n*)	
Left school before any qualification	9, 2
O-levels/GCSEs	4, 1
A-levels	14, 3
University degree	27, 6
Postgraduate qualification	27, 6
Other	14, 3
Prefer not to say	5, 1
Employment status (%, *n*)	
Full-time homemaker	44, 10
Full-time (approximately 35 hours/week)	26, 6
Part-time (less than 35 hours per week)	22, 5
Currently unemployed	4, 1
Other	4, 1
Mental health and well-being (%, *n*)	
Would have liked to receive support for emotional well-being but they had not	55, 11
Have minor difficulties with mental health	67, 14

Effectiveness in improving clinical outcomes: preliminary findings from the scales

See Table 2 for an overview of the quantitative data results.

Parental depression. After VIG participation, mean PHQ-9 scores decreased significantly from 6.2 (± 5.4) at T1 to 5.5 (±5.6) at T2 (p = 0.028). Both the baseline and follow-up mean scores of the PHQ-9 can be clinically classified as "mild depression" (Kroenke *et al.*, 2001).

Table 2 Group mean differences at pre- to post-intervention (paired *t*-tests)

Measure	*T1 M (SD)*	*T2 M (SD)*	t-*value*	p-*value*
PHQ-9 ($n = 20$)	6.2 (5.4)	5.5 (5.6)	$t(19) = 2.39$	0.028
GAD-7 ($n = 20$)	6.15 (5.87)	3.85 (4.59)	$t(19) = 3.15$	0.005
MCQ ($n = 20$)	57 (6.76)	63 (4.68)	$t(19) = -3.838$	0.001
MPAS ($n = 19$)				
Total	73.33 (9.91)	80.40 (8.32)	$t(18) = 4.98$	<0.001
Quality of attachment	34.03 (3.70)	40.79 (3.96)	$t(18) = -10.07$	<0.001
Absence of hostility	18.69 (3.81)	19.71 (3.44)	$t(18) = 1.58$	0.131
Pleasure in interaction	20.53 (4.06)	19.89 (4.01)	$t(18) = 0.64$	0.529
KIPS ($n = 17$)				
Total	3.67 (0.69)	4.14 (0.61)	$t(16) = -2.783$	0.013
Item 6: Speaking to the child	2.94 (1.3)	4.29 (0.77)	$t(16) = -4.226$	0.001
Item 10: Supportive directions ($n = 13$)	3.31 (0.48)	3.88 (0.81)	$t(12) = -2.635$	0.022
Item 12: Promotion of exploration and curiosity	3.59 (0.94)	4.12 (1.05)	$t(16) = -2.314$	0.034
ASQ:SE				
6-months; $n = 14$	33.21 (23.09)	18.21 (15.88)	$t(13) = 3.79$	0.002
12-months; $n = 4$	26.25 (11.81)	12.50 (6.45)	$t(3) = 2.2$	0.115

Parental anxiety. Anxiety levels of parents were assessed into mild, moderate and severe groups based on GAD-7 scores. Scores of 5, 10 and 15 were taken as cut-off points for mild, moderate and severe anxiety, respectively. Overall, participant mean scores declined from 6.15 (±5.87) at T1 to 3.85 (±4.59) at T2 ($p = 0.005$). Clinically, this shift indicates movement from "moderate" to "mild" anxiety.

Parental confidence. Whilst the MCQ is intended to be administered only to mothers, it was delivered to all participants, regardless of their gender. Parental confidence scores increased significantly from 57 (±6.76) at T1 to 63 (±4.68) at T2 ($p = 0.001$) following participation in VIG.

Parent-infant relationship quality. MPAS and PPAS scores were measured at baseline and follow-up as total scores and by their three thematic subscales: quality of attachment, absence of hostility and pleasure in interaction for the MPAS; patience and tolerance, pleasure in interaction and affection and pride for the PPAS. Total MPAS scores indicated greater levels of parent-infant attachment, T1 = 73 (±9.9) and T2 = 80 (±8.32) ($p < 0.001$). The small number of male participants ($n = 1$) prohibited the analysis of PPAS data. Parent-child interactions improved overall as indicated by an increase of mean KIPS scores, at baseline (M = 3.67, ±0.69) to follow-up (M = 4.14, ±0.61) ($p = 0.013$).

