



Full Length Article

Randomized controlled trial of a parenting program to reduce the risk of child maltreatment in South Africa



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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 highly-deprived and vulnerable communities in Cape Town, South Africa. Low-income parents ($N = 68$) with children aged three to eight years were randomly assigned to either a group-based parenting program or a wait-list control group. Observational and parent-report 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 ($d = 0.63$) and observational assessments of parent-child play ($d = 0.57$). Observational assessments also found moderate negative treatment effects for less frequent positive child behavior ($d = -0.56$). This study is the first randomized controlled trial design to rigorously test the effectiveness of a parenting program on reducing the risk of child maltreatment in sub-Saharan Africa using both observational and self-report assessments. Results provide preliminary evidence of effectiveness of reducing the risk of child maltreatment by improving positive parenting behavior. Further development is required to strengthen program components regarding child behavior management and nonviolent discipline strategies. Future research would benefit from a larger trial with sufficient power to determine program effectiveness.

1. 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

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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 (Gilbert et al., 2009). Victims of child maltreatment are also more likely to develop depressive disorders, and almost twice as likely to develop substance abuse problems as non-affected children (Norman et al., 2012). Child maltreatment is also a major risk factor for victimhood and perpetration of intimate partner violence, as well as other interpersonal violence (Widom & Wilson, 2015). Moreover, harsh and abusive parenting has substantial intergenerational effects; parents who experienced maltreatment as children are also more likely to maltreat their own children (Thornberry & Henry, 2013). 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, Cluver, Boyes, & Loening-Voysey, 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 maltreatment (Meinck, Cluver, Boyes, & Ndhlovu, 2013). 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, Operario, & Cluver, 2012; Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006), which is associated with neglectful or abusive parenting (Cohen, Hien, & Batchelder, 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, Aber, Raver, & Lennon, 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 maltreatment (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, Johnston, Kendrick, Polnay, & Stewart-Brown, 2006; Chen & Chan, 2015). Although a recent meta-analysis found limited effects of programs aimed at preventing child maltreatment, moderator analyses showed larger effects for programs that provided training to parents (Euser, Lenneke, Stoltenborgh, Bakersman-Kranenburg, & Van Ijzendoorn, 2015). In particular, parenting programs delivered prior to or at the outset of problem behaviors in early childhood are particularly important for later risk reduction (Furlong et al., 2013). Many of these programs are based in either attachment theory (Bowlby, 1974) or social learning theory (Bandura, 1977), share common theoretical foundations and programmatic components derived from over 50 years of research (Pearl, 2009). They also use a range of parenting components that focus on building positive parent-child relationships as well as child behavior management strategies to reduce conduct problems (Hutchings, Gardner, & Lane, 2004). Core components associated with larger effect sizes for reduced harsh parenting include the positive parent-child interaction, emotional communication, consistent responding, problem solving, time-out, and practicing parenting skills with children (Kaminski, Valle, Filene, & Boyle, 2008). 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, Gardner, & Cluver, 2013), and the transportability of evidence-based parenting interventions from HICs to LMICs (Gardner, Montgomery, & Knerr, 2015). Furthermore, evidence suggests that parenting programs have similar levels of effectiveness whether they are locally-developed to fit a specific cultural or contextual setting (i.e., emic) or transported from another country based on universal principles (i.e., etic), as long as they are based on the same underlying core principles (Leijten, Melendez-Torres, Knerr, & Gardner, 2016). However, while parenting programs have shown some effectiveness in LMICs when delivered to families with infants (Cooper et al., 2009; Vally et al., 2014), few have been tested using randomized controlled trials with children above the age of two years. In addition, a review of current group parenting programs implemented in South Africa found that few were based on evidence-based principles or components (Wessels & Ward, 2015).

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 (Mejia, Calam, & Sanders, 2015; Puffer 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. This program, called the Sinovuyo Caring Families Program for Young Children, was developed by the authors in 2012 using community-based participatory approaches to integrate common approaches and principles found in evidence-based parenting programs from high-income countries with local cultural and contextual issues relevant to South African families (Lachman et al., 2016a). It is part of an initiative called Parenting for Lifelong Health which is focused on the development, evaluation, and dissemination of freely available, low-cost parenting interventions to reduce the risk of child maltreatment and improve child wellbeing in low- and middle-income countries (Ward et al., 2014). This initiative is a response to increasing calls for the dissemination and scale up of parenting programs in LMICs, and the need to build an evidence-base in areas where lack of resources, reduced technical capacity, cultural differences, and increased adversity might compromise program effectiveness (Mejia, Leijten, Lachman, & Parra-Cardona, 2016).

