

Promoting Mother–Infant Book Sharing and Infant Attention and Language Development in an Impoverished South African Population: A Pilot Study

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Abstract The low rates of child literacy in South Africa are cause for considerable concern. Research from the developed world shows that parental sharing of picture books with infants and young children is beneficial for child language and cognitive development, as well as literacy skills. We conducted a pilot study to examine whether such benefits might extend to an impoverished community in South Africa, by evaluating the impact of training mothers in book sharing with their 14–18 month old infants. Seventeen mothers received book sharing training; and 13 mothers did not, but instead received a comparison training in toy play. We assessed the mothers' behavior during both book sharing and toy play before and after training, and we also assessed infant attention and language. Mothers receiving book sharing training engaged well with it, and they also benefited from it; thus, compared to the comparison group mothers, they became more sensitive, more facilitating, and more elaborative with their infants during book sharing, and they also became more sensitive to their infants during toy play. In addition, infants whose mothers received the book sharing training showed greater benefits than the comparison group infants in both their attention and language. Training in book sharing for families living in conditions of marked socio-economic adversity in South

Africa has the potential to be of considerable benefit to child developmental progress. A large scale controlled trial is required to confirm this.

Keywords Book sharing · Language development · Infant attention · Maternal sensitivity · Early literacy

It has been estimated, conservatively, that 200 million young children, predominantly from Asia and sub-Saharan Africa, are failing to achieve their developmental potential as a consequence of poverty (Grantham-McGregor et al. 2007). These children are multiply disadvantaged, suffering adverse consequences in terms of their growth, physical health, socio-emotional competence, and cognitive skills. While all of these adverse outcomes carry clear disadvantage, the deficits in cognitive skills, including literacy, and the associated educational failure exacerbate, the entrenchment of cycles of deprivation. This occurs, not only through their impact on later earnings, but also, especially in mothers, through their association with high fertility, poor child care, and poor child health and survival rates (Grantham-McGregor et al. 2007).

In economically developed countries, it is well established that early cognitive and socio-emotional development are strong determinants of subsequent school progress and literacy (e.g. Catts et al. 2001; Leppänen et al. 2006; Currie and Thomas 1999; Pianta and McCloy 1997; Murray et al. 2010). Although limited, evidence from low and middle income countries is consistent with this conclusion (Groman and Pollitt 1996; Liddell and Rae 2001). Given that children's ability at the point of school entry is such an important predictor of their progress through school, there is a strong case, therefore, for intervention in the preschool period. Indeed, studies of interventions delivering such

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early cognitive stimulation in developing countries consistently show substantial and sustained benefits in terms of child language and cognitive functioning (Walker et al. 2007). A notable feature, however, of the most effective of these interventions is their comprehensive nature: thus, they are typically directed at multiple risk factors, and are of “adequate duration, intensity, and quality... integrated within health and nutrition services” (Engle et al. 2007). Importantly, despite the great weight of positive evidence in favour of the introduction of such early development programmes, government investment has tended to be low (Engle et al. 2007). There are several possible reasons for this. Aside from concerns about the immediate cost, one likely impediment is that mounting such comprehensive interventions poses major logistical challenges in terms of personnel, training and delivery, especially in circumstances where resources are scarce. It is important, therefore, to explore whether there might be simple, low cost strategies directed specifically at promoting early child cognitive and pre-literacy skills, which would present a less daunting implementation prospect. One possible strategy that has received little attention to date in the developing world is the promotion of book sharing, a form of intervention which, some have argued, is especially potent for enhancing early literacy development (Bus 2001; Bus et al. 1995; Neuman and Roskos 1997; Whitehurst et al. 1988).

Research from economically developed countries does, indeed, suggest that book sharing between a carer and an infant may be especially effective as a means of promoting infant language development and skills relevant to later literacy. This research, generally with children aged 9 months–2 years, has consistently found that periods of prolonged joint attending between carer and infant more commonly occur when sharing picture books than in other situations. Further, during these times, more than in any other context, carers name objects for the infant, and they more often acknowledge, extend, and elaborate on the focus of the infant’s interests or on the sounds they make (Fletcher and Reese 2005).