Socio-emotional infant outcomes. There was no need for the referral of the child for further mental health evaluations as both the six-month mean score (M = 33.21, ±23.09) and 12-month mean score (M = 26.25, ±11.81) at T1 fell below their respective ASQ:SE cut-off points (45 and 48). Both the six-month and 12-month group mean scores declined between T1 and T2; however, only results from the six-month follow-up analysis were statically significant ($t(13)=3.79$, $p = 0.002$). The 12-month group mean score at T2 (M = 12.5, ±6.45) further decreased from T1, but this was not significant ($t(3)=2.2$, $p = 0.115$) likely due to the small sample size of the 12-month group ($n = 4$).

Acceptability of the intervention: findings from the thematic analysis

Six families were interviewed about their experience of the intervention. The thematic analysis uncovered eight themes: why to take part?; making it work for us; being under the spotlight; I am doing a good job; me and my baby; continuity helps build trust; opening doors in important relationships and getting out and about.

Why take part? Families had varied reasons for wanting to participate. Two parents explicitly wanted help connecting with their child due to perceived difficulties in this area ("I realised that she wasn't really connected to me as well – that we weren't really giving each other basically eye to eye" [FAMILY01]). Others (n = 2) wanted support for themselves and have company. One parent cited their own mental health difficulties as the reason for participating ("I felt down, quite blue and depressed and I was always trying to pick myself up and so I felt that it was important to reach out for a little bit of help" [FAMILY02]). Some parents described feeling anxious about their child and their parenting abilities and hoped the programme would increase their confidence. Decreased parental confidence was related to life events such as the premature birth of their baby or relationship difficulties with the child's other parent. Increasing the enjoyment of parenting was another reason for participating ("I didn't want to lose sight. I wanted to be able to enjoy it [being a mother]" [FAMILY02]).

Making it work for us. Overall, parents felt the practical aspects of the programme (location, content, length and frequency of sessions) were appropriate. They appreciated the home setting for the sessions ("I was more comfortable and relaxed to have it at home" [FAMILY01]) and the flexibility of their VIG practitioners. Parental views on the ideal frequency of sessions were a matter of personal preference ("It was fine. I don't think you could do it longer" [FAMILY03]). Some parents suggested the sessions be spread out over a longer period to be able to notice their child's development.

Parents were equally divided on their questionnaire completion experiences. Three parents stated that completion of these questionnaires was either fine or interesting, whilst others (n = 3) reported having difficulty with them. For some, this was due to the style of questions and length of the survey. For one parent, difficulties arose from the reflective nature of the questionnaires, which imposed contemplation of their own emotions and feelings ("It was very upsetting to see where I was putting myself, but I was very honest about how I was feeling, so it was very upsetting" [FAMILY01]). However, by the end of the intervention, this parent felt happier to complete the questionnaire as their emotional state had changed.

The feedback provided by the VIG practitioners whilst viewing the videos was perceived positively by all participants (n = 6) ("She was really considerate when she did the filming [. . .] The very first session was quite nerve-racking. She was just great, I mean, how she just really kind of made me almost forget about it" [FAMILY03]). One parent suggested giving access to the video footage outside of the sessions to allow more time for reflecting on the contents ("If there could be an app that I could have signed in myself to access the footage. I think it would just be easier to have my own [. . .] personal, private time to be able to, kind of, digest it a little bit more" [FAMILY04]).

