

Abstract

Parenting programs in high-income countries have been shown to reduce the risk of child maltreatment. However, there is limited evidence of their effectiveness in low- and middle-income countries. The objective of this study was to examine the initial effects of a parenting program in reducing the risk of child maltreatment in Cape Town, South Africa. Low-income parents ($N = 68$) with children aged three to eight years were randomly allocated to either a group-based parenting program or a wait-list control group. Assessments were taken at baseline and at immediate post-test after the intervention was delivered. Primary outcomes were parent-report and observational assessments of harsh parenting, positive parenting, and child behavior problems. Secondary outcomes were parent-report assessments of parental depression, parenting stress, and social support. Results indicated moderate treatment effects for increased frequency of parent-report of positive parenting and observational assessments of child-led play. There were also potentially clinically relevant though non-significant treatment effects for reduced frequency of reported child behaviour problems, increased frequency of reported perceived social support, and reduced frequency of observed negative parenting. Observational assessments also found moderate treatment effects for less frequent positive child behavior and clinically relevant though non-significant effects of more frequent negative child behaviour. Results suggest preliminary intervention effectiveness in reducing the risk of child maltreatment by improving positive parenting behavior in highly vulnerable families in low-resource communities. Further development is required to strengthen program components regarding child behavior management. Future research would benefit from a larger trial with sufficient power to determine program effectiveness.

Keywords: Child Maltreatment, Parenting Programs, Intervention Research, South Africa

Introduction

Child maltreatment during early childhood has long been associated with increased risk of developing negative outcomes in adolescence and adulthood. Child maltreatment – defined as physical, emotional, and sexual abuse and neglect (World Health Organization, March 1999) – is linked to increased child behavior problems (Kim, Cicchetti, Rogosch, & Manly, 2009), which predict poor educational performance, juvenile delinquency, and criminal activity (Patterson et al., 1989). Victims of child maltreatment are also more likely to develop depressive disorders, and almost twice as likely to develop substance abuse problems than non-affected children (Norman et al., 2012). Child maltreatment is also a major risk factor for later intimate partner violence, both as victim and as perpetrator (Dunkle et al., 2004). Moreover, harsh and abusive parenting has substantial intergenerational effects; parents who experienced maltreatment as children are also more likely to maltreat their own children (Pears & Capaldi, 2001). On the other hand, positive parenting behavior – such as parental warmth and consistent limit-setting – may reduce the likelihood of child maltreatment, especially in the context of cumulative risk (Trentacosta et al., 2008).

While child maltreatment is a global concern, children living in South Africa often experience particularly high levels of maltreatment with lifetime prevalence rates of 55% for physical abuse and 36% for emotional abuse (Meinck et al., 2016). Moreover, elevated societal risks – such as high levels of poverty, HIV/AIDS, drug and alcohol abuse, and community and interpersonal violence – frequently coincide in South Africa, thus increasing the risk of abuse (Lachman et al., 2002). For example, families affected by HIV/AIDS are also more likely to experience intimate partner violence, and women affected by intimate partner violence are also more likely to become infected with HIV (Jewkes, Dunkle, Nduna, & Shai, 2010). Both groups are at risk for poor mental health (Kuo et al., 2012; Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006), which is associated with neglectful or abusive

parenting (Cohen et al., 2008). Families affected by HIV/AIDS are also more likely to experience socioeconomic challenges (Collins & Leibbrandt, 2007), which decrease the capacity of parents to interact positively with their children (Gershoff et al., 2007). Finally, South African children living in families affected by adverse factors are more likely to develop behavioral difficulties (Moolla, 2012), which are reciprocally linked to increased risk of harsh parenting and potential abuse (Pardini, 2008).

There is encouraging evidence from high-income countries (HICs) of the effectiveness of parenting programs in reducing the risk of child maltreatment (Barlow et al., 2006; Chen & Chan, 2015). Parenting programs delivered during early childhood prior to or at the outset of problem behaviors are particularly important for later risk reduction (Kazdin, 1997). Furthermore, evidence from HICs has shown that group-based parenting programs may be effective for socioeconomically disadvantaged families (Leijten, Raaijmakers, de Castro, & Matthys, 2013; McGilloway et al., 2012). Recent reviews have also identified limited but promising evidence of effectiveness in low- and middle-income countries (LMICs) (Knerr et al., 2013), and the transportability of evidence-based parenting interventions from HICs to LMICs (Gardner et al., 2015). However, while parenting programs have shown some effectiveness in LMICs when delivered to families with infants (Cooper et al., 2009; Cooper et al., 2014), few have been tested in randomized controlled trials with disadvantaged families with older children in sub-Saharan Africa.