In summary, we used a randomized controlled trial design to test the following hypotheses based on the previous research. First, a parenting program that integrates evidence-based components within a local South African cultural context and low-cost delivery methods would reduce harsh parenting while improving positive and effective parenting in highly-vulnerable families when compared to controls (Furlong et al., 2013). Second, the parenting program would also have a direct effect on reducing child behavior problems (Gardner, Hutchings, Bywater, & Whitaker, 2010). Third, the parenting program would also reduce parental depression and stress while improving social support for parents enrolled in the program (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Barlow, Coren, & Stewart-Brown, 2002; Bennett, Barlow, Huband, Smailagic, & Roloff, 2013). Finally, improvements in both parent and child

outcomes would contribute to the overall reduction in risk of child maltreatment (see Fig. 1).

2. Methods

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

2.1. 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 child maltreatment (Meinck et al., 2013).

2.2. 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%) (Lachman et al., 2016a). 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 criterion 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 maltreatment 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 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 severe disabilities.

2.3. Power calculations

Power 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 (Erdfeider, 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. Given the intention-to-treat design, we did not include an attrition rate in the sample size calculations. The final sample size was 68 participants, which meant that the study was powered to detect an effect size of $d = 0.48$ or greater.

2.4. Randomization

An external researcher not directly involved in the study conducted the randomization procedures remotely in Oxford, United Kingdom. Participants were randomly assigned on a 1:1 ratio to an intervention or wait-list control group after baseline data collection using a concealed computerized program, SealedEnvelope™. 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.

2.5. 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

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.