Since it is well established that vocabulary and language development occurs through both direct instruction of word meanings (Stahl 1997) and incidental learning from verbal contexts (Elley 1989; Weizman and Snow 2001), book sharing is an especially rich and effective environment for promoting child language development (Doyle and Bramwell 2006). In particular, as Bond and Wasik (2009) have argued, the opportunity that book sharing presents for initiating conversations may be key to its effectiveness, since such conversations provide a structure around which the adult helps promote child language and vocabulary development (Ezell and Justice 2005; Justice et al. 2005; Justice and Pence 2005). Book sharing may also be such a powerful medium of instruction because it occurs in a

naturalistic and meaningful context that is both interesting and motivating for young children (Justice and Pullen 2003; Watkins and Bunce 1996).

Given these established benefits of book sharing, it is unsurprising that studies have shown that more frequent book sharing between children and their parents predicts better language and literacy skills later on, an association that still holds even when family social class is taken into account (Bus et al. 1995; Deckner et al. 2006; Raikes et al. 2006; Theriot et al. 2003). However, particularly convincing evidence for the value of supportive book sharing comes from studies where instruction has been provided that aims to improve the quality of book sharing. These studies have generally assessed the value of training in ‘dialogic reading’, a method of intervention first described by Whitehurst and associates, in which parents are trained, either one-to-one, or else in small groups, to provide high quality book sharing (e.g. Arnold et al. 1994; Whitehurst et al. 1988, 1994, 1999; Lonigan and Whitehurst 1998). ‘Dialogic reading’ refers to adults’ use of evocative or interactive behaviors during book sharing with their child, including following the child’s interest, asking open-ended questions, following the child’s answers with further questions, repeating and expanding on child’s responses, and providing praise and encouragement of the child’s participation. These studies have consistently shown that, compared to other kinds of parent training, book sharing programmes are associated with the greatest gains in infants’ language skills (Reese et al. 2010). A parallel strand of intervention work has been conducted showing similar benefits of providing book sharing to children with language delay (e.g. Crain-Thoreson and Dale 1999; Cronan et al. 1996; Dale et al. 1996; Ezell et al. 2000).

The bulk of the research into the value of book sharing has been carried out in the developed world. However, children in low income countries are disproportionately subject to the socio-economic and family risk factors associated with compromised language, cognitive, and literacy skills. Specifically, for children in poverty, language opportunities at home can be extremely limited (Hart and Risley 1995), and book sharing with children is a significantly less likely occurrence in low compared to middle income families (Anderson and Stokes 1984; Heath 1983; Teale 1986). Thus, the introduction of book sharing in these contexts may be especially beneficial to emergent literacy.

For several reasons, South Africa would be a particularly suitable environment for piloting a low and middle income country training study of mother–infant book sharing. High levels of poverty characterize much of South African society, and the extreme material and social inequalities have been linked to a range of social and health problems, including HIV Aids, violence, substance abuse, under/malnutrition, and high rates of maternal depression (Cooper

et al. 1999; Seedat et al. 2009; Hartley et al. 2011), all of which have a major adverse impact on child development. More specifically, there is compelling evidence for there being a literacy disadvantage amongst South African children. Thus, in the Progress in International Reading Literacy Study (2007) review of literacy amongst 9/10 year old children in 40 countries, South Africa was at the bottom of the performance table. Consistent with this, a recent report revealed that for learners in Grade 3 (children aged 9 years), more than half did not achieve the acceptable performance level (Department of Basic Education 2011). Second, although there are no firm data on this point, it is our experience that there is little culture of book sharing within indigent South African communities. For example, we interviewed mothers of 14–18 month old infants resident within 1 km of our research base, and found that of 33 none had ever engaged in book sharing with their infant; so any intervention would be largely uncontaminated by prior experience. Finally, our previous research suggests that mothers are highly motivated to engage in interventions that are designed to help them support their children's development. Thus, an intervention designed to improve maternal sensitivity towards infants recently offered to mothers in Khayelitsha was well received, with all but 2 % of targeted mothers agreeing to take part; and it proved to be of benefit to both the quality of the mother–infant relationship and child emotional development (Cooper et al. 2009).