This present study aims to contribute to the literature on the effectiveness of parenting programs in reducing the risk of child maltreatment and improving positive parenting in LMICs. It builds on existing research in South Africa that has demonstrated the feasibility of conducting high-quality trials of parenting programmes for families with children up to 18 months of age (Cooper et al., 2009; Vally, Murray, Tomlinson, & Cooper, 2014), as well as from recent studies in Panama and Liberia on parenting programmes for children between the

ages of three and ten ((Mejia, et al., 2015; Puffer et al., 2015). Moreover, while a recent meta-analysis found limited effects of programs aimed at preventing child maltreatment, moderator analyses showed larger effects for programs that provided parent training (Euser, et al., 2015). We utilized a small-scale randomized controlled trial to examine the effect of a parenting program on reducing the risk of child maltreatment in low-income families with children aged three to eight years in Cape Town, South Africa. Feasibility studies are considered essential steps in preparation for larger experimental studies (Lancaster et al., 2004). They allow for close examination of the feasibility of the study design and provide the opportunity to conduct exploratory analyses of intervention outcomes. Small-scale trials also allow researchers to probe for possible harmful effects prior to testing in a larger population. As a result, this study examined the following research questions: (a) what is the feasibility of conducting a randomized controlled trial of a parenting program delivered to families with young children living in low-income communities characterized by high crime, poverty, and HIV/AIDS; and (b) what is the preliminary effectiveness of the program in reducing risks related to child maltreatment for the intervention group in comparison to controls?

Methods

This trial is reported in line with the CONSORT (Consolidated Standards of Reporting Trials) guidelines on randomized controlled trials (Altman et al., 2001).

Setting

The study took place from March to August 2013 in Khayelitsha, a low-income suburb in Cape Town, South Africa. Khayelitsha consists of both informal and formal settlements with a population of approximately 390,000 mainly isiXhosa-speaking people

(Statistics South Africa, 2012).¹ It is characterized by high levels of poverty, intimate partner violence, substance abuse, and HIV-prevalence – all risk factors for potential physical and emotional child abuse (Meinck, 2014).

Participants

Parent-child dyads ($N = 68$) were recruited from two sources: referrals from local community organizations ($n = 47$, 69%) and participants recruited by word-of-mouth from a formative evaluation conducted by the authors in 2012 to inform the development of the tested parenting program ($n = 21$, 31%) (XXXX, 2016). Inclusion criteria required parents to be (a) isiXhosa-speaking adults over the age of 18; (b) identify themselves as a primary guardian of at least one child aged three to eight years; (c) reside in the same household as their children for at least four nights per week, in order to assure adequate time for engagement in parenting skills at home with their children; (d) and be available and willing to participate in weekday program sessions. Primary guardians were any adult caregiver who self-identified as the primary person responsible for a child's wellbeing, including biological parents, relatives, or non-kin foster caregivers, with no restrictions on biological relationship. Although multiple caregivers of a child were invited to attend program sessions, only one parent was interviewed per household.

In addition, we included an inclusion criteria for elevated child behavior problems based on a cut-off of 11 or more problems on the parent-report form of the Eyberg Child Behavior Inventory problem scale (Eyberg & Pincus, 1999). This was particularly important given that children with behavioral difficulties face an increased risk of abuse by caregivers (Lansford et al., 2011). It also increased the likelihood that parents would be motivated to participate in a parenting program that addressed child management issues. Moreover, if

¹ IsiXhosa is an indigenous South African language that is also one of the three official languages of the Western Cape, the province in which Cape Town is located.

there were multiple children between the ages of three to eight with elevated levels of behavior problems in a household, the parent was asked to choose the child whose behavior was the most difficult to manage. Finally, the exclusion criteria included participants or children who exhibited acute mental health problems or evidence of severe abuse.