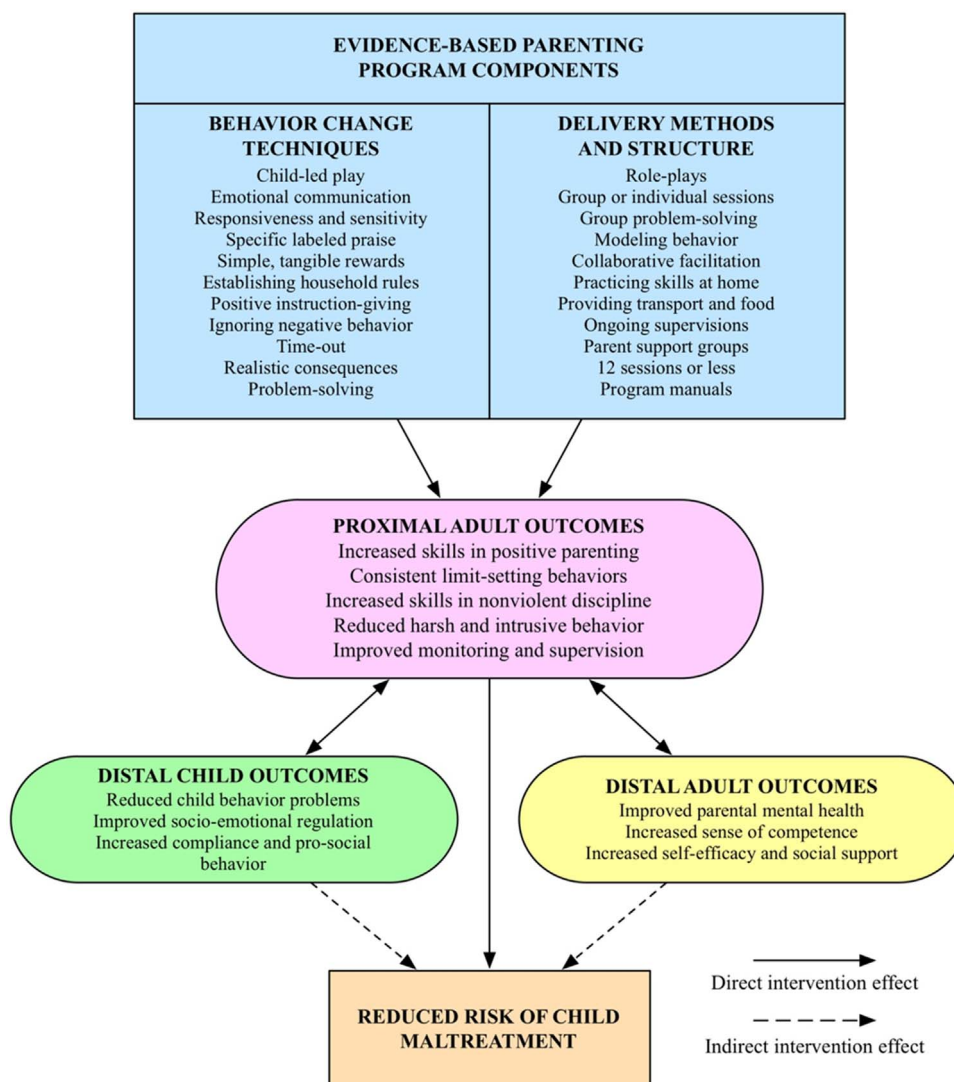


Fig. 1. Theory of change model for parenting programs with reduced risk of child maltreatment as the ultimate outcome.

low levels of literacy, research staff conducted informed consent procedures verbally in isiXhosa – the predominant language spoken by participants – as well as providing information written in clear, simple terms. 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.

Parents were notified during informed consent procedures that families would be immediately referred to local child welfare services if severe abuse was reported or observed in which the child was at risk of significant harm (e.g., “grabbed child around the neck and choked child”). There were seven cases of severe abuse reported at baseline, and one at post-test. Research assistants reported these cases immediately to the principal investigators of the study who then made referrals.

2.6. Intervention

The Sinovuyo Caring Families Program for Young Children 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 authors to community-based workers with a basic level of training in early childhood development, who then facilitated the sessions in isiXhosa to three parent groups consisting of 10–14 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).

2.7. Measures

2.7.1. 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 maltreatment 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 child maltreatment that included household poverty.

2.7.2. 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.

2.7.2.1. Harsh parenting – parent-report. Harsh parenting was measured using the Parent-Child Conflict Tactics Scale (PCCTS, 27 items; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). The PCCTS has been used previously in studies on parenting in South Africa (Mueller, Alie, Jonas, Brown, & Sherr, 2011), and includes subscales measuring psychological aggression (5 items, e.g. – “shouted, yelled, or screamed at”), physical assault (13 items, e.g. – “hit on the bottom with a belt”), and neglect (5 items, e.g. – “were too drunk to take care of your child”). The PCCTS also contains a separate subscale for nonviolent discipline (4 items, e.g., “explained why something was wrong”). Parents responded according to a Likert scale based on the number of times in the past 3 months each activity occurred (0 = never to 3 = three or more times). Total scores were calculated by summing items from each individual subscale. Since the internal reliability was poor for many of the subscales at baseline (i.e., psychological aggression: $\alpha = 0.48$; physical assault: $\alpha = 0.68$), the psychological aggression and physical assault items were combined to create an overall assessment of harsh parenting (baseline: $\alpha = 0.76$; post-test: $\alpha = 0.72$). The nonviolent discipline and neglect subscales had very low reliability and were thus excluded from further analyses (nonviolence discipline: $\alpha = 0.20$; neglect: $\alpha = 0.04$).

2.7.2.2. Positive parenting – parent-report. 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. 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”). Items are summed to create total frequency scores for each subscale (positive parenting baseline: $\alpha = 0.81$; post-test $\alpha = 0.72$; setting limits baseline $\alpha = 0.81$; post-test $\alpha = 0.76$).

2.7.2.3. Child behavior problems – parent-report. 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 ($\alpha = 0.89$) (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 (baseline: $\alpha = 0.93$; post-test: $\alpha = 0.95$) and problem subscale scores (baseline: $\alpha = 0.86$; post-test: $\alpha = 0.93$).

2.7.2.4. Observed parenting and child behavior. 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, Waugh, Tully, & Hynes, 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 min), tidying up (5 min), and preparing and eating a snack (10 min). 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. Thirty percent of the videos were coded by both raters to calculate inter-rater agreement based on intra-class correlation coefficients (ICCs at baseline for positive parenting = 0.97; effective parenting = 0.90; negative parenting = 0.93; positive child behavior = 0.74; negative child behavior = 0.74; child-led play = 0.82; $p < 0.05$).

2.7.3. Secondary outcomes

2.7.3.1. Parenting stress. Parenting stress was measured using the Parenting Distress subscale of the Parenting Stress Index-Short Form (12 items; Abidin, 1995). This scale has previously been used with at-risk South African populations (Potterton, Stewart, & Cooper, 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 (baseline: $\alpha = 0.85$; post-test: $\alpha = 0.73$).

2.7.3.2. Parental depression. 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 (baseline: $\alpha = 0.89$; post-test: $\alpha = 0.90$).