Accordingly, we conducted a pilot study in South Africa of the impact on mothers and their young children of training the mothers in book sharing. The study was conducted in Khayelitsha. This is the largest of five major peri-urban settlements in Cape Town. Unemployment in these settlements is estimated to be up to 50 % (Smith 2005), and around three-quarters of the population have either no income or earn less than R800 per month (\$111 USD). The population is young, and women have a high fertility rate (3–4 children each). Most infants in this area of Khayelitsha are cared for by their mothers, with grandmothers, older siblings and crèche facilities being used to supplement maternal care (Cooper et al. 2009, 1999). In each settlement, there is sub-economic formal housing, as well as areas of informal houses/shacks. Typically, these communities have tarred roads, mast lighting, water, and water-borne sewerage services and some access to electricity and telephones. Notably, there are many government services and non-government organisations (NGOs) in Cape Town serving these settlements, as well as schools and health care services, with most women living within 5 km of a prenatal clinic. In addition, despite the fact that families very rarely engage in book sharing with their infants, local libraries are beginning to be set up (albeit without dedicated sections for preschool children), and a basic infrastructure is therefore emerging that could potentially

support the practice of adults' book borrowing and sharing picture books with young children.

This study received ethical approval from the Research Ethics Committee of the University of Stellenbosch (N11/01/014). The purpose was to conduct a feasibility study to determine whether the training programme was acceptable within the Khayelitsha community, whether mothers would engage with it, and whether this training appeared to have a positive impact on maternal behaviour and positive infant outcomes.

Methods

The study was a pilot randomised controlled trial. A group of four local women were recruited and trained to be trainers in good book sharing practices. A comparison was then made between a sample of mothers and infants who received the book sharing training from these local trainers and a group who had not received this training but instead received a comparison toy play programme.

Trainers

Four women from the community, nominated by local agencies, were recruited to be trainers. They had all completed secondary education (i.e., schooling to 18 years of age), but had no further education. Over the course of 1 week these four women received training from our team in supporting mothers in book sharing with their infants. This involved a combination of didactic lectures on the value of book sharing and on the key features of sensitive book sharing, video presentations of good and poor book sharing, role play, discussion of video-recorded sessions of the trainers themselves book sharing with infants and working with mothers doing book sharing, and guidance in how to promote good book sharing in mothers. These four women became extremely committed to the training programme. They were convinced that the training was needed within the community, that it would be well accepted by mothers, and that it would benefit the children. This commitment we felt to be important because, for the training programme to be acceptable to the community, it was necessary that it be presented to mothers in their own language (isiXhosa), and as a local initiative delivered by local expertise, rather than as something imposed by some external agency.

Recruiting Participants and Randomisation

Two local Khayelitsha women identified women in the community with an infant aged between 15 and 17 months, and invited them to join a “baby book sharing project”.

Between them they identified 30 mothers with children in the required age range. These mothers and infants then visited the research base to have the study described to them in detail by these same local women. Considerable time was taken to explain the nature of the study to the women, and the fact that their participation was entirely voluntary was made clear. All the mothers were interested in what the book sharing training might do for their children, and all were keen to attend and formally consented to do so. They subsequently returned with their infants for a 2 h assessment session. At this point they were randomly assigned to receive the book sharing programme immediately, or after 7 weeks.

Groups

The mothers and infants were assigned to one of four groups (each of 7–8 mothers and infants). Two of these groups received the training in book sharing ($n = 17$). This involved an initial session in which a 40 min PowerPoint® presentation was given outlining the benefits to infants of book sharing and describing the key features of sensitive book sharing (see Table 1). Each mother then received a 15 min session from a trainer of individual support in book sharing with her own infant, using a picture book. At the end of the session there was a 20 min group discussion focussed around a particular picture book, after which mothers and infants left, each with a copy of this book.¹ Mothers were advised to practice book sharing with their child every day. There were six further training sessions held weekly. These sessions each began with a group meeting reviewing with the mothers their experiences with the book sharing, and recapitulating the critical features of responsive book sharing. This was followed by individual training sessions. Each session ended with discussion of a new book which mothers and infants then took home with them.