Being under the spotlight. Most participants (n = 5) expressed initial worries about being filmed with their children. For some, this was due to data protection and confidentiality concerns (N = 3), whilst others were apprehensive about feeling judged. All participants stated their comfort levels with being filmed increased after a short period of time and that this was facilitated by the VIG practitioners, with whom they developed a relationship of trust. For two participants, the type of technology used (iPads and smartphones) and their sense of security put them at ease. Whilst the filming process was described as anxiety-provoking, participants understood the filming was an integral part of the programme and one that ultimately brought beneficial changes for them ("Actually being able to see me, like, almost step out of myself and see me and see my interaction – it really helps me understand and digest what was happening" [FAMILY04]).

I am doing a good job. The intervention increased the confidence of all parents (n = 6), with some directly attributing this to improved mental health and well-being. Parents stated their increased confidence also had benefits for their child ("In the long run, obviously the baby also benefits from me being more confident" [FAMILY03]). Most parents (n = 5) gained

confidence from viewing their interactions with their child on video, as it allowed them to discern their existing skills, receive positive feedback from the VIG practitioners and identify areas for future development ("It was just a really clever, surprising experience to watch and I think it just really helped to – it definitely built my confidence" [FAMILY04]; "She would bring out some of the nice things that she could see and how I could improve" [FAMILY06]). The external feedback from the practitioners was described as particularly powerful for reducing parental anxiety, guilt and feelings of judgement from peers:

> I felt so much [. . .] so much emotion, so much guilt, so much, like, doubt whether I was doing the right thing, whether I was a good enough mum. So actually going through the programme and actually having that reassurance completely helped with how I felt. [FAMILY04]

> I was not confident when there were people around and people were watching me being a mother to her – "Oh my gosh, am I doing a good job"? – you know, all these thoughts. But having the VIG practitioner watch us, she was someone else watching us [. . .] but she was kind of like an outsider watching us – that, again, was the confidence. [FAMILY01]

Me and my baby. Half of the parents (n = 3) stated the programme improved their connection with their children ("Yes, the benefit was for both of us – me and my baby. It was a connection that really improved" [FAMILY01]). Two parents felt the programme increased their knowledge of their child's behaviour. One parent described the programme had helped them "be calmer" with their baby at times when they were "mentally not well" [FAMILY01]. Seeing their babies' reactions on video and hearing the practitioners' feedback, led to two parents performing more activities with their baby following the intervention ("I think it has helped me to play with him more because I can see that he really enjoys it – [. . .] you see his eyes light up and smiling when you are doing stuff" [FAMILY06]). Parents with more than one child (n = 2) found the intervention also benefited their interactions with their other children, as VIG practitioners additionally gave tips and feedback about managing this dynamic:

> She kind of helped me to see the importance of spending time with my other children because the baby kind of takes up all your time and, you know, she gave me ideas. So it has improved, I would say, my relationship with my [older] son in particular because he was the one that got the least of my time. [FAMILY06]

Continuity helps build trust. The programme directly affected the relationship between parents and VIG practitioners. Seeing the same health-care professional over multiple visits, rather than different staff on each occasion, helped participants build trust with the professions and feel comfortable talking openly about their concerns ("It is nice to have that continuity because it helps build trust as well" [FAMILY05]). Parents described feeling supported by the health workers, with one parent perceiving the increased frequency of contact with their health visitor as the main benefit of the programme. For others, VIG practitioners were cited as having a major impact on their mental health ("She was amazing. She was just one of the main reasons I feel that really helped me get through my baby blues" [FAMILY04]; "What made me, I guess, feel positive is her [commendation] because she would encourage me and let me know that I am doing really well" [FAMILY06]).