2.7.3.3. Perceived social support. The Multidimensional Scale of Perceived Social Support was used to measure parental social support (MSPSS, 12 items; Zimet, Powell, Farley, Werkman, & Berkoff, 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 (baseline: $\alpha = 0.70$; post-test: $\alpha = 0.77$).

2.8. 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. Mobile phone data collection methods have been shown to be especially effective in increasing participant willingness to disclose potentially stigmatizing behavior as well as improve the efficiency and accuracy of data collection (Phillips, Gomez, Boily, & Garnett, 2010). To account for low literacy rates in the sample, research assistants read out loud the informed consent information as well as each item and associated choice option on the questionnaire.

Research assistants followed data collection protocols that included scripts to guide them on the procedure for conducting parent-report and observational assessments. Screening at baseline occurred in February 2013 at a local community center and lasted approximately 30 min for each participant. Self-report and observational assessments took place in participants' homes and lasted approximately 60 and 30 min 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 were cleaned and entered into SPSS 21.0 for analysis.

2.9. Data analysis

Data analyses were conducted with an intention-to-treat design using multiple imputation at the individual item level with

Table 1
Demographic characteristics of the sample at baseline.¹

	Control (<i>n</i> = 34)	Intervention (<i>n</i> = 34)	<i>p</i> value
Family characteristics			
Informal housing, <i>n</i> (%)	25, 73.5%	26, 76.5%	0.784
Household size, <i>M</i> (<i>SD</i>)	5.56 (2.19)	5.58 (3.43)	0.441
Parent characteristics			
Parent age, <i>M</i> (<i>SD</i>)	41.09 (13.32)	42.06 (13.16)	0.606
Parent gender, <i>n</i> female, %	34, 100.0%	33, 97.1%	1.000
Marital status, <i>n</i> single, %	26, 76.5%	24, 70.6%	0.784
Not completed high school, <i>n</i> (%)	25, 73.5%	31, 90.9%	0.109
Unemployed, <i>n</i> (%)	32, 94.1%	34, 100.0%	0.493
Child characteristics			
Child age, <i>M</i> (<i>SD</i>)	5.18 (1.73)	5.62 (1.65)	0.798
Child gender, <i>n</i> female (%)	17, 50.0%	16, 47.1%	1.000
Relationship to parent, <i>n</i> biological (%)	20, 58.8%	21, 61.8%	1.000
Social risk factors for child abuse			
Experienced hunger ≥ 5 times in previous 30 days, ^a <i>n</i> (%)	25, 73.5%	29, 85.3%	0.369
Family affected by HIV/AIDS, ^b <i>n</i> (%)	11, 32.4%	10, 29.4%	1.000
Parent experienced intimate partner violence in previous month, ^c <i>n</i> (%)	12, 35.3%	11, 32.4%	1.000
Parent experienced physical abuse as a child, ^d <i>n</i> (%)	24, 70.6%	25, 73.5%	0.624
Three or more risk factors for abuse, <i>n</i> (%)	12, 35.3%	17, 50.0%	0.327

¹ Independent *t*-tests and Chi-squared tests found no significant differences between groups at baseline.

^a Hunger Scale Questionnaire.

^b Three or more symptoms on the Verbal Autopsy.

^c Conflict Tactics Scale.

^d ISPCAN Child Abuse Screening Tool-Retrospective.

chained equations creating 20 multiple imputed data sets to account for missing data (Streiner & Geddes, 2001). Intra-cluster correlations coefficients were also 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 were used with treatment allocation and baseline assessments as fixed effects (Baldwin, Murray, & Shadish, 2005). Random effects included allocation and parenting group assignment to account for the partially nested data in the intervention arm. We examined levels of significance of effect to determine the likelihood that findings were not due to error, 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).

3. Results

Characteristics of the sample are summarized in Table 1. Adult respondents who completed baseline assessments were predominantly female (*n* = 67; 98.5%), unmarried (*n* = 50; 73.5%), and biological parents of children targeted in the program (*n* = 41; 60.3%). Non-biological parents were grandmothers (*n* = 21; 30.9%), aunts (*n* = 5; 7.4%), and one foster mother (1.5%). Only 17.6% of the respondents had finished high school (*n* = 12). There was an average of 2.66 children per household (*SD* = 1.32) with an overall average of 5.71 people per household (*SD* = 1.32). Selected children were roughly evenly split by gender (48.5% female) with the mean age of 5.40 years old (*SD* = 1.69).