The mothers in the comparison group ($n = 13$) attended the research base for the same amount of time as the mothers who received the training. The purpose of this was to ensure that any improvements in the group who received the book sharing training were not simply a function of the attention they were receiving. Thus, the comparison group mothers received the same amount of instruction and individual support as the mothers who received the book sharing training, but the focus was on toy play. The initial session involved a PowerPoint® presentation on the

importance for optimal child cognitive development of supporting child play, with the emphasis on enhancing maternal responsivity to the infant. At each session a toy was introduced and there was discussion about how the child could be encouraged to explore the toy. Mothers were encouraged to support child play at home. (All the mothers who received this comparison condition subsequently were offered the book sharing training and all accepted it and completed the training).

Assessments

The assessments were conducted by a local native isiXhosa speaking woman, working alongside one of the English researchers. Assessments were conducted within the research base with each mother and child before the intervention began; and all the assessments were repeated immediately after the 6 week training programme. The mothers and infants in the training group and those in the comparison group were assessed in exactly the same way. Both the assessments and the associated coding were conducted by assessors who were unaware of whether the mother and infant were in the training group or the comparison group.

Infant Focused Attention

Following the assessment protocol specified by Goldsmith and Rothbart (1992), appropriately modified for older children, each mother–infant pair was settled into a room furnished with a large comfortable chair and play mat. The mother was invited to be seated and a researcher brought three toys into the room: a simple open truck with wooden blocks, a spinning top with small toys visible inside its plastic cover, and a board with looped wires over which beads were threaded. The researcher briefly demonstrated each of the toys to the infant, and then indicated that the infant could play with them. The mother was told that we were interested in how the infant responded to the toys on their own and was asked not to engage in the play. Play was filmed for 5 min.

Videotapes were scored by two trained researchers who were not informed about the mothers' assignment to groups (book sharing or toy play) nor results of the infant language assessment. Initiation and duration of episodes of infant attention to each of the toys were recorded to 1 s accuracy, and were used to calculate the longest bout of attention to any one toy. The quality of infant focused attention during each 30 s time block was rated on a 4 point scale, 1 = unfocused, undirected behaviour, 2 = minimal, casual attention (e.g. holding or touching the toy with no focus), and 3 = clear focus, but not purposeful play (e.g., shaking

¹ We used the following books in our program: Helen Oxenbury—All fall down (1987), Clap hands (1987), Tickle Tickle (1987); assorted books from the “Touch and Feel” series (DK Publishing, 1998); and two books we made ourselves of photographs we took of people and situations in Khayelitsha (such as street scenes, local children at play, and domestic scenes, such as a mother cooking.).

Table 1 Primary components of training program

Component	Description
Active child participation	The carer is encouraged to follow cues from baby, to support and encourage the baby's active participation, to facilitate the baby's handling of the book, to help the child to turn pages and steady and orient the book
Pointing and naming	The carer is encouraged to point and name objects in the infant's visual field, indexed by simple looking, patting, banging, or scratching the picture; the carer is encouraged to respond by naming the object
Emphasize stimuli to which baby attends	The carer is encouraged to support the baby's interest in whatever is named by animating what is shown (e.g. moving their hand up and down to mark the bouncing of a pictured ball)
Active questioning using "where" style questions	For words the baby understands, the carer is encouraged to prompt the baby to point to a particular object or character, asking questions starting with 'Where is the...?', or 'Can you find the ...?'
Active questioning using "what, who" style questions	Later, when the baby knows how to say the word for an object, the carers is encouraged to ask questions like 'What is this?' and point to the relevant aspect of the picture for the baby to name
Active linking of book content to the baby's world	The carer is encouraged to link the content of the book to the baby's own experience (e.g. encourage baby to imitate character's actions; take turns to point to a pictured animal's nose, and then find their own nose and the carer's nose, the parents saying the word along with each point). With young infants such linking is located in the here and now. With older infants the carer is encouraged to elaborate what is on the page to the baby's wider experience (e.g. the pictured dog is "just like the dog next door"; or, perhaps, the picture can be linked to a recent visit to the shop when the mother and baby bought groceries "just like the mother and baby here in the book")

toy but without a clear aim), 4 = focused purposeful play (e.g. creating a pile of blocks). The mean score and the best quality of attention were noted.

