CHILD DEVELOPMENT

EMPIRICAL ARTICLE

Book-Sharing for Parenting and Child Development in South Africa: A Randomized Controlled Trial

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This study evaluated the impact of a parenting intervention on children's cognitive and socioemotional development in a group of caregivers and their 21-to-28-month-old children in a low-income South African township. A randomized controlled trial compared an experimental group ($n = 70$) receiving training in dialogic book-sharing (8 weekly group sessions) with a wait-list control group ($n = 70$). They were assessed before the intervention, immediately following it, and at a six month follow-up. The intervention had positive effects on child language and attention, but not behavior problems, prosocial behavior, or theory of mind. Intervention caregivers were less verbally and psychologically harsh, showed more sensitivity and reciprocity and more complex cognitive talk. This program benefited parenting and child development and holds promise for low-income contexts.

Child Development in Low- and Middle-Income Countries

Children in low- and middle-income countries (LMICs) are at risk for compromised cognitive and social development (Grantham-McGregor et al., 2007). These child problems commonly occur in the context of widespread poverty. Indeed, conservative estimates suggest that in excess of 250 million children, primarily in sub-Saharan Africa and Asia, are failing to reach their developmental potential as a result of poverty (Black et al., 2017; Walker et al., 2011). These developmental problems predominantly occur within a context of severe community stress, often characterized by high levels of violence (Aisenberg & Herrenkohl, 2008).

In these circumstances, caregivers, who themselves have been educationally and socially disadvantaged, are likely to replicate harsh childrearing and relationship practices that contribute to compromised child development and behavior problems (Walker et al., 2011). These risks not only constrain the life chances of the children, but carry a considerable social burden and have a major adverse financial impact on affected societies (Heckman & Masterov, 2007).

Cognitive Development

A large body of research from high-income countries (HIC) has shown that early cognitive and language

development is a critical determinant of subsequent school progress and literacy (Bornstein & Putnick, 2012; Catts, Fey, Zhang, & Tomblin, 2001; Murray et al., 2010). Evidence suggests that a similar relationship obtains in LMIC settings (Dendir, 2014; Engle et al., 2007; Liddell & Rae, 2001). Hence, the early developmental deficits so prevalent in LMIC contexts are likely to play a critical role in how cycles of poverty and deprivation become entrenched in societies through their adverse impact on educational progress, and thereby on future employment opportunities and earning potential (Heckman, 2008; Heckman & Masterov, 2007). This is particularly relevant for South Africa, where recent evidence on educational outcomes has shown that children are performing poorly, especially relative to the country's level of wealth and development (Mullis, Martin, Foy, & Hooper, 2017). Importantly, both cross-sectional and longitudinal research shows that particular early parenting practices are associated with child cognitive performance: where parental interactions are responsively contingent to the child, and support the child's active engagement in their environment, children perform better on measures of cognitive functioning (Murray, 2014).

Social and Emotional Development

Research has shown a number of early positive child and parenting characteristics to be associated with optimal child social and emotional development and reduced levels of behavior problems (Murray, 2014). One key child characteristic is sociocognitive understanding. This includes the ability to understand one's own feelings, emotions, desires, and intentions, as well as those of other people (Ruffman, Slade, & Crowe, 2002). A key development in early social understanding is "theory of mind"—the ability to accurately attribute mental states (desires, motives, emotions) to other people and understand that these can be different from one's own (Wellman, 2002). This is important because it underpins cooperation and prosocial behavior (Diener & Kim, 2004). The relationship between early prosocial behavior and lower rates of aggression and conduct problems in adolescence and beyond has been demonstrated in a number of longitudinal studies (e.g., Chen, Li, Li, Li, & Liu, 2000; Eron & Huesmann, 1984).

Specific aspects of early parenting are important in the development of children's social understanding. In particular, research has highlighted the contribution of certain kinds of parental discourse with the child, as these are internalized and shape child sociocognitive development (Fivush & Nelson, 2006; Murray et al., 2014). When parental speech includes frequent reference to mental states, desires, emotions (e.g., "think," "feel," "want") and causality, this has been shown to promote children's social understanding, including the theory of mind capacity (LaBounty, Wellman, Olson, Lagattuta, & Liu, 2008; de Rosnay, Pons, Harris, & Morrell, 2004).

When young children do not acquire adaptive ways of dealing with challenges and frustrations, they can fall into persistent patterns of aggression that are associated with violent behavior later in life (Broidy et al., 2003; Nagin & Tremblay, 1999; Tremblay et al., 2004). Studies in HICs show that aggression in childhood is predicted by a range of early child, family, and wider social factors (Engle et al., 2007; Moffitt & Caspi, 2001; Odgers et al., 2012). Key predictors include child concentration problems and hyperactivity, as well as an insecure attachment (Tremblay et al., 2004). Importantly, meta-analyses have also revealed the importance of particular parenting practices, namely, harsh and coercive parenting, including corporal punishment, and the lack of parental positive reinforcement and responsiveness, as well as general insensitivity (Gershoff, 2002; Rothbaum & Weisz, 1994). Although less is known about parenting and family risk factors for child aggression and violence in LMICs, the most recent meta-analytic evidence suggests that the same predictive relationships obtain as in HICs (Murray, Anselmi, Gallo, Fleitlich-Bilyk, & Bordin, 2013; Murray et al., 2018; Wessels et al., 2013).

Book-Sharing

The sharing of books with young children is well established as being of benefit to their language development and preliteracy skills (Lonigan & Shanahan, 2010; Mol, Bus, de Jong, & Smeets, 2008; Whitehurst & Lonigan, 1998). Two early meta-analyses, looking at the effect of frequency of parent−child book-sharing (Bus, Van Ijzendoorn, & Pellegrini, 1995), and the value of dialogic reading interventions on child language outcomes (Mol et al., 2008), both demonstrated substantial benefit to child language. The most recent meta-analysis (Dowdall et al., 2019) of randomized controlled trials (RCTs) of the efficacy of shared picture book reading interventions on child language outcomes revealed a clear benefit to expressive vocabulary ($d = 0.41$, CI [0.20 to 0.61]) and a positive, although a more modest, effect on receptive language ($d = 0.26$, CI [0.12 to 0.40]); and, for the subgroup of interventions that were not very brief, outcomes were much improved (i.e., $d = 0.54$ and 0.34, respectively). This meta-analysis also found a substantial benefit to caregiver book-sharing competence (e.g. pointing and naming, asking open-ended questions, following the child's lead, elaborations) as a result of the intervention ($d = 1.01$; CI [0.40 to 1.63]). Notably, there was a paucity of RCTs conducted outside of HICs.

Aside from their benefit to child language development, picture books can be effective tools for prompting rich mental state discussion between parents and young children (Fine, Aram, & Ziv, 2014; Ruffman, Slade,

Devitt, & Crowe, 2006; Ziv, Smadja, & Aram, 2013). Indeed, recent observational research has also shown associations between book-sharing and child social understanding (Adrian, Clemente, & Villanueva, 2007; Adrian, Clemente, Villanueva, & Rieffe, 2005). Thus, there is preliminary evidence that book-sharing can be a good context in which caregivers, through talking about mental states can, promote child social understanding (Adrian et al., 2005).