Respondents also represented a highly vulnerable population. Ninety-seven percent were unemployed (*n* = 66), 75% lived in informal housing, (*n* = 51, e.g., corrugated tin shacks), 79.4% reported experiencing hunger more than five days in the previous month (*n* = 54), and 45.6% depended on more than one source of government support (*n* = 31). A third of the respondents reported experiencing violence from an intimate partner in the past month at baseline (*n* = 23), 72.1% reported experiencing physical or emotional abuse as a child (*n* = 49), and 30.9% of the parents were either AIDS-symptomatic, HIV-positive, or caring for a child orphaned by AIDS (*n* = 21).

Independent *t*-tests and chi-squared tests found no differences between the intervention and control groups for all demographics and outcome measures at baseline. Sensitivity analyses also found no significant differences between the means of incomplete outcomes and pooled imputed outcomes using an intention-to-treat approach. Moreover, the influence of potential outliers (those with *z*-scores greater than ± 2.5) was examined by performing analyses twice – with and without outliers – with no significant differences between results (*p* > 0.05). 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.

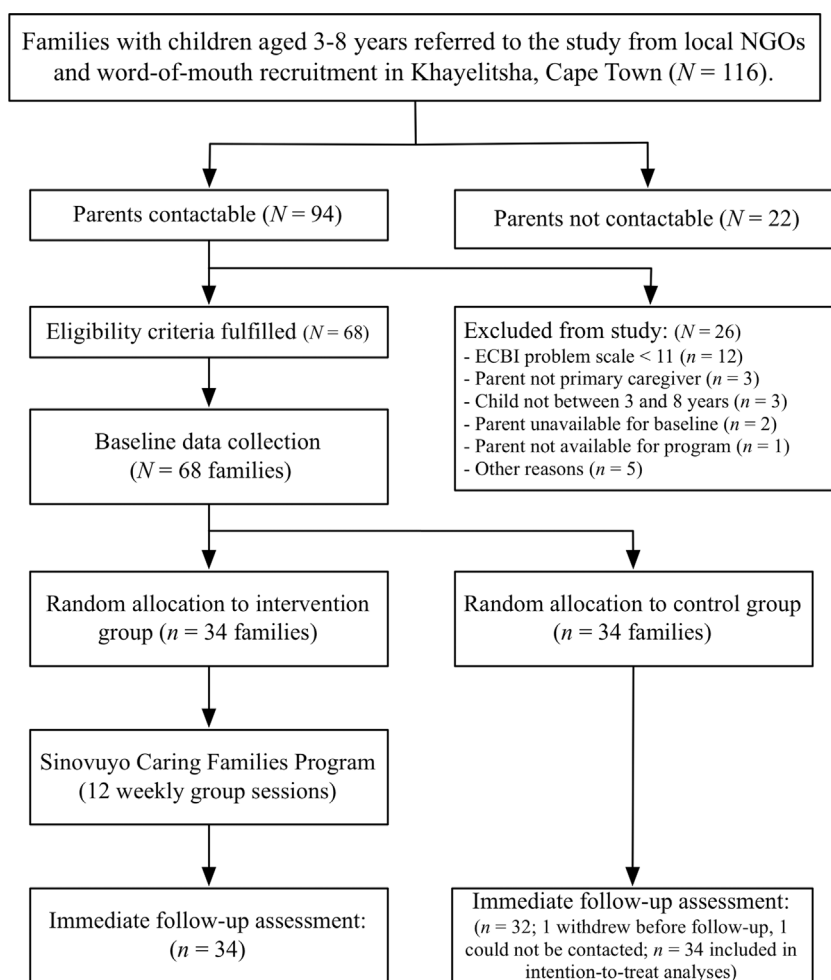


Fig. 2. Consort diagram.

3.1. Study flow

The study flow diagram is represented in Fig. 2. 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. 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.

3.2. Treatment of missing data

Little's MCAR test on outcome variables indicated that the data was missing at random (Chi-Square = 2288.267, DF = 8869, Sig. = 1.000). Analysis found 60.3% of the variables in the questionnaire had at least one instance of missing data, primarily due to dropout at post-test assessment, 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).

3.3. Program participation and fidelity

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

Table 2

Results summarizing primary outcomes using multivariate mixed modeling and an intention-to-treat analysis.