Sample size calculation

Sample size calculations were exploratory due to the lack of existing studies in South Africa. Preliminary calculations were based on a randomized controlled trial of a parenting program of similar length for families in the United States, the Incredible Years ($N = 54$ parents) (Webster-Stratton, Kolpacoff, & Hollinsworth, 1988). We used a G*Power 3 calculator (Erdfelder, Faul, & Buchner, 1996) with an *a priori* power analysis based on the study's screening tool – the Eyberg Child Behavior Inventory (ECBI) problem scale (Cohen's $d = 0.80$ in the Incredible Years study). Assuming a Type I error of $p < 0.05$ and 80% power, the sample size necessary to detect a significant effect was calculated at 52 participants. Estimating an attrition rate of 15%, the total sample was set at a minimum of 60 participants, which meant that the study was powered to detect a large effect size, but not a small one.

Randomization

An external researcher not directly involved in the study conducted the randomization procedures remotely in Oxford, United Kingdom. Participants were randomly allocated on a 1:1 ratio to an intervention or wait-list control group after baseline data collection using a concealed computerized program, SealedEnvelopeTM. To assure equal distribution across groups, randomization was stratified by child age and gender. Our implementing partner, Clowns Without Borders South Africa, notified participants of their allocation status via telephone. Although program implementers and participants were aware of their allocation status, researchers conducting self-report interviews and observational assessments were

blind to allocation. After post-test data collection, the control group received the intervention from September to November 2013.

Ethical procedures

All study protocols were approved by institutional review boards at the Universities of Oxford and Cape Town, and registered with ClinicalTrials.gov and the Pan African Clinical Trial Registry (NCT01802294; PACTR201302000455414). In order to compensate for low levels of literacy, research staff conducted informed consent procedures verbally in isiXhosa with parents in private. Parents were told they had the right to decline consent, and that they could leave the study at any time. With the exception of a snack provided during observational assessments and a certificate of completion and simple toy at the end of post-test data collection, no financial incentives were provided for participation in the evaluation study. The implementing partner also provided lunch, public transportation, and certificates to parents during parenting sessions as part of program delivery.

Intervention

Parents in the intervention group were invited to participate in the Sinovuyo Caring Families Program for Young Children, an evidence-informed, group-based parenting program developed in South Africa using community based participatory approaches (XXXX, 2016). This program was derived from common elements of evidence-based parent management training programs (Kaminski et al., 2008). It is based on social learning theory (Bandura, 1977) and focuses on improving positive parent-child relationships prior to learning authoritative limit-setting and nonviolent discipline strategies (Kazdin, 1997). Core components include content on child-led play, emotional communication, praise and rewards, instruction-giving and household rules, and nonviolent discipline strategies such as ignoring negative attention-seeking behaviors, cool-down for aggressive behavior or noncompliance, and consequences (Hutchings et al., 2004).

The program also contains specific material tailored for low-income families living in South Africa. Facilitators follow a manualized program protocol designed for low-resource settings, which requires no equipment beyond homemade toys from recycled materials, paper, and pens. Parenting principles are introduced using traditional stories and illustrated scenarios that mirror typical extended family households in the South African context (Bozalek, 1999). Parents set their own goals for their children's behavior at the beginning of the program (often incorporating local cultural values such as respect and social responsibility), and the program assists each parent to achieve their individual goals. The program encourages parents to spend time with their children by collaborating together on household chores, which, in poverty-affected households, can take a great deal of time each day, thereby making it difficult for parents to find the time to play with their children (Bray & Brandt, 2007). The program also includes specific content on keeping children safe in communities characterized by violence (Meth, 2013), as well as methods to communicate with children about HIV/AIDS and poverty. Mindfulness-based techniques are incorporated to assist parents in managing stress due to high levels of community violence, illness, and poverty (Kabat-Zinn, 2013).

A local non-governmental organization (NGO), Clowns Without Borders South Africa (www.cwbsa.org), delivered the program to the intervention group over 12 weekly sessions from April to June 2013. Training was provided by the first author and primary developer of the program to community-based workers with a basic level of training in early childhood development, who then facilitated the sessions in pairs to three parent groups consisting of 10 to 14 parents per group. Each session lasted between two and three hours and included the following activities: (a) opening prayer, (b) mindful physical exercise, (c) children's song, (d) discussion on home activities from previous session, (e) introduction of core parenting principle, (f) group discussion on the benefits of the principle, (g) working

through illustrated stories, (h) practicing parenting skills through role-plays, (i) assignment of home activities to implement the skills learned during the session, and (j) closing prayer.

Whenever possible, one-on-one home consultations were provided to parents who missed a session (less than one home consultation per session).

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Measures

Demographic information.