Mother–Infant Book Sharing and Toy Play

The researcher invited the mother to sit wherever she felt she would be most comfortable. She then presented the mother with a board book (Oxenbury, 1987). The book has simple line drawings of babies of different ethnic groups engaging in a range of everyday activities (e.g., being washed, having their hair brushed, and going to sleep). The mother was invited to share the book with the baby in whatever way she liked. The task was filmed for 5 min.

Following the book sharing task, the researcher removed the book, and brought two toys into the room, each for 2½ min, and invited the mother to play with the infant in whatever way she liked. The first toy was a shape-sorter, and the second a hammer ball set. Each was attractive for infants of 14–18 months, but difficult enough to require assistance. The play was filmed throughout.

Three ratings were made for each of book sharing and toy play (scores for the two toy episodes were summed and averages were used), based on established scales for mother–infant interactions in this age group (e.g. Stein et al. 1994; Murray et al. 2008).

1. Maternal sensitivity, ranging from ignoring of infant cues and being intrusive and hostile to being attuned to infant signals and responding promptly and appropriately.
2. Maternal facilitation in the book task (i.e. the extent to which the mother supported the infant's engagement

with the book), ranging from providing no support to considerable support (i.e. helping the infant to turn the pages, supporting the book if it started to slip, positioning it so that the infant could see it easily). For toy play it was found more appropriate to record facilitation in terms of discrete instances where the mother helped the infant to play effectively with the toys.

3. Mother–infant reciprocity, ranging from no turn taking or mutual responsiveness to reciprocal interaction throughout with co-ordinated and smooth exchanges.

In addition, two specific event codes, derived from the literature on book sharing and child language acquisition (Fletcher and Reese 2005), were used for book sharing, as follows:

1. Pointing and naming of elements of the picture.
2. Elaborations—i.e. comments on the picture itself, or topic depicted, which adds to the infant's experience.

For these book-specific codes, two trained researchers, both unaware of whether the mother and child being assessed were in the book sharing training group or the comparison group, agreed event codes by consensus rating.

Two researchers scored videos of each task using the ratings scales shown in Table 3. Random samples of ten videos for each task were independently scored by these two researchers to establish reliability (i.e. using the Pearson correlation coefficient). Reliability was uniformly good as follows: for book sharing sensitivity $r = 0.82$, facilitation $r = 0.94$, reciprocity $r = 0.96$; for play sensitivity with the two toys $r = 0.87$ (0.77–0.96), facilitation, 0.92 (0.88–0.96), reciprocity 0.89 (0.88–0.90).

Infant Comprehension and Vocabulary

There was no established measure of language development for Xhosa speaking children of this age group and we therefore developed our own (modelled on the Peabody Picture Vocabulary Test (Dunn and Dunn 2007)). This involved creating a series of picture cards of objects. These objects were chosen with the help of a focus group of local mothers as being familiar within the children's experience (e.g. a dog, a carrot, a bicycle). To assess *comprehension* the child was presented with our cards in sequence. Each card showed four pictures simultaneously. The Xhosa speaking researcher presented a card and then asked the infant to point to one of the pictures (saying, for example, "show me the dog"), following the same procedures used for the Peabody Test. The question was posed for each of the 16 pictures. To assess *vocabulary*, infants were presented with a series of 18 further cards, each showing a single object, and the infant was asked what the picture showed.

For both comprehension and vocabulary, an independent researcher who was unaware of whether the mother and child being assessed were in the book sharing training group or the toy play comparison group, trained to reliability, scored the number of correct responses on each of the tasks. The total number of correct responses was calculated.