The main body of research on book-sharing has been conducted in HIC and it is only recently that the impact of book-sharing in LMICs has begun to be examined. Thus, in a randomized trial of a book-sharing intervention conducted in South Africa, with caregivers of 14- to 16-month-old infants, considerable gains were demonstrated on measures of infant language and attention (Vally, Murray, Tomlinson, & Cooper, 2015), and there was preliminary evidence of improvements in social understanding (Murray et al., 2016). Notably, mediation analyses showed that it was by virtue of improvements in parental sensitivity and reciprocity that the cognitive gains were brought about (Murray et al., 2016). This confirmed the promise that was shown in a small-scale pilot RCT in South Africa (Cooper et al., 2014). Similar gains from book-sharing interventions have been reported for studies in Mexico, Bangladesh, and Brazil (Opel, Ameer, & Aboud, 2009; Valdez-Menchaca & Whitehurst, 1992; Weisleder et al., 2017). However, an important gap in this evidence base is whether such an intervention could have an impact on child socioemotional development and behavior, and the parenting behaviors relevant to these child variables, such as mental state talk, disciplining strategies, and positive parenting.

Current Trial

The current trial was unique by virtue of the age of the children, the content of the intervention, and the diversity of the outcomes measured. It targeted two-year-old children, who are at an age that, compared to trials in infancy, affords the opportunity of assessing the impact of the intervention on a number of dimensions of social understanding and child behavior, as well as on language and attention. The intervention, therefore, included specific focus on promoting parenting skills relevant to child social understanding and preventing the development of aggressive behavior. Specifically, the training was extended to include book content with themes concerning book characters' emotions, intentions, perspectives, and prosocial behavior, in order to promote parental mental state and emotional talk around these topics. Although we did not directly address the topic of negative parenting in the intervention, we hypothesized that such practices would reduce as a secondary consequence of promoting positive parenting.

Objectives and Hypotheses

The objective was to determine the impact of a book-sharing intervention on a broad range of child and caregiver variables located on the early pathways to later aggression and violence. We hypothesized that the intervention would improve child language, attention, sociocognitive understanding, and behavior. We also hypothesized that caregivers would evidence more behavioral sensitivity, both in book-sharing and non-book-sharing contexts, and that interactions would be more reciprocal; and that caregivers would engage in more mental state talk with their children, and would be more supportive and less harsh in situations that challenged parenting. In the main, these analyses were confirmatory in nature, and based upon evidence for such relationships that have obtained in other settings or with other kinds of samples.

Method

Study Design

We conducted an RCT—the Benefits of Early Book Sharing (BEBS)—to evaluate a dialogic book-sharing intervention for caregivers of children between 21-28 months. Participants were randomized at the individual level to an intervention or wait-list a control group. Data were collected at baseline, post-intervention, and at a 6-month follow-up. The Consolidated Standards of Reporting Trials (CONSORT) were followed in preparing this paper. The trial protocol was pre-registered and the protocol was published (Dowdall et al., 2017).

Eligibility Criteria and Recruitment

One hundred and ninety one families with children aged 21–28 months at the time of baseline assessment, with an adult primary caregiver who was at least 18 years old, who lived in the household with the child for at least 4 nights per week, were invited to participate in the study. Seven declined to participate and a further 44 were excluded for various reasons, leaving a final sample of 140 (see CONSORT diagram). A chronic illness or disability in the child or the adult that would prevent them from fully participating in the intervention was an exclusion criterion. Caregivers and children were recruited by staff systematically going from door to door in the specified areas and enquiring about potentially eligible participants.

Study Setting

The study was conducted in Khayelitsha, a large peri-urban township on the outskirts of Cape Town, South

Africa, characterized by high levels of poverty, HIV, unemployment, and violence (Smit et al., 2016). All assessments took place at offices at a local Research Centre. Intervention group sessions were held in an adjacent church hall.

Intervention

The intervention was a group-based dialogic book-sharing program based on previous research from South Africa (Cooper et al., 2014; Murray et al., 2016; Vally et al., 2015). It consisted of eight 60- to 90-min sessions run weekly over consecutive weeks. The program was delivered by trained facilitators to groups of four to six caregivers. The two facilitators who had both completed basic schooling, had been involved in previous book-sharing intervention studies. They also received additional training in the current programme modified for older children, and weekly supervision by the trial manager who had been trained in the intervention. Each session focused on different and incremental principles and techniques for caregivers to apply during book-sharing. For the first six sessions, there was a "book of the week" that the caregivers took home to share with their child, and that they brought back the following week. In session seven, all the key techniques and principles were reviewed, and the child chose which of the six books they wanted

to take home for that week. During the final session, there was a group discussion where caregivers were guided in reflecting on the program and discussing plans for continuing with their book-sharing—such as registering at a nearby children's library or continuing to meet as a group. Session eight ended with a graduation where caregivers were presented with a certificate of completion, a laminated card with a summary of the key lessons from the program (on the back of which there was a picture of themselves and their child sharing a book), and a copy of each of the six books used in the program. Table 1 details the content of each session. For the 6-month period following session eight, the facilitator visited each participant on three occasions to deliver a new picture book and have a short encouraging conversation with the caregiver about their book-sharing.

The first part of each session was a group-based, instructive presentation of the week's key book-sharing principles. PowerPoint slides were used to deliver particular learning points, accompanied by brief illustrative video clips created in the same community in the local language. Toward the end of the presentation, the facilitator discussed the book of the week with the caregivers, highlighting how this book could be used at home, providing examples of how to apply the techniques covered in that session.

The second part of each session involved one-to-one mentoring with the facilitator. This took place in a

TABLE 1 Intervention session content

Session	Content
1	*Introduction to book-sharing* Introduction and basic dialogic books-sharing skills Part 1—following the child's lead, using a lively voice, setting up book-sharing routines
2	*Pointing and naming* Basic dialogic book-sharing skills Part 2—pointing and naming, repeating, extending and elaborating on things that interest the child, finding opportunities for praise
3	*Naming and linking* Asking "where/who/what/why" questions, linking book content to the child's own experience, finding opportunities to use actions (e.g., hugging, eating)
4	*Talking about feelings* Helping the child understand the meaning of basic emotion terms (happy, sad, angry, scared). Discussing why book characters feel the way they do, using facial expression and tone of voice to convey characters' feelings, linking feelings to the child's own experience
5	*Talking about intentions* Discussing what characters are thinking and intending, encouraging the child to be curious about what will come next in the story
6	*Talking about perspectives* Helping the child understand that different people can see things differently, know different things, and feel differently about things
7	*Summary* Reviews of key principles from Sessions 1–6
8	*Graduation event* Certificates of completion are presented to participants along with summary take-home cards and a full set of the 6 books (from Sessions 1–6). A group discussion about how to remain motivated about book-sharing and how to access children's books (e.g., registering for local library)

separate room, where the caregiver was asked to share the book of the week with their child, under the guidance of the facilitator. These sessions lasted for approximately 5–10 min, with the final few minutes dedicated to positive feedback and modeling of book-sharing techniques. This session also included a discussion between caregiver and facilitator about the book-sharing home routine, where the facilitator encouraged the caregiver to spend at least 10–15 min a day sharing the book of the week with their child, practicing the techniques learned that week.