Demographic information included parent factors: age, gender, marital status, level of education, and employment status; child factors: age, gender, relationship to caregiver; and family factors: household size, type of household structure (i.e., informal or formal), number of children under 18 per household, and number of government grants received per household. In addition, household poverty was assessed using the nine-item Hunger Scale Questionnaire (Labadarios et al., 2003). Parents reported on the occurrence of hunger over the previous 30 days, and whether there had been hunger more than five times during that period (e.g., “the household has run out of money to buy food”). Items were summed to create a total score of household hunger intensity.

This study also measured the following risk factors associated with child maltreatment in South Africa (Meinck et al., 2013): (a) familial HIV/AIDS using the Verbal Autopsy Questionnaire for child AIDS-orphanhood or parental HIV-positive status, (VA, 18 items) (Lopman et al., 2006); (b) incidence of intimate partner violence using the Revised Conflict Tactics Short Form scale (CTS2S, 10 items) (Straus & Douglas, 2004); and (c) whether the parent had experienced abuse as a child using the International Society for the Prevention of Child Abuse and Neglect’s Child Abuse Screening Tools-Retrospective Version (ICAST-R, 11 items) (Dunne et al., 2009). Separate variables were created for each

risk factor as well as a variable for overall cumulative risk for abuse that included parental depression and household poverty.

Evaluation feasibility outcomes.

In order to assess the feasibility of conducting a randomized controlled trial of a parenting program in a low-resource South African context, we examined study recruitment and retention rates, randomization procedures, data collection methods, and the effect of using a partially nested design to evaluate treatment effects (Pals et al., 2008). Recruitment rates were calculated based on the number of potential participants who were contactable, met the inclusion criteria, and enrolled in the study after obtaining informed consent. Retention rates were calculated based on dropout of enrolled participants at any stage during the study. We examined randomization feasibility by assessing the efficacy of blinding assessors and the extent of group contamination. Furthermore, since many of the measures were not previously validated in South Africa, we examined the reliability and response rates of self-report outcomes and observational assessments. Finally, potential within-group effects were examined by analyzing intra-cluster correlation coefficients.

Primary intervention outcomes.

Primary outcomes associated with increased risk of child maltreatment were self-report and observational assessments of harsh parenting, positive parenting, and child behavior problems.

Harsh parenting was measured using the Parent-Child Conflict Tactics Scale (CTSPC, 23 items) (Straus et al., 1998). The CTSPC has been used widely in studies on parenting in South Africa (Mueller et al., 2011). An overall assessment of harsh parenting during the past three months was assessed by summing individual subscales for psychological aggression (e.g., “shouted, yelled, or screamed at”), physical assault (e.g., “hit on the bottom with a belt”), and neglect (e.g., “was too drunk to take care of your child”). The CTSPC also

contains a separate subscale for nonviolent discipline that was analyzed separately from the items on harsh parenting (4 items, e.g., “explained why something was wrong”).

Positive parenting was assessed using the positive parenting and setting limits subscales from the Parenting Young Children Scale (PARYC; 7 items each) (McEachern et al., 2011). The PARYC measures the frequency of parent behavior over the previous month. Items are summed to create total frequency scores for positive parenting (e.g., “how often do you play with your child”) and setting limits (e.g., “how often do you stick to your rules and not change your mind”).

Child behavior problems were measured using the ECBI (36 items) (Eyberg & Pincus, 1999). The ECBI has been previously utilized in South Africa with strong internal consistency ($\alpha = .89$) (Moolla, 2012). Parents are asked how often a specific behavior occurred in the past month and whether the behavior was considered a problem for them (e.g., “acts defiant when told to do something”). The ECBI produces total intensity and problem subscale scores.

Observed parenting and child behavior was assessed using the Sinovuyo Observational Coding System (SOCS) (Mlotshwa, 2013). The SOCS was developed based on adaptations of the Dyadic Parent-Child Interaction Coding System (Eyberg & Robinson, 2000) and Family Observation Scale (Sanders, 1996) to fit the South African context. It assesses the frequency of behaviors during a set of prescribed activities involving the parent and child: free play (10 minutes), tidying up (up to 5 minutes), and preparing and eating a snack (10 minutes). Two raters coded videos by assessing the frequency of parenting behavior, including positive parenting (i.e., positive verbal or positive nonverbal behaviors), effective parenting (i.e., use of consequences and positive commands), and negative parenting (i.e., indirect commands, negative verbal, and negative physical behaviors). Child behavior categories were positive child behavior (i.e., compliance, positive verbal, and

positive nonverbal behaviors) and negative child behavior (i.e., noncompliance, negative verbal, or negative physical behaviors). Assessors also recorded coder impressions of the level of engagement in child-led play as an additional indication of positive parenting. Raters coded ten videos to establish intra-rater reliability with a criterion coder prior to coding the complete dataset. In order to determine inter-rater reliability, 30% of videos were coded by both raters.