Data Analysis

The data were entered into an SPSS data base (IBM SPSS Statistics, version 20). Scores at the baseline assessment were subtracted from those at follow up as a measure of change. Where the difference was positive, mothers/infants were categorised as having improved; those with equal or lower scores were grouped together as showing no improvement. Comparison was then made between those who had received the book sharing training and those who had not, in terms of the proportions who improved (using Chi-square analyses).

Results

It can be seen from Table 2 that the two samples were similar in terms of their demographic characteristics, with no significant differences in terms of the age of either the children or mothers, the number of years the mothers had spent in education, and the proportion in each group of boys and girls (Table 3).

Table 2 Sample characteristics

Variable	Training group (n = 17)	Control group (n = 13)
Child gender	Male = 47.1 % Female = 52.9 %	Male = 69.2 % Female = 30.8 %
Child age (months)	Mean = 15.42 (SD = 1.56)	Mean = 15.76 (SD = 1.82)
Mother's age (years)	Mean = 29.29 (SD = 12.24)	Mean = 25.54 (SD = 5.90)
Mother education (years)	Mean = 10.41 (SD = 1.84)	Mean = 10.23 (SD = 0.93)

Acceptability to Mothers

All mothers invited to participate in the study agreed to take part and, to varying degrees, engaged well in the training programme. Thus, of the 17 mothers who received the training, 9 attended all 6 training sessions and 14 attended at least four of these. Furthermore, when enquiry was made at the beginning of each training session about the extent of book sharing practice during the previous week, all mothers reported at each session that they had practised book sharing at home, and 8 reported that they had done this every day throughout the training programme. On completing the book sharing training, the mothers were asked by the assessor how they had found the training. There was universal approval of the initiative.

Indeed, many of the mothers were extremely enthusiastic about what they felt book sharing was providing their children. For example, a typical response from one mother was: *"It has been a very good program for us because my baby has learned many new words that she didn't know before. She is learning all the time from the books. She knows and understands what is happening in the books and she remembers it. My bond with her is also better. Before this training I was not really giving her attention. Now, because of coming here for the sessions, I know that it is important for her that I give her time and attention. And I feel much closer to her now"*.

Impact of Training on Mothers

In terms of the variables assessing the general quality of maternal engagement (i.e. 'sensitivity', 'reciprocity' and 'facilitation'), at the follow up assessment, compared to the mothers who had not received the book sharing training, a greater proportion of those who had received this training had improved on all three variables; notably, this benefit occurred in relation to both the book sharing and the non-book sharing tasks. The difference was substantial for sensitivity (for the non-book sharing tasks $\chi^2 = 5.03$, $df = 1$, $p < 0.05$; and for book sharing alone $\chi^2 = 3.25$,

Table 3 Summary of maternal and child assessments

Maternal variables	In book sharing (5 min episode)	In toy play (2 episodes of 2½ min each)
Sensitivity	5-point scale: 1 = highly insensitive, to 5 = highly sensitive	5-point scale: 1 = highly insensitive, to 5 = highly sensitive
Facilitation	5-point scale: 1 = no facilitation, to 5 = facilitation throughout	Event count of discrete facilitatory behaviors
Reciprocity	5-point scale: 1 = no mutual responsiveness, 5 = reciprocal interaction throughout	5-point scale: 1 = no mutual responsiveness, 5 = reciprocal interaction throughout
Pointing and naming	Number of times mother points to and names element	Not applicable
Elaborations	Number of times mother comments on picture/theme	Not applicable
Child outcomes		
Focused attention	Longest bout of attention to any one of 3 toys (seconds).	
Quality of attention	4 point scale: 1 = unfocused, undirected behaviour 2 = minimal, casual attention 3 = clear focus, but not purposeful play, 4 = focused purposeful play	
Infant expressive vocabulary	Picture vocabulary task 4 cards, 16 items, with instruction “show me the dog” (number correct)	
Infant comprehension	Picture vocabulary task: series of 18 cards with instruction “what is this?” (number correct)	

$df = 1$, $p < 0.07$). In contrast, for reciprocity, the difference in improvement between the two groups was not great (because there was substantial improvement in both groups). For facilitation, there was again very little difference between the two groups for the non-book sharing task; but for the book sharing task, a greater proportion of those who had received book sharing training improved ($\chi^2 = 3.28$, $df = 1$, $p < 0.07$).