Opening doors in important relationships. Some participants reported the quality of their relationships with partners, friends and family had also improved because of their involvement in the programme. Half of the parents (N = 3) described how the programme improved their relationship with their partners, particularly where this had previously been negatively affected by mental health difficulties:

> With my husband, like, definitely in the early days I felt quite frustrated all the time. I think as part of, like, going through my baby blues [. . .] Having been able to actually talk to him about, you know, the sessions and he could see how I was after the sessions – it definitely improved our relationship. [FAMILY04]

Others (n = 2) described how the reassurance given by the VIG practitioners provided mutual benefits for themselves and the family unit, as their partners' anxieties had equally reduced ("Seeing her reassured was always of benefit to me as well" [FAMILY05]). The increase in self-confidence gained through the programme empowered two parents to speak openly to friends and family about their concerns. For one parent, the programme allowed them to overcome the perceived stigma surrounding mental health, enabling them to discuss this with friends:

> Having gone through the baby blues and, actually, I suppose there is a bit of a stigma attached to it – not a lot of women talk about it and I, you know, made that kind of decision that I need to talk about how I am feeling. [FAMILY04]

Getting out and about. The programme was found to have positive impacts on participants' social life. Two mothers stated they were going out more because of the programme. This was due to information provided by health visitors about local social groups, widening participants' social networks. The intervention also increased participants' self-confidence and reduced their anxiety about going out and being around others with their children: "No matter what, people are always judging [. . .] so that [the programme] kind of benefited me with my self-esteem and the confidence of mothering my child wherever we are, not just indoors" [FAMILY01].

Discussion

This study found VIG to be highly acceptable to socially disadvantaged parents. Despite small sample sizes, the quantitative analyses showed parents improved in most domains being measured. Mean scores for both depression and anxiety decreased between T1 and T2, with anxiety scores shifting from "moderate" to "mild" levels following VIG. Perceived parental confidence also increased significantly from T1 to T2. Mean MPAS scores in terms of overall parent-infant attachment and attachment quality also improved. The mean scores on the KIPS also found significant improvements in the quality of the parent-infant relationship. Significant increases were finally evidenced on several items of the KIPS such as parents' promotion of language experiences, giving supportive directions and promoting exploration and curiosity. Finally, findings on the ASQ:SE indicated improvements in babies' social and emotional development following VIG.

Many of the improvements outlined in the quantitative analyses were reflected in the qualitative analysis of the interviews exploring parents' views of the programme. Parents revealed an overwhelmingly positive experience of receiving VIG as part of a universal offer within their community; all perceived the programme to have benefited them and their families in several life domains. Whilst being filmed was initially daunting for most parents, all later reported becoming comfortable with the process and understood the video footage as an essential element of the intervention. Participants stated the intervention increased their confidence as a parent. This was achieved through seeing their skills reflected in video recordings and the positive feedback received from practitioners. Throughout the programme, parents described an improved connection with their children. The VIG also helped some parents to widen their social networks by gaining the confidence to go out more or join a local social group.

Considerations around recruitment, sampling and retention

This study faced threats to internal and external validity which are important to discuss. During the evaluation period, 3 of the 7 VIG practitioners changed occupation, which adversely impacted the numbers of families recruited to the evaluation. Another challenge was the strict age criteria for the child, which slowed down recruitment overall and impacted sample size by having fewer families taking part in the study than expected. Despite this, uptake of approached families was high (82%). Notably, although recruitment was

universal, it operated on a convenience basis, is largely done at the clinical discretion of each VIG practitioner as part of how they managed their overall caseload and wider clinical responsibilities. As such, parents involved in the study were either self-selecting or invited by VIG practitioners. Such sampling approaches have the potential to introduce selection and response bias to the study, limiting the findings' generalisability as participants do not statistically represent the general population.

However, the use of a convenience sampling approach in this study is justified. Firstly, whilst this cannot be said for the quantitative evaluation of preliminary clinical outcomes, the evaluation of acceptability was qualitative in nature and as such did not seek to achieve statistical representativeness, but rather dive deeper into the unique experiences of individuals. Secondly, the target population was already "selective" in nature with regard to the general population, as it sought out new parents in the context of social disadvantage. Previous studies have demonstrated that recruitment in socially disadvantaged communities can be challenging due to high family mobility, increased likelihood of refusal to allow access to their home and general suspicion and mistrust of professional services (Daro and Harding, 1999). Using a convenience sampling approach enabled the evaluation to be studied in the intended subgroup of the general population. Moreover, the success of VIG relies heavily on the ability to converse openly about parent-infant interactions; these conversations happen more easily if they are founded on feelings of trust and non-judgement between the practitioners and parents. Allowing selection of families into the study increased the likelihood of successful data collection for the evaluation as VIG sessions built on professional rapport already established.