Secondary Outcomes.

Secondary outcomes were self-report measurements of parenting stress, parental depression, and perceived social support.

Parenting stress was measured using the Parenting Distress subscale (12 items) of the Parenting Stress Index-Short Form (Abidin, 1995). This scale has previously been used with at-risk South African populations (Potterton et al., 2007). The subscale assesses the frequency of parenting stress experienced within the previous three months (e.g., “I felt trapped by my responsibilities as a parent”). Items are summed with higher scores indicating higher levels of stress.

Parental depression was measured using the Beck Depression Inventory (BDI-II) (Beck & Steer, 1988). The BDI-II is a 21-item scale designed to assess the intensity of depression in both clinical patients and for the general population. It has been translated into isiXhosa and validated in South Africa (Steele, 2003). Parents are asked to choose from a series of statements describing their experience of depressive symptoms over the past two weeks. Responses are summed with higher scores indicating higher levels of depressive symptoms. We used clinical cut-off scores of 14 to 19 for mild depression, 20 to 28 for moderate depression, and 29 and above for severe depression in the study sample (Beck & Steer, 1988).

The Multidimensional Scale of Perceived Social Support (MSPSS, 12 items) was used to measure parental social support (Zimet et al., 1990). The MSPSS has been used previously in South Africa with high reliability (Casale et al., 2015). Parents report on levels of agreement with statements reflecting support from family, friends, and other sources (e.g., “I get the emotional support and help I need from my family”). Items are summed to create a total score with higher scores indicating higher levels of perceived social support (range 12 to 60).

Data collection and management

Questionnaires and assessment protocols were translated into isiXhosa and back-translated into English to ensure accuracy of translation. Trained isiXhosa-speaking research assistants blind to group allocation conducted face-to-face interviews and recorded videos of observational assessments with participants using low-cost mobile phones. Screening at baseline occurred in February 2013 at a local community center and lasted approximately 30 minutes for each participant. Self-report and observational assessments took place in participants’ homes and lasted approximately 60 and 30 minutes respectively. Post-test data collection took place in July 2013, immediately after the intervention group received the program, and about three and a half months after baseline.

After each assessment, the mobile phones instantly transmitted self-report data to a secure central network server. Observation videos were also extracted from the phones every day. Electronic data was accessible via a password known only to senior members of the research team. All data was also backed up on an external hard drive and in paper format. Non-electronic data was stored in a locked filing cabinet at the University of Cape Town. Outcome data was cleaned and entered into SPSS 21.0 for analysis.

Data analysis

Data analyses were conducted with an intention-to-treat design using multiple imputation at the item level to account for missing data (Streiner & Geddes, 2001). Little's Missing Completely at Random (MCAR) test with expectation maximization assessed response rates and the randomness of missing data (Li, 2013). The Multiple Imputation by Chained Equations method was used with a fully conditional specification and a Markov Chain Monte Carlo algorithm (10 maximum iterations) (Graham, Olchowski, & Gilreath, 2007). Twenty multiple imputed datasets were created in order to minimize the potential impact of individually imputed data. Intra-cluster correlations coefficients were calculated within the intervention group to measure the level of dependency of outcomes for members in the same parenting group (Pals et al., 2008).

Baseline differences between intervention and control groups were examined for demographic data and outcome measures using independent t-tests and Chi-square crosstab analyses. To test the preliminary effectiveness of the intervention at immediate post-test, multivariate mixed-effects models (SPSS mixed) were used with baseline scores as covariates. This procedure is considered a more robust statistical analytic approach than analyses of covariance since it takes into account potential within-group effects in the intervention arm (Baldwin et al., 2005). Fixed effects included treatment allocation and baseline outcomes. Random effects included allocation and parenting group assignment to account for the partially nested data in the intervention arm. In order to examine whether there was an effect of grouping participants, treatment allocation was included as a repeated measure with individual participants nested within parenting group assignment. Furthermore, the restricted maximum likelihood estimation method (REML) was used to produce less biased estimates of variance due to the small number of parent groups (Bauer, Sterba, & Hallfors, 2008). In order to assess the potential clinical relevance of outcomes in this study,