In terms of the specific book sharing variable of ‘pointing and naming’, neither group showed an improvement; but in terms of ‘elaborations’, compared to the comparison group, a significantly greater proportion of the group that had received the training showed an increase ($\chi^2 = 4.17$, $df = 1$, $p < 0.02$).

Although the sample was too small for a definitive analysis, neither child gender nor age appeared to be related to change in the maternal variables.

Impact of Training on Infants

The proportion of infants whose longest bout of focused attention increased from base line to post training was greater for the group that had received the book sharing training than for the comparison group, but not significantly so ($p < 0.2$). However, a significantly greater

proportion of those who had received the book sharing training than the comparison group improved their overall quality of attention ($\chi^2 = 4.69$, $df = 1$, $p < 0.02$) and their ‘best quality of attention’ (Fisher exact $p = 0.047$).

Compared to the comparison group infants, a significantly larger proportion of the group who had received book sharing training showed an increase in the comprehension score ($\chi^2 = 4.87$, $df = 1$, $p < 0.02$) and an increase in the vocabulary score ($\chi^2 = 4.51$, $df = 1$, $p < 0.02$).

Although, again, the sample was too small for a definitive analysis, neither child gender nor age appeared to be related to change in the infant variables.

Discussion

The outcome of this pilot study was largely positive. The mothers invited into this study were, following an account by women from their own community of the purpose of the training, highly motivated to take part and, with some variation, they did engage in the training sessions and the prescribed home practice. The training in book sharing was of clear benefit to mothers in that, compared to the comparison group mothers, those who received the book sharing training became more sensitive to their infants both in book sharing

and in general play; and they became more facilitating and elaborative in their book sharing. The preliminary examination of the impact of book sharing on the infants was encouraging: compared to the group whose mothers had not received the book sharing training, there appeared to be general benefits from maternal book sharing training for infant attention, and a significantly greater proportion of the infants whose mothers had received the book sharing training showed an increase in both the index of comprehension and the index of vocabulary. These positive findings are especially encouraging, given that the comparison condition in this study—support of maternal toy play with infants was also of benefit to the quality of the mother–infant relationship, and has recently even been shown to benefit book sharing practice (Landry et al. 2012).

This pilot study provides data on feasibility, as well as preliminary evidence for efficacy, to justify carrying out a systematic randomised controlled trial within a low and middle income country context of the efficacy of training mothers in book sharing in promoting infant language development and generally enhancing infant attention. The conduct of such a trial could be informed by what we have learned in carrying out this pilot study. For example, the pilot suggested some changes in the mode of delivery of the intervention. Thus, as noted above, each training session was conducted with groups of seven to eight mothers and infants. While this was an efficient method of imparting information to the mothers, it meant that when a mother and infant were called for their individual session with the trainer, the child was withdrawn from group play with several other children; and it was, at times, difficult to get the child to switch from rough and tumble social play to a quiet moment of book sharing with the mother. There needs to be a more careful titration between the economy of group instruction and the availability of infants for engagement in individual guidance sessions. The preliminary findings of the pilot study also suggested that there should be some modifications to the content of the intervention, for example, use of more focused video demonstrations of particular supportive behaviors (Huebner and Meltzoff 2005), such as ‘pointing and naming’.

In conclusion, book sharing has been termed a “language acquisition device” (Ninio 1983). In societies where there is no or little culture of book sharing, and no alternative form of interpersonal engagement which could serve an equivalent educative function, the introduction of sensitive and facilitatory book sharing could have a profound effect on children’s intellectual development. It is important that this possibility be systematically investigated in a large scale randomised controlled trial.

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