Outcomes

Outcome data were collected through the use of (a) direct child assessments, (b) video-recorded caregiver–child interactions, and (c) caregiver interviews and questionnaires. The caregiver interviews and child assessments used were all conducted in isiXhosa. The assessment of each caregiver-child pair was completed by one of two native isiXhosa speaking assessors, trained and supervised by the project manager. The assessors remained blind to intervention group allocation. The assessments comprised assessments of the child (e.g., attention assessment), interviewing the caregiver (e.g., assessing caregiver depression), and filming the caregiver and child in interactive tasks (e.g., while sharing a book). Videos were scored by blind coders trained by the first author and PI. Detailed information about the training and supervision of assessors and program facilitators, as well as informed consent procedures, can be found in the published protocol (Dowdall et al. 2017).

Primary Outcome Measures

Child cognition

Child language. Child language was assessed at baseline and immediately following the intervention by interviewing the primary caregiver using the short form of the MacArthur Communication Development Inventory (CDI; Fenson et al., 2000). This 100-item checklist, which has been widely used (e.g., Cronan, Cruz, Arriaga, & Sarkin, 1996; High, LaGasse, Becker, Ahlgren, & Gardner, 2000), including in other African contexts (Law & Roy, 2008), provides information on child expressive and receptive language. It was used at baseline and immediately following the intervention. A measure (i.e., a count) of child utterances during free-play with the mother was also recorded at all three time points. At the follow-up assessment, the language subscales of the Bayley Scale of Infant Development (Bayley, 1993) were administered. This measure has been widely used, including in a number of African peri-urban contexts (Ballot et al., 2017).

Child attention. Child attention was measured using the Early Childhood Vigilance Task (ECVT) at all three time points (Goldman, Shapiro, & Nelson, 2004). This is a screen-based assessment of sustained focal attention during which the child views interesting moving cartoon stimuli. Images appear, disappear, and then reappear over a period of 7 minutes. Sustained attention is indexed by the number of seconds the child attends to the screen, expressed as a proportion of the 7 minutes of the video. The ECVT has been used successfully in a previous South African RCT (Murray et al., 2016; Vally et al., 2015), as well as in other African contexts (Musielak-Hanold, 2016). We also used an observational measure rating the average quality of child attention during free play at all three time points (Cooper et al., 2014).

Child behavior
Child prosocial behavior. This was assessed directly in a prosocial "helping" task where a scenario was created that gave the child the opportunity to help the assessor locate her lost pen (Buttelmann, Carpenter, & Tomasello, 2009; Murray et al., 2016). "Helping behavior" was scored as a binary variable if the child picked up the lost pen and returned it to the assessor, or pointed to the lost pen, or verbally indicated the pen's whereabouts to the assessor. This assessment, based on a task reported by Buttelmann et al. (2009), was used in a previous trial of book-sharing and found to show the effects of the intervention (Murray et al., 2016). In addition, the child's main caregiver completed the prosocial scale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), a measure that has previously been used successfully in South Africa (Cluver, Gardner, & Operario, 2007).

Child aggression. The child's main caregiver completed the aggression subscale of the Child Behavior Checklist (CBCL) for ages 18 months–5 years (Achenbach, 1992). This 19-item questionnaire provides an assessment of various types of aggressive and deviant child behavior. This measure, which has been used successfully in several South African studies (Cluver & Gardner, 2007; Nöthling, Martin, Laughton, Cotton, & Seedat, 2013; Rochat et al., 2016), was administered at all three assessments.

Direct measures of child defiance/noncompliance were also obtained from coded video data of three caregiver–child interaction tasks: a prohibition task ("Don't touch"), a compliance task (Crockenberg & Litman, 1990; Kochanska & Aksan, 1995; Pereira, Negrão, Soares, & Mesman, 2014), and a frustration task ("Barrier" task). The 'Don't touch' prohibition task is one where caregivers are told not to allow their children to touch attractive toys in close proximity to the child for a period of two minutes. The 'Clean up' compliance task is where the caregiver is asked to get their child to clean up a set of toys with which they have been

playing. The 'Barrier' frustration task is one where a toy is removed from a child and placed behind a see-through perspex barrier, such that the toy is in sight of the child but not accessible to them. The first two tasks have been used to assess child defiance in several studies in HICs (Kochanska & Aksan, 1995; Pereira et al., 2014). Since they have, to our knowledge, not been used in LMIC contexts, baseline videos were examined and culturally sensitive modifications were made to existing coding schemes (Cooper, 2016). As the distributions were skewed toward zero, binary variables were created for "defiant" and "nondefiant" behavior based on any instance of a rating of "4" or "5" on the 5-point scale (i.e., frequent and constant whining, temper tantrum). The Barrier task has also been widely used in studies conducted in HICs (Goldsmith & Rothbart, 1993), as well as in previous work in South Africa (Bozicevica et al., 2016), to provide a measure of negative intensity (5-point scale of negative emotion), and constructive (attempts to obtain toy and self-distraction) versus dysregulative (tantrums and venting) emotion regulation strategy (count variables). These assessments were made at all three time points.

Secondary Outcome Measures

Caregiver sensitivity and reciprocity

Caregiver sensitivity, reciprocity, and facilitation were assessed by direct observation of the caregiver and child during book-sharing and non-book-sharing contexts. For the book-sharing interaction caregivers were sat with their child at the same side of a table and given a picture book and asked to share the book with the child. For the toy play interaction, which followed the 'Don't touch' task, caregivers were asked to play with their child with the set of toys provided. Caregiver–child interactions were videotaped for up to 15 minutes and independently coded using a reliable system of global rating scales ranging from 1 to 5 (Murray, Stanley, Hooper, King, & Fiori-Cowley, 1996). These variables were shown in a previous trial to improve with book-sharing training and to mediate the effects of the intervention on child cognitive development (Murray et al., 2016; Vally et al., 2015). All these assessments were made at all three assessment points.

Caregiver discipline

Caregiver discipline was assessed using the Discipline and Violence self-report questionnaire (Lansford & Deater-Deckard, 2012). This questionnaire comprises three subscales of discipline practice: non-violent, physically violent, and psychologically violent discipline. This questionnaire was administered at all three assessment points. Caregiver disciplining strategies were also assessed by direct observation of videos of interactions during the prohibition and compliance tasks. Caregiver behavior was coded using measures of harsh/coercive

discipline (physical and verbal), and supportive guidance (physical and verbal) during the "Don't Touch" prohibition task and the "Clean up" compliance tasks. These assessments of caregiver discipline have been widely used in the assessment of parenting in several studies in HICs (Crockenberg & Litman, 1990; Kochanska & Aksan, 1995). Since, to our knowledge, they have not been used in an LMIC context, baseline videos were examined and culturally sensitive modifications were made to existing coding schemes (Cooper, 2016; Kochanska & Aksan, 1995). Many of the variables coded for the "Don't Touch" prohibition and "Clean up" compliance tasks, were skewed toward zero, and in such cases, binary variables were created.