This same rapport poses questions around response bias – namely, whether participants were satisficing or responding overwhelmingly positively to the evaluation questions to "please" the practitioners. Controlling for satisficing was impossible in this study, given that its design was chosen appropriately to its aims and resource limitations. The study built on previous VIG effectiveness literature as a rationale to evaluate the delivery of VIG by different types of professionals than usual (i.e. health visitors and family support workers), in a specific setting (socially disadvantaged borough). In practice, it is expected that health visitors and family support workers will also be building from their rapport when delivering VIG. Thus, in this context, VIG is to be thought of as a supplement to the support provided by health visitors and family support workers to socially disadvantaged families.

Finally, the sampling approach was chosen to keep attrition low. Of the 23 families that consented to take part in the evaluation, 4 (17%) dropped out by T2. In total, 17% is below the 20% benchmark considered to indicate "acceptable attrition" (Early Intervention Foundation, 2018) and is comparable to other universally delivered postnatal intervention evaluations (Brugha *et al.*, 2011) and video-feedback interventions targeting attachment (Bakermans-Kranenburg *et al.*, 2003) that are not necessarily conducted in the context of social disadvantage. It should be noted that analyses of the differences between starters and completers revealed a significant difference in age, with young age associated with starters rather than completers ($p < 0.001$). Insofar, parental intervention studies have denoted socio-economic status, age of the child and treatment format (individual vs group) as factors of attrition (Chacko *et al.*, 2016); the relationship between parental age and attrition needs to be further investigated. With less than 20 participants completing the intervention overall, the strength of the evidence is further limited in its generalisability by its sample size (Early Intervention Foundation, 2018).

Overall evaluation limitations and considerations for future research

This study carried threats to external validity (generalisability of outcomes to the general population) due to limitations stemming from its design (sampling approach, small sample size and the non-randomised, before-and-after evaluation design lacking a matched control group). It also carried a threat to internal validity, as the length of the evaluation period only

allowed to study short-term effects of VIG; the lack of participant follow-up challenges the sustainability of VIG in improving participant outcomes in the long term. The study findings should, therefore, be interpreted as preliminary results on the clinical effectiveness of VIG delivery by health visitors and family support workers to socially disadvantaged families, warranting further investigation through a larger, randomised-controlled trial with long-term follow-up.

However, as discussed above, the limitations stemming from the study design are intrinsically linked to the interventional nature of VIG, which called for such design compromises. The underlying mechanism by which VIG is effective is related to the ease of having open conversations about parent-infant interactions. Qualitative data has shown that rapport and trust between the practitioners and parents, and parents' feelings of safety against judgement, were essential to creating an environment for these conversations which helped them achieve change. Such factors may pose challenges when designing a randomised evaluation of VIG and scaling up its implementation (Kelley *et al.*, 2014; Tchala Vignon Zomahoun *et al.*, 2019).

Conclusion

This mixed-methods evaluation of VIG as delivered universally by health visitors and community family support workers in a socially disadvantaged urban community was found to be acceptable with encouraging improvements in parents' self-confidence, parental anxiety, parent-infant relationships quality and infant development. This small-scale, non-randomised evaluation supports the implementation of NICE recommended video-feedback approaches as delivered by health visitors and community family support workers. VIG delivery by these professionals may provide a preferable cost-effective alternative to psychologists given their established relationships with parents as providers of universal services. Further large scale, randomised evaluations are required to replicate and strengthen these preliminary findings, although the nature of VIG as an intervention building on established trust and professional rapport may add complexities to randomised evaluation designs.

Note

1. The acceptability and feasibility of implementing the intervention was also explored through interviews with the VIG practitioners and supervisors involved in the study and these findings have been published in Chakkalackal *et al.* (2017).

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