we examined tests for significance of effect (set at the $p < 0.05$ level), as well as the direction and magnitude of bias corrected Cohen's d effect sizes (Gardner & Altman, 1986). While tests for significance based on p -values may determine whether there is a statistically reasonable likelihood of detecting an intervention effect, the estimation of effect sizes is generally recommended as a more appropriate approach for studies with small sample sizes (Kianifard & Islam, 2011). An effect size of 0.2 was considered small, 0.5 was moderate, and 0.8 or higher was large (Cohen, 1988). Finally, this study used a threshold of $d = 0.25$ to determine a clinically relevant effect (Wolf, 1986).

Results

Characteristics of the sample are summarized in Table 2. Participants were predominantly unemployed, female, unmarried, and biological parents of children targeted in assessments. Non-biological parents were grandmothers ($n = 21$), aunts ($n = 5$), and one foster mother. The average number of children per household was 2.66 with a total household size of 5.71 members. Child gender was evenly split between boys and girls with a mean age of 5.40 years old.

In terms of risk factors for child maltreatment, 34% of parents reported experiencing violence from an intimate partner in the past month at baseline, 72% reported experiencing physical abuse as a child, and 31% of the parents were either AIDS-symptomatic, HIV-positive, or caring for a child orphaned by AIDS. As indicators of household poverty, 75% lived in informal housing, (e.g., corrugated tin shacks), 79% reported experiencing hunger more than five days in the previous month, and 46% depended on more than one source of government support. Forty-six percent of the participants reported symptoms of mild to severe depression. Forty-three percent of the participants also reported experiencing three or more risk factors for child maltreatment (i.e., extreme poverty, familial HIV/AIDS, intimate partner violence, mild to severe parental depression, and/or history of child maltreatment).

In terms of discipline practices at baseline, 43% of the parents reported shouting, yelling, or screaming at their child, 74% reported using some form of corporal punishment such as hitting their child, and 21% reported using severe physical punishment such as beating up their child repeatedly. In terms of positive parenting behavior, 32% reported playing with their child, and 49% reported praising their child's good behavior often.

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Program enrolment was high. Ninety-four percent of the parents allocated to the intervention group attended at least one session with enrolled parents attending an average of nine out of twelve sessions (75% attendance rate). A third of the parents missed only one or no sessions, and 88% attended six or more sessions. Only four participants were characterized as program dropouts after missing at least three consecutive sessions and not returning to the program. Facilitators also reported implementing 91% of the manualized activities based on fidelity checklists.

Study feasibility

Study retention is summarized in the flow diagram (Figure 1). Out of the 116 participants referred to the study, 94 were contactable and screened (72.4%). Sixty-eight parents were eligible and included in the study (70.8%). Reasons for ineligibility included the parent reporting less than 11 child problem behaviors on the ECBI problem scale, the respondent not being the child's primary caregiver, the child's age not being between three and eight years, and unavailability for baseline assessment.

Study retention for self-report data was considerably higher than anticipated with only two dropouts (97.1%). Observation assessment retention rates were also high (88.2% baseline, 89.7% post-test). Incomplete assessments or dropouts were due to the family relocating to another province, the child no longer living with the parent, either parent or child refusing to be videoed, and withdrawing from the study for personal reasons.

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There were only four (5.9%) reported instances of compromised interviewer blindness in which participants disclosed their allocation status to researchers at post-test. Although a few parents discussed the program with control group participants who lived nearby, significant contamination was considered unlikely based on interviews with the control group.

The internal reliability of parent-report outcome measures ranged from .75 to .93 with the exception of the Parent-Child Conflict Tactics Scale's nonviolent discipline subscale ($\alpha = .20$). This was excluded from further analyses. Inter-rater reliability coefficients were acceptable for all of the observational assessments (ICC = 0.74 to 0.97, $p < 0.05$) (Table 6).

Little's MCAR test on outcome variables indicated that the data was missing at random (Chi-Square = 2288.267, DF = 8869, Sig. = 1.000). Missing Value Analysis found 60.3% of the cases had missing data with a total of 2.8% missing values. Outcomes missing over 10% of the data were parent history of child maltreatment (17.6% missing on three variables at baseline, 16.2% missing on eight variables at post-test) and observation assessments of parenting and child behavior (11.8% and 10.3% missing variables at baseline and post-test, respectively).