Child social understanding

Pre-theory of mind (ToM) was assessed using a set of six tasks adapted from tasks developed by Buttleman, Carpenter & Tomasello (2009), Repacholi & Gopnik (1997) and a scale developed by Wellman and Liu (Wellman & Liu, 2004) that has been used extensively across a range of countries and contexts (LaBounty et al., 2008; Wellman, 2002; Wellman, Fang, Liu, Zhu, & Liu, 2006; Wellman & Liu, 2004). The tasks gradually become more complex, beginning with tasks assessing perspective taking, moving to an understanding of diverse desires, and finally to tasks that require an understanding of diverse beliefs. The three tasks that assessed diverse beliefs were only administered at follow-up. Two theoretically informed dimensions were created: "Pre-ToM" comprising a perspective-taking task and two diverse desires tasks; and "ToM Classic," comprising three diverse beliefs tasks (only administered at follow-up). Both dimensions ranged from 0 to 3.

Exploratory Outcomes

Mental state talk

Caregiver mental state talk was assessed by making transcripts from video recordings of interactions during a narrative cartoon-explanation task (Taumoepeau & Ruffman, 2006). We showed the caregiver two sets of six cartoon pictures, depicting a sequence in which a cartoon character is unaware of another character who is attempting to perform a malevolent act (e.g., a cat attempting to raid a bird's nest). The caregiver was then asked to explain to their child what was happening in the cartoon and this was filmed for up to five minutes. Mental state talk was coded based on a system derived from Ruffman and colleagues (Ruffman et al., 2006; Taumoepeau & Ruffman, 2006, 2008). The main categories included references to emotions (e.g., happy, scared, angry), to desires (e.g., want, like), to cognitive states (e.g., know, think), and to perspective taking (e.g., look, see, watch). The extent to which caregivers provided causal explanations was also coded, including

both explicit causal reference terms (e.g., "because") and implied causal terms (e.g., "he's running—the cat is chasing him"). In order to provide a richer account of the caregiver narrative, attention-orienting statements, questions, and simple descriptions were also coded, as has been done in some previous studies (Dunn, Brown, & Beardsall, 1991; Ruffman et al., 2002). All the dimensions of mental state talk were highly correlated with one another and a composite measure, "complex cognitive talk," was therefore created (including causal talk). This assessment was made at baseline and immediately post-intervention.

Coding and Reliability

Videos of caregiver–child interactions and child attention and frustration tasks were scored by blind and independent trained coders. For caregiver–child interaction variables, reliability was established from a randomly selected 20% of baseline videos. Intraclass correlation coefficients ranged between .87 and .96 for interaction variables (e.g., sensitivity), and .93 to .99 for child variables (e.g., attention).

Sample Size and Power Calculation

The sample consisted of 140 caregiver–child dyads (70 in each arm). This sample had sufficient power to detect projected differences in the primary cognitive outcomes. All power calculations were run for 80% power and $\alpha = .05$. The power calculations for language and attention outcomes were based on previous research that aimed to improve child language and focal attention through a book-sharing intervention in South Africa, with two groups of 44 calculated as sufficient based on an effect size of 0.5 (Vally et al., 2015). For the behavioral outcomes of aggression and prosocial behavior, the power estimates were based on normative data from a study in Khayelitsha on a sample of 302 children. For both the prosocial and the aggression variables, two groups of 64 were calculated as sufficient to detect the difference (two-tailed), based on an effect size of 0.50. Two groups of 70 were therefore recruited, which allowed for 10% sample attrition.

Randomization

Eligible participants who consented to taking part in the study were randomized on a 1:1 schedule to the index group and a waitlist control condition (the latter received the intervention once the three waves of assessment had been completed). A minimization process was used, using the MINIM software (Evans, Royston, & Day, 2004), to ensure a similar distribution of participant characteristics between two study groups in terms of child age (younger 21–25 months, or older 25–28 months) and sex. Randomization took place when participants consented to being part of the study, before completion of baseline assessments and was done by the trial manager (ND).

Data Analysis

Statistical analyses were performed independently on the basis of intention to treat. Baseline data are presented, by group, for a number of sociodemographic variables, such as gender, age, and caregiver variables such as income, employment, and depression.

Comparisons of groups at post-intervention and follow-up were first conducted by using t tests and chi-squared tests for unadjusted analyses. Cohen's d, reflecting mean differences between groups in standard deviation units was used as a measure of effect size. Unadjusted effect sizes and p-values are presented in outcome tables. Adjusted analyses were conducted by using analysis of covariance (ANCOVA) to assess intervention effects at post-intervention and follow-up, after controlling for baseline scores as covariates. ANCOVA adjusted partial eta squared values and p values are presented in outcomes tables. In cases where binary outcome variables were used, logistic regressions were run to control for baseline scores.

Results

The CONSORT diagram (Figure 1) shows the participant flow. Of 191 dyads assessed for eligibility, consent was obtained from 140 who met all inclusion criteria and were then randomized to intervention or wait-list control. Of these, 130 (93%) completed post-intervention assessments, and 123 (88%) completed 6-month post-intervention follow-up assessments. Of the 70 dyads allocated to the intervention group, 63 completed the full intervention, while three received some but not all sessions, and four caregivers did not receive any of the intervention. The mean session attendance was 7.32 ($sd = 1.81$). Sociodemographic characteristics of the sample are summarized in Table 2.

Primary Outcomes

Table 3 shows results for child language outcomes, with intervention effects evident at post-intervention for CDI expressive ($d = 0.37$, CI [0.02 to 0.71]) and receptive ($d = 0.50$, CI [0.15 to 0.84]) language. However, when baseline scores were adjusted for, the effect for CDI expressive was no
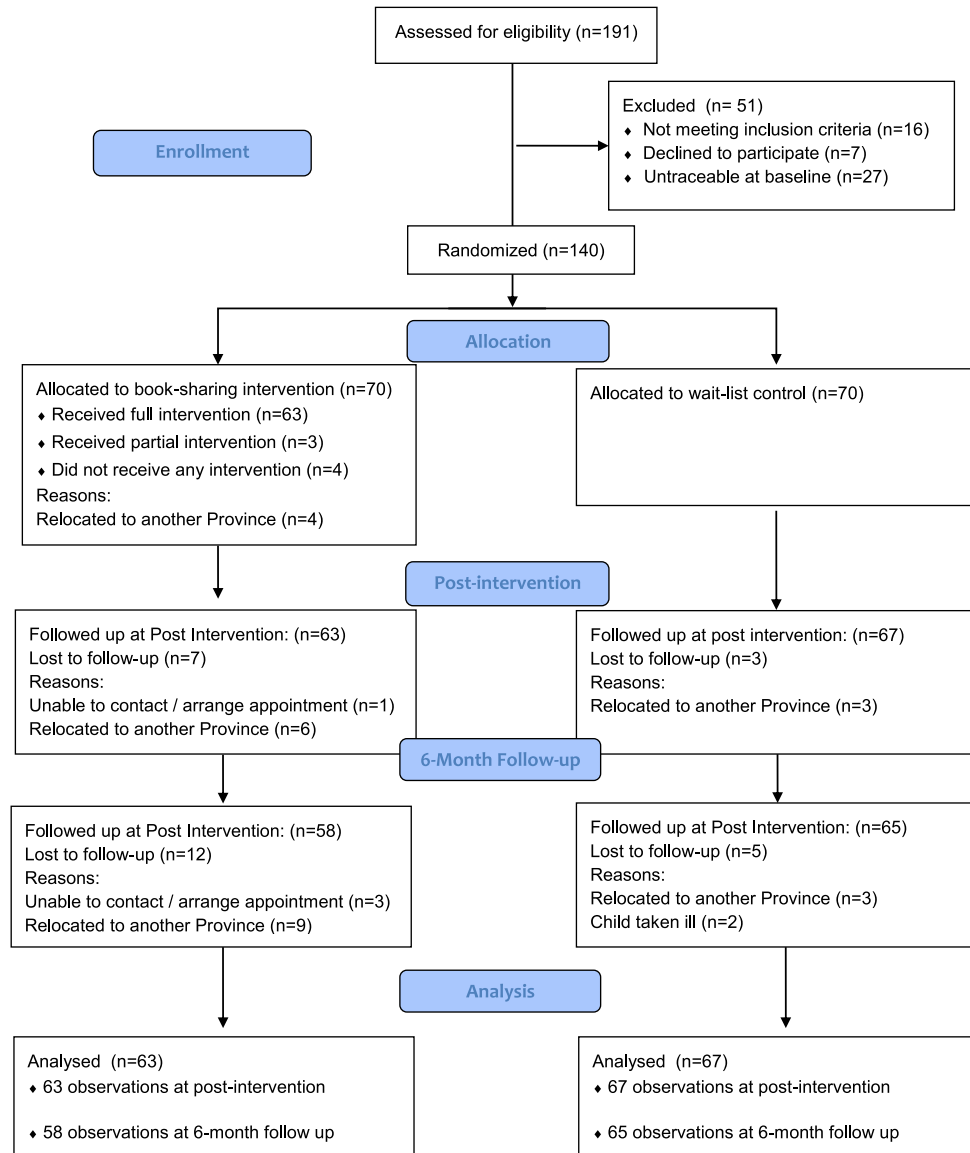
FIGURE 1 Consolidated Standards of Reporting Trials diagram [Color figure can be viewed at wileyonlinelibrary.com]

longer significant at the 5% level ($p = .10$). At 6-month follow-up, a difference was found between groups on the Bayley expressive subscale ($d = 0.49$, CI [0.13 to 0.86]), but not the receptive subscale ($p = .21$), a pattern that remained when baseline language scores were adjusted for. Children in the intervention group evidenced more utterances in free play compared to controls post-intervention ($d = 0.35$, CI [0.01 to 0.70]), but not at 6-month follow-up. In Table 3, we also present the child attention outcomes. There was no difference between groups on the ECVT at post-intervention ($p = .51$), however, a significant benefit of the intervention was observed at 6-month follow-up ($d = 0.39$, CI [0.02 to 0.76]; $p < .05$). In contrast, for the observed attention measure (average quality) during free-play there was a difference between groups at

post-intervention ($d = 0.44$, CI [0.09 to 0.79]; $p < .01$), but not at follow-up ($p = .61$).

In Table 4 we present observed and caregiver reported child behavior outcomes. No between-group differences were found for observed child defiance in the "Don't Touch" or "Clean Up," or for intensity in the "Barrier" frustration task at either time point. No group differences were found for observed mature strategies in the barrier frustration task at post-intervention or 6-month follow-up. For dysregulative strategies in the barrier task, no group differences were present at post-intervention; however, at 6-month follow-up there was a significant effect ($d = -0.42$, CI [-0.78 to -0.07]), with fewer dysregulative strategies used by children in the intervention group. No group differences were seen for the caregiver-reported CBCL aggression subscale, the SDQ prosocial subscale, or the pen "help" task at either assessment point.

TABLE 2 Baseline sample characteristics

Variable	Range	Full sample, n = 140	Control, n = 70	Index, n = 70
Caregiver age (years)	18–63	31.82 (8.08)	32.87 (9.09)	30.79 (6.83)
Child age (months)	21–28	24.3 (1.54)	24.3 (1.54)	24.3 (1.56)
Household food insecurity scale	0–25	9.96 (5.07)	10.07 (4.88)	9.86 (5.29)
Caregiver depression (PHQ-9)	0–24	6.21 (4.73)	6.00 (4.64)	6.43 (4.84)
Child gender				
Female		65 (46%)	33 (47%)	32 (46%)
Male		75 (54%)	37 (53%)	38 (54%)
Caregiver type				
Mothers		123 (88%)	61 (87%)	62 (89%)
Other caregivers		17 (12%)	9 (13%)	8 (11%)
Caregiver marital status				
Single		47 (34%)	23 (33%)	25 (36%)
Married/living with partner		92 (66%)	47 (67%)	45 (64%)
Caregiver education				
Less than Grade 10		26 (19%)	17 (24%)	9 (13%)
Grade 10 or 11		77 (55%)	37 (53%)	40 (57%)
Matric		33 (23%)	14 (20%)	19 (27%)
Post matric		4 (3%)	2 (3%)	2 (3%)
Monthly household income				
0–49		1 (1%)	0 (0%)	1 (1%)
50–100		6 (5%)	4 (6%)	2 (3%)
101–200		19 (15%)	6 (10%)	13 (20%)
201–500		74 (57%)	38 (60%)	36 (55%)
500–800		20 (15%)	11 (17%)	9 (14%)
800→		9 (7%)	4 (7%)	5 (7%)
Housing				
Shack		106 (76%)	52 (74%)	54 (77%)
Brick house		34 (24%)	18 (26%)	16 (23%)
Employment				
Unemployed		82 (59%)	45 (64%)	37 (53%)
Part time/self employed		33 (23%)	18 (26%)	15 (21%)
Full time		25 (18%)	7 (10%)	18 (26%)

Note: Data are mean (*SD*), or *n* (%). PHQ-9 = Patient Health Questionnaire. Household income figures in US dollar.

Secondary Outcomes

In Table 5, we present the child theory of mind outcomes. It is apparent that, while all comparisons favored the intervention group, in no case was the difference statistically significant.