Sensitivity analyses found no significant differences between the means of incomplete outcomes and pooled imputed outcomes. Moreover, due to the small sample size, the influence of potential outliers (those with z -scores greater than ± 2.5) was examined by performing analyses twice – with and without outliers – with nearly identical results for all outcomes.

Independent t -tests and Chi-square tests found no differences between the intervention and control groups for all demographics and outcome measures at baseline. Finally, within-group analyses found no significant intra-cluster correlation coefficients for

any of the outcome measures, thus indicating that there was minimal effect of parent group assignment within the intervention allocation.

Intervention effects

Parent-report.

Multivariate mixed model analyses of parent-report data are summarized in Table 3. Analyses showed significant treatment effects for positive parenting, $F(1,65) = 6.97, p < .05$), with results indicating more frequent parent-reported positive parenting at post-test assessment in the intervention group in comparison to controls ($d = 0.63$, 95% CI [0.14, 1.12]). There were also potentially clinically relevant but non-significant intervention effects for reduced intensity of child behavior problems ($d = -0.29$; 95% CI [-0.77, 0.19]) and increased perceived social support in comparison to controls ($d = 0.27$; 95% CI [-0.21, 0.75]).

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Observational assessments.

Results from observational assessments are summarized in Table 4. Models suggested significant treatment effects for coder impressions of child-led play, $F(1,65) = 5.70, p < .05$), with improvements in the intervention group in comparison to controls ($d = 0.57$, 95% CI [0.09, 1.06]). There was also a non-significant but clinically relevant treatment effect for decreased frequency of observed negative parenting ($d = -0.33$; 95% CI [-0.81, 0.14]). On the other hand, models also suggested significant negative treatment effects for observed child positive behavior, $F(1,65) = 5.60, p < .05$), with decreased frequency of positive behavior in the intervention group in comparison to controls ($d = -0.56$, 95% CI [-1.05, -0.08]). There was also a non-significant but clinically relevant difference between groups in the frequency of observed negative child behavior with a higher frequency observed in the intervention group in comparison to controls ($d = 0.30$; 95% CI [-0.18, 0.78]).

There were no other significant differences or effect sizes over $d = 0.25$ between groups for the remaining self-report or observed outcomes, nor were there any differences found related to gender.

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Discussion

This study is the one of the first to use a randomized controlled trial evaluation to examine the preliminary effects of a parenting program in reducing the risk of child maltreatment in families with children aged three to eight in sub-Saharan Africa. Findings indicate that it is possible to implement a rigorous evaluation of a parenting intervention despite working with highly vulnerable families living in impoverished communities. Results show high levels of study recruitment and retention, as well as strong reliability of parent-report and observational measures. By maintaining allocation concealment and using rigorous randomization procedures including an intention-to-treat design, we were able to limit selection and reporting biases. Moreover, the combination of self-report and observational assessments illustrates that it is possible to use a robust approach to analyze parenting and child behavior from multiple perspectives in this context with limited resources.

Exploratory outcome analyses of the program's impact on reducing child maltreatment showed mixed results. The moderate effect sizes for increased frequency of positive parenting in the intervention group provide some initial indications that the program may reduce potential risks of abuse. Moreover, these effects were found in both parent-report and observational assessments, thus contributing to the robustness of results. This is particularly important given evidence on the role of positive parenting as a protective factor in reducing harsh parenting and child behavior problems during early childhood (Trentacosta et al., 2008). Results regarding harsh parenting and child behavior were less conclusive. Although observational assessments showed clinically relevant treatment effects for reduced

harsh parenting, there were no differences between groups for parent-report on the Parent-Child Conflict Tactics scale. Instead, analyses showed significant reductions in parent-reports of harsh parenting from baseline to post-test, thus suggesting either a potential Hawthorne effect as a result of participating in the study or a response bias due to social desirability. (Flay, 1986). Furthermore, the less frequent positive child behavior observed in the intervention group suggests that additional emphasis on limit-setting and nonviolent discipline may be necessary to have a positive effect on child behavior. However, it is important to note that results are limited by the timing of post-test assessment immediately after program delivery. Other studies have reported that parents may require more time to practice nonviolent approaches to discipline in order to implement them with consistency and confidence (Whittingham, Sofronoff, Sheffield, & Sanders, 2009). Thus, a longer-term follow-up would have enabled us to examine potential delayed treatment effects (Kumkale & Albarracin, 2004).