We present the observed parenting outcomes in Table 6. Significant group differences were found for observed book-sharing sensitivity (*d* = 1.01, CI [0.67 to 1.40]) and reciprocity (*d* = 0.57, CI [0.22 to 0.92]) at post-intervention. Significant group differences were also found for observed sensitivity in free play at post-intervention (*d* = 0.21, CI [−0.14 to 0.56], adj *p* < .01) and 6-month follow-up (*d* = 0.39, CI [0.03 to 0.75]). For observed reciprocity in free play, while there was no group difference at post-intervention

(adj *p* = .15), there was a difference at 6-month follow-up (*d* = 0.37, CI [0.02 to 0.73]). A modest, but significant group difference was found for facilitation in free play at post-intervention (*d* = 0.22, CI [−0.13 to 0.57], adj *p* = .048), but this was only partially evident at 6-month follow-up (*d* = 0.27, CI [−0.08 to 0.63], adj *p* = .06). A substantial group difference was found at post-intervention for observed complex cognitive talk during the narrative task (*d* = 0.65, CI [0.29 to 1.01]). For verbal guidance, there was a significant effect in the "Clean Up" task (*d* = 0.41, CI [0.05 to 0.77], *p* = .02), but not in the "Don't Touch" task (adj *p* = .11). The reverse was true for physical guidance: at post-intervention, there was a significant positive effect in the "Don't Touch" task (*d* = 0.36, CI [0.01 to 0.71], *p* = .04) but not in the "Clean Up" task (adj *p* = .48). An effect was

TABLE 3 Child language and attention outcomes at post-intervention and 6-month follow up

Variable	Time-point	Intervention, M (SD)	Control, M (SD)	p-value[a]	Cohen's D (95 % CI)[a]	η_p^{2}[b]	p-value (adjusted)[b]
CDI (Exp)	Baseline	51.23 (15.07)	47.70 (15.15)				
	Post	62.69 (12.75)	58.06 (13.04)	.04[*]	0.37 (0.02, 0.71)	.021	.10
CDI (Rec)	Baseline	60.37 (13.49)	59.76 (13.89)				
	Post	71.70 (9.18)	66.78 (10.60)	<.01[**]	0.50 (0.15, 0.84)	.075	<.01[**]
Bayley (Exp)[c]	Follow up	38.36 (3.53)	36.46 (4.09)	<.01[**]	0.49 (0.13, 0.86)	.059	<.01[**]
Bayley (Rec)[d]	Follow up	31.82 (3.13)	31.09 (3.28)	.21	0.23 (−0.13, 0.59)	.011	.28
Utterances (Exp)	Baseline	15.59 (15.91)	16.55 (14.82)				
	Post	22.66 (17.12)	17.12 (13.27)	.05[*]	0.35 (0.01, 0.70)	.041	.02[*]
	Follow up	14.03 (13.71)	12.67 (15.07)	.67	0.08 (−0.28, 0.43)	.002	.59
ECVT	Baseline	0.64 (0.18)	0.63 (0.18)				
	Post	0.70 (0.14)	0.68 (0.19)	.51	0.12 (−0.23, 0.47)	.003	.53
	Follow up	0.64 (0.18)	0.57 (0.18)	.04[*]	0.39 (0.02, 0.76)	.040	.05[*]
Free-play	Baseline	4.38 (0.94)	4.52 (0.64)				
	Post	4.92 (0.28)	4.76 (0.43)	.01[*]	0.44 (0.09, 0.79)	.054	<.01[*]
	Follow up	4.72 (0.70)	4.78 (0.60)	.61	−0.09 (−0.44, 0.26)	.002	.64

Note: ECVT = Early Childhood Vigilance Task.

[a]Based on *t* tests with no adjustments.

[b]ANCOVA adjusted for baseline score.

[c]Controlling for baseline utterances.

[d]Controlling for CDI receptive.

*$p < .05$.; **$p < .01$.

found for harsh verbal parenting in the "Don't Touch" context ($d = -0.43$, CI [−0.79 to −0.08], $p = .02$), favoring the intervention group. Due to the low frequency (<5%) of caregivers being rated as "physically harsh" in the "Don't Touch" and "Clean Up," and verbally harsh in the "Clean up" task, we were unable to analyze these variables.

In Table 6, we also present caregiver self-report disciplining outcomes from the discipline and violence self-report questionnaire. Notably, all effects, although nonsignificant, favored the intervention group. For the non-violent subscale, which represents only those caregivers who use non-violent strategies *and* report not using any harsh/violent strategies, there was a trend for an intervention effect at post-intervention ($d = 0.31$, CI [−0.03 to 0.66], $p = .07$), but not at 6-month follow-up (adj $p = .78$). No between group differences were found for the physical violence subscale. For the "psychologically violent" subscale, there was a trend toward a benefit of the intervention, both at post-intervention ($d = -0.19$, CI [−0.16 to 0.53], adj $p = .07$), and at 6-month follow-up ($d = -0.19$, CI [−0.16 to 0.55], adj $p = .09$).

Discussion

The current study showed that a caregiver-directed group-based dialogic book-sharing intervention delivered by non-professionals had meaningful impacts both on positive caregiver–child interactions, such as caregiver

sensitivity, caregiver–child reciprocity, and complex cognitive talk, as well as on child language and cognitive outcomes. There was also some reduction in certain aspects of harsh parenting. However, no benefit was apparent for child behavior problems, prosocial behavior, or pre-theory of mind.

For child language, at post-intervention, intervention effects were found on the caregiver-reported CDI expressive outcome and observed child utterances during free-play. At follow-up, an effect was found for the expressive subscale of the Bayley. The particular benefit to expressive language is in line with the findings of a recent meta-analysis (Dowdall et al., 2019).

For child attention, an intervention effect on child performance on the ECVT was observed at follow-up, but not immediately post-intervention. This may suggest that with this child age group several months of book-sharing, with the shared focal attention that accompanies it, are needed for benefits to child attention to be realized. While the benefit we showed to child attention at follow-up replicates a previous book-sharing trial in South Africa (Vally et al., 2015), these remain the only two book-sharing studies to date to have measured child attention as an outcome. It is important to note that baseline and post-intervention ECVT assessments were completed with children sitting on the caregiver's lap, whereas for 6-month follow-up assessments children were of the age where they were keen to sit alone with their mother behind then in the corner of the room. This difference in administration is possibly the reason for

TABLE 4 child behavior outcomes

Variable	Time-point	Intervention, M (SD) or N (%)	Control, M (SD) or N (%)	p-value[a]	Cohen's D (95% CI)[a]	η_p^{2b}	p-value (adjusted)[b]
Don't touch (defiance) % Defiant	Baseline	17 (25%)	20 (29%)				
	Post	22 (36%)	17 (26%)	.23	0.21 (−0.14, 0.57)		.15
	Follow up	7 (12%)	7 (11%)	.82	0.04 (−0.31, 0.39)		.71
Clean up (Defiance) % Defiant	Baseline	16 (23%)	19 (27%)				
	Post	7 (12%)	6 (9%)	.66	0.08 (−0.26, 0.45)		.64
	Follow up	5 (9%)	6 (9%)	.90	0.02 (−0.33, 0.37)		.98
Barrier (Intensity) % High intensity	Baseline	12 (18%)	9 (14%)				
	Post	7 (11%)	3 (5%)	.17	0.24 (−0.11, 0.59)		.22
	Follow up	3 (5%)	1 (2%)	.26	0.20 (−0.15, 0.56)		.32
Barrier (Mature strat)	Baseline	52.48 (16.18)	53.76 (18.15)				
	Post	59.47 (19.61)	54.63 (18.15)	.14	0.26 (−0.09, 0.60)	.012	.24
	Follow up	53.79 (17.77)	50.10 (15.45)	.22	0.22 (−0.13, 0.58)	.021	.14
Barrier (Dysreg strat)	Baseline	3.52 (5.56)	4.48 (7.10)				
	Post	3.51 (7.95)	2.70 (5.22)	.50	0.12 (−0.23, 0.47)	.004	.50
	Follow up	1.39 (4.18)	4.84 (10.43)	.02*	−0.42 (−0.78, −0.07)	.035	.04*
CBCL (aggression)	Baseline	17.44 (7.65)	16.00 (7.30)				
	Post	15.01 (7.78)	14.74 (8.21)	.84	0.03 (−0.31, 0.37)	.001	.73
	Follow up	12.27 (7.57)	12.30 (7.56)	.98	0.004 (−0.34, 0.36)	.002	.63
SDQ (pro-social)	Baseline	7.24 (2.50)	6.97 (2.56)				
	Post	7.73 (2.45)	7.13 (2.55)	.17	0.24 (−0.11, 0.58)	.012	.21
	Follow up	8.09 (2.35)	8.18 (1.84)	.80	−0.04 (−0.40, 0.31)	.001	.70
Pen task (pro-social) % Pass	Baseline	19 (27%)	23 (33%)				
	Post	20 (36)%	17 (28%)	.39	0.20 (−0.23, 0.64)		.41
	Follow up	27 (49%)	25 (42%)	.42	0.16 (−0.25, 0.56)		.44

Note: CBCL = Child Behavior Checklist (aggression subscale); Dysreg strat = Dysregulative Strategies; Mature strat = Mature Strategies; SDQ = Strengths and Difficulties Questionnaire (pro-social subscale).
[a]Based on *t* tests with no adjustments.
[b]ANCOVA adjusted for baseline score
*$p < .05$.

TABLE 5 Child Theory of Mind (ToM) outcomes

Variable	Time-point	Intervention, M (SD)	Control, M (SD)	p-value[a]	Cohen's D (95% CI)[a]	η_p^{2b}	p-value (adjusted)[b]
Pre-ToM[c]	Baseline	0.58 (0.83)	0.91 (0.95)				
	Post	1.43 (1.01)	1.22 (0.88)	.42	0.21 (−0.30, 0.71)	.022	.33
	Follow up	1.35 (0.93)	1.13 (0.85)	.23	0.25 (−0.16, 0.66)	.012	.43
ToM classic[d]	Follow up	1.24 (0.93)	1.07 (0.88)	.42	0.19 (−0.27, 0.64)	—	—

[a]Based on *t* tests with no adjustments.
[b]ANCOVA adjusted for baseline score.
[c]Perspectives and diverse desires tasks.
[d]Three diverse belief tasks.

scores decreasing in both groups from post-intervention to 6-month follow-up (with children sometimes turning away from the screen to reference their mother behind them), rather than the attention of the children deteriorating. Given, the importance of attention for later development and school achievement (Choudhury & Gorman, 2000), the finding of a benefit of book-sharing at the follow-up

assessment should provide impetus for researchers to include measures of attention in future book-sharing intervention research.

There were few group differences for observed and caregiver-reported child behavior outcomes; and none for child theory of mind. While it is possible that targeting risk factors such as child attention and sensitive

TABLE 6 Parenting outcomes

Variable	Time-point	Intervention, M (SD) or N (%)	Control, M (SD) or N (%)	p-value[a]	Cohen's D (95% CI)[a]	η_p^{2b}	p-value (adjusted)[b]
Sensitivity (book-sharing)	Baseline	2.53 (0.63)	2.62 (0.55)				
	Post	3.48 (0.81)	2.74 (0.61)	<.001**	1.03 (0.67, 1.40)	.262	<.001**
Reciprocity (book-sharing)	Baseline	2.64 (0.80)	2.75 (0.70)				
	Post	3.46 (0.80)	3.01 (0.81)	.002**	0.57 (0.22, 0.92)	.098	<.001**
Sensitivity (play)	Baseline	2.48 (1.08)	2.89 (1.14)				
	Post	2.62 (1.06)	2.41 (0.94)	.23	0.21 (−0.14, 0.56)	.06	.006**
	Follow up	2.97 (0.90)	2.60 (0.97)	.03*	0.39 (0.03, 0.75)	.078	.002**
Reciprocity (play)	Baseline	2.83 (1.24)	3.11 (1.14)				
	Post	3.07 (1.12)	2.86 (1.19)	.33	0.17 (−0.17, 0.52)	.017	.15
	Follow up	3.50 (1.14)	3.06 (1.20)	.04*	0.37 (0.02, 0.73)	.053	.01**
Facilitations (play)	Baseline	3.70 (2.40)	4.50 (2.54)				
	Post	3.31 (1.76)	2.92 (1.70)	.20	0.22 (−0.13, 0.57)	.032	.048*
	Follow up	3.12 (1.73)	2.67 (1.55)	.13	0.27 (−0.08, 0.63)	.028	.06+
Complex cognitive talk[c]	Baseline	11.18 (8.77)	10.30 (8.04)				
	Post	18.22 (11.84)	11.45 (9.46)	<.001**	0.63 (0.28, 0.99)	.110	<.001*
Verbal guidance (don't touch task)	Baseline	13 (19%)	24 (35%)				
	Post	18 (30%)	14 (22%)	.30	0.18 (−0.17, 0.53)		.11
Verbal guidance (clean up task)	Baseline	32 (46%)	28 (41%)				
	Post	44 (73%)	35 (53%)	.02*	0.41 (0.05, 0.77)		.03*
Physical guidance (don't touch task)	Baseline	10 (15%)	14 (20%)				
	Post	20 (32%)	11 (17%)	.04*	0.36 (0.01, 0.71)		.02*
Physical guidance (clean up task)	Baseline	33 (47%)	41 (58%)				
	Post	20 (33%)	26 (40%)	.40	−0.15 (−0.49, 0.20)		.48
Harsh verbal (don't touch task)	Baseline	8 (12%)	20 (29%)				
	Post	6 (10%)	17 (26%)	.02*	−0.43 (−0.79, −0.08)		.07+
DVQ (non-violent)[d]	Baseline	17 (24%)	13 (19%)				
	Post	23 (37%)	15 (22%)	.07+	0.31 (−0.03, 0.66)		.08+
	Follow up	11 (19%)	11 (17%)	.76	0.05 (−0.30, 0.41)		.78
DVQ (physical)[e]	Baseline	43 (61%)	46 (66%)				
	Post	32 (50%)	41 (61%)	.23	−0.21 (−0.13, 0.56)		.32
	Follow up	35 (60%)	40 (62%)	.89	−0.08 (−0.27, 0.43)		.87
DVQ (psychological)[f]	Baseline	32 (46%)	20 (29%)				
	Post	18 (28%)	25 (37%)	.29	−0.19 (−0.16, 0.53)		.07+
	Follow up	23 (39%)	32 (49%)	.28	−0.19 (−0.16, 0.55)		.09+

Note: DVQ = Discipline and Violence Questionnaire.