This study has a number of limitations. First, as a small-scale trial, the internal validity of outcome results must be considered with caution due to the small sample size (Lancaster et al., 2004). High variance due to heterogeneity within groups often occurs in studies with small samples making it difficult to distinguish intervention effects (i.e., variance due to allocation) amidst other sources of variance (Hopkin, Hoyle, & Gottfredson, 2015). In addition, although RCTs of similar parenting programmes have found strong convergences of effects between self-report and observational assessments (e.g., Gardner et al., 2006; Hutchings et al., 2007; McGilloway et al., 2012), concurrent validity based on pairwise correlations was not established between observational and self-report measures of parent and child behaviour.

The small selective sample size also limits the generalizability of the results to a wider population. Participants were recruited from a specific population group in which many

of the families were already receiving support from a local community-based organization. Additional research would benefit from including families who are not receiving social services since they may respond differently to the program. Furthermore, two key population groups were not engaged: fathers and employed parents. Employed parents were unable to participate in the study because the group sessions were delivered on weekdays. Although evening sessions may have accommodated this group, pre-program consultations with parents found resistance to attending program sessions after nightfall due to very high neighborhood crime levels. Moreover, challenges in recruiting male caregivers are an often-cited occurrence in parent training programs, even in high-income countries (Wong, Roubinov, Gonzales, Dumka, & Millsap, 2013). The lack of male participation in the study may have been a result of recruitment biases due to the research staff consisting primarily of women. There also may have been cultural barriers as a result of childrearing being traditionally viewed as a woman's responsibility (Panter-Brick et al., 2014). Furthermore, fathers who did not reside in the same household as the participating child were excluded due to the study inclusion criteria. Future research may need to reconsider this criterion since South African fathers often do not live in the same household as their children and have limited contact with them over the course of their lifetimes (Bray et al., 2010).

Finally, more research is needed on the psychometric properties of self-report measurements and observational methods. It is possible that there are cultural, linguistic, or contextual issues that need to be taken into account with respect to measuring harsh parenting and child behavior, as well as other outcomes in this study. With the exception of the Beck Depression Index, the majority of outcome measurements in this study have not been psychometrically tested for isiXhosa-speaking populations in South Africa. Although most have been used in similar contexts, the validity of the scales has yet to be evaluated as to whether they measure the same constructs as originally designed. Likewise, the Sinovuyo

Observational Coding System may require additional piloting and testing to determine its reliability in assessing parent and child behaviors.

Results highlight a number of key recommendations for future program development and evaluation. Further program revision is necessary to improve intervention effects, particularly for child behavior problems and harsh parenting. The Sinovuyo program was initially designed with greater emphasis and time allocated to promoting positive parenting behavior before introducing limit-setting skills and nonviolent discipline. Nonviolent discipline strategies such as ignoring negative attention-seeking behavior or time-out may require additional sessions or revised content in order for parents to correctly integrate them within their daily parenting practices. In addition, programs may need to actively involve parents and children in joint sessions or via intensive coaching at home in order to improve child behavior.

Additional research is also necessary in order to determine program effectiveness and feasibility. A process evaluation would provide the opportunity to further examine the cultural acceptability of the program as well as any potential barriers to implementation and participation (Durlak & DuPre, 2008). This would allow further development by integrating outcome and process data prior to further testing (Oakley et al., 2006). Moreover, a planned randomized controlled trial with an adapted program and a larger sample size will provide sufficient statistical power to detect intervention effects. This will also enable moderator and mediator analyses to be conducted to investigate mechanisms of change and potential differential effects for specific population groups or conditions. By including a longer follow-up assessment, we will also be able to determine whether there are delays or any changes in intervention effects over time.

In conclusion, this randomized controlled trial demonstrates the feasibility of conducting a rigorous evaluation of a parenting program for highly vulnerable families in

South Africa. This is particularly relevant to the South African context where parenting programs are often implemented with minimal evaluation (Wessels & Ward, 2015). Although results were mixed with regard to its effectiveness, there were encouraging signs that the program may reduce the risk of child maltreatment by improving positive parenting skills. Nevertheless, due to the negative results regarding observed child behavior, the program may require additional content or revision to strengthen delivery, specifically with regard to managing difficult child behavior. Subsequent to these revisions, a large-scale study with longer follow-up assessments is planned in order to have greater power to examine program effectiveness with wider generalizability.

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