[a]Based on *t* tests with no adjustments.

[b]ANCOVA adjusted for baseline score; Questionnaire.

[c]Based on cognitions, desires, emotions, perspectives, and causal talk.

[d]Carers used at least one non-violent strategy and no violent strategies.

[e]Carers used at least one harsh physical strategy.

[f]Carers used at least one harsh psychological strategy.

+$p < .1$.

*$p < .05$.; **$p < .01$.

parenting may not be sufficient to improve child behavior outcomes and that more direct support for caregiver management of difficult child behavior may be required, as suggested by Chacko, Fabiano, Doctoroff, and Fortson (2018), a longer term follow-up is required for a definitive rejection of the null hypothesis. Similarly, in relation to the pre-theory of mind outcome, given that the intervention did lead to improvement

in caregiver complex cognitive talk (e.g., mental state talk), itself known to be associated with child theory of mind (Devine & Hughes, 2018), a sleeper effect of the current intervention on child theory of mind remains a possibility.

In terms of caregiver behaviors, substantial group differences favoring the intervention group were found for observed caregiver sensitivity and reciprocity during book-sharing and, importantly, also during free play. Intervention group caregivers also demonstrated more facilitatory behavior with their children during free-play. Further, intervention group caregivers displayed more verbal guidance and physical guidance in the compliance and prohibition tasks, respectively. Also, in the prohibition task, intervention group caregivers were significantly less harsh in their verbal interactions with their children. Finally, in terms of self-reported caregiver disciplining behavior, there was a suggestion of a possible benefit in terms of the non-violent subscale and the psychological subscale, but group differences did not reach conventional statistical significance.

Effects on caregiver book-sharing competence were broadly in line with the findings of a recent meta-analysis (Dowdall et al., 2019) which estimated the pooled effect of book-sharing interventions on measures of caregiver book-sharing competence, and, consistent with Cooper et al. (2014), extend the conclusions to non-book-sharing contexts such as sensitivity and reciprocity in play.

Findings were mixed with respect to harsh parenting. Significant reductions were found for observed harsh verbal interactions, and there was a suggestion of an impact on non-violent parenting. No effects were found for observed harsh physical disciplining practices but, as noted above, these were rarely observed in either group at any of the assessments and the null hypothesis was therefore, essentially, untestable. Although it is possible that intervention content which focuses only on promoting sensitive and positive parenting through book-sharing is not sufficient to effect change in negative or harsh parenting, it is notable that there were encouraging positive trends across all measurable dimensions of harsh parenting. This suggests that the intervention focus on positive parenting may have had a knock-on effect with respect to harsh parenting. Having said this, it may well be the case that, in order to achieve substantial reductions in harsh parenting, it may be necessary to target harsh physical discipline directly through the direct promotion of positive discipline, as was done by Chacko et al. (2018). Furthermore, given the pervasiveness of harsh parenting and violence in South Africa (Breen, Daniels, & Tomlinson, 2015), it remains possible that a broader structural shift around physical punishment may be required.

The current study has a number of strengths, including high rates of retention, a follow-up, evaluation of a number of domains of parenting and child functioning using multiple and independent methods of evaluation, and an emphasis on observational data rather than caregiver reported outcome data. Furthermore, the intervention was delivered by non-professionals, a necessary condition given the local resource limitations for these kinds of programs to be delivered at scale in LMICs.

The study also had certain limitations. First, although systematic assessment measures were used, norms (i.e., standard scores) were not available for any of them. As such, we were limited in our ability to interpret the clinical significance of the findings. Second, while in this study, we did conduct a 6-month post-intervention follow-up assessment, which is longer than the follow-up time for the great majority of book-sharing RCTs (Dowdall et al., 2019), we still remain ignorant of the long-term impact of book-sharing interventions. While the sample size was adequate for the primary analyses, for some of the analyses of secondary outcomes, the study may have been underpowered. Further, the caregiver sample was comprised almost exclusively of mothers or other female caregivers. Only one book-sharing trial has focused on the impact on fathers (Chacko et al., 2018). This is clearly a major gap in the book-sharing literature, and, indeed, the early parenting literature in LMIC in general. Finally, the present study did not include a measure of book-sharing frequency in the home, which limits our ability to discuss adherence to the intervention.

Future Directions for Research

While the findings of this study are encouraging, a number of questions remain to be addressed. One issue concerns the question of whether it would be possible to bring about changes in child behavior (aggression, prosocial), and in physically harsh parenting, by more directly embedding traditional parenting programs into the book-sharing intervention, as was successfully done by Chacko et al. (2018) in the United States with a population of low-income fathers. Second, this field of work could benefit from a follow-up at school-entry of children and caregivers who had participated in a book-sharing intervention in early childhood. This would reveal to researchers and policy makers the potential long-term benefits of these interventions, and answer important questions regarding the durability of effects on parenting and child outcomes. Third, examining changes in parenting behaviors as potential mediators of intervention effects on child outcomes could provide valuable insights into how we develop and refine such intervention approaches. Fourth, evaluation of this kind of program through an effectiveness trial would help to answer important policy-related questions regarding the sustainability and scalability of book-sharing interventions. Book-sharing work in the United States has demonstrated the potential for scaling such interventions through integration with healthcare systems. Compared to many LMICs, South Africa has well established systems for reaching mothers and children through antenatal and postnatal care. Designing and

evaluating a book-sharing programme for this context could help pave the way for structural integration of these kinds of interventions into healthcare systems. Finally, the book-sharing literature could benefit from parallel qualitative studies with caregivers to help understand issues of relevance to implementation, such as barriers and facilitators to uptake, adherence during training, and continuation with book-sharing beyond the training period.

Conclusions

The BEBS trial evaluated the impact of an early book-sharing intervention on a range of parenting and child outcomes. This simple intervention was shown to benefit child language and attention and to improve sensitive parenting in both book-sharing and free play, to improve caregiver complex cognitive talk, and to enhance caregiver–child reciprocity. While the intervention did reduce harsh verbal parenting, its impact on observed harsh physical parenting could not be ascertained. Certain aspects of child problem behavior, which were not improved by the intervention, may require more direct targeting of aspects of parenting, such as positive discipline.

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