Measure	Control (n = 34)		Intervention (n = 34)		F Statistic	Estimated mean difference ² [95% CI]	Effect size ³ [95% CI]
	Baseline M (SD)	Post-test ¹ M (SD)	Baseline M (SD)	Post-test ¹ M (SD)			
Harsh parenting							
Harsh parenting, parent-report ^a	9.95 (8.06)	3.47 (3.01)	8.24 (5.75)	3.55 (5.18)	0.01	0.08 [−1.98, 2.14]	0.02 [−0.46, 0.49]
Negative parenting, observed ^b	5.59 (5.11)	4.53 (3.34)	7.48 (9.70)	3.32 (3.78)	2.03	−1.21 ⁺ [−2.94, 0.52]	−0.34 ⁺ [−0.81, 0.14]
Positive parenting							
Positive parenting, parent-report ^c	20.12 (9.30)	20.21 (7.28)	21.50 (9.09)	25.29 (8.56)	6.97 ⁺	5.08 ^{**} [1.23, 8.92]	0.63 ^{**} [0.14, 1.12]
Positive parenting, observed ^b	7.71 (8.93)	6.63 (5.56)	7.78 (6.33)	7.40 (5.56)	0.34	0.77 [−2.09, 3.63]	0.13 [−0.35, 0.61]
Child-led play, observed ^b	0.54 (0.72)	0.45 (0.73)	0.64 (0.73)	0.87 (0.70)	5.70 ⁺	0.42 ⁺ [0.07, 0.76]	0.57 ⁺ [0.09, 1.06]
Setting limits, parent-report ^c	23.79 (8.77)	21.12 (7.06)	24.79 (9.30)	20.71 (8.71)	0.06	−0.41 [−4.25, 3.43]	−0.05 [−0.53, 0.42]
Effective parenting, observed ^b	13.06 (9.39)	8.66 (4.55)	10.62 (5.27)	8.21 (3.95)	0.20	−0.45 [−2.51, 1.62]	−0.10 [−0.58, 0.37]
Child behavior							
Intensity, parent-report ^d	122.56 (42.50)	111.39 (37.72)	120.59 (41.66)	99.78 (41.85)	1.44	−11.59 [−30.88, 7.70]	−0.29 [−0.77, 0.19]
Problem, parent report ^d	21.09 (7.06)	16.45 (7.98)	20.74 (6.87)	15.49 (9.52)	0.21	−0.97 [−5.22, 3.29]	−0.11 [−0.58, 0.37]
Positive behavior, observed ^b	17.95 (11.72)	13.52 (7.21)	15.48 (9.82)	9.99 (5.05)	5.60 ⁺	−3.53 ⁺ [−6.54, −0.52]	−0.56 ⁺ [−1.05, −0.08]
Negative behavior, observed ^b	2.24 (7.00)	0.52 (1.66)	1.85 (1.96)	1.08 (2.36)	2.46 ⁺	0.56 [−0.34, 1.45]	0.30 [−0.18, 0.78]

¹ Post-test means adjusted for baseline scores.² Difference in mean follow-up scores between intervention and waiting list control conditions adjusted for baseline scores.³ Bias-corrected Cohen's *d*.* *p* < 0.05.** *p* < 0.01.+ *p* < 0.15.^a Parent-Child Conflict Tactics Scale.^b Sinovuyo Observational Coding System.^c Parenting Young Children Scale.^d Eyberg Child Behavior Inventory.

missing in at least three consecutive sessions and not returning to the program. Facilitators also reported implementing 91% of the manualized activities based on fidelity checklists.

3.4. Outcomes

Multivariate mixed model analyses for parenting and child behavior outcomes are summarized in Table 2.

3.4.1. Parenting

Analyses showed medium treatment effects for parent-report of positive parenting ($d = 0.63$, 95% CI [0.14, 1.12]), with results indicating more frequent positive parenting at post-test assessment in the intervention group in comparison to controls ($F(1,65) = 6.97$, $p = 0.03$). Analyses also found medium treatment effects for observed child-led play ($d = 0.57$, 95% CI [0.09, 1.06]), with improvements in the intervention group in comparison to controls ($F(1,65) = 5.70$, $p = 0.04$). There were no significant differences between groups for parent-report of child maltreatment ($d = 0.02$; 95% CI [−0.46, 0.49]; $F(1,65) = 0.01$, $p = 0.95$) nor observational assessments of observed negative parenting ($d = −0.33$; 95% CI [−0.81, 0.14]; $F(1,65) = 2.03$, $p = 0.17$).

3.4.2. Child behavior

Observational assessments found negative treatment effects for reduced observed child positive behavior ($d = −0.56$, 95% CI [−1.05, −0.08]), with decreased frequency of positive behavior in the intervention group in comparison to controls ($F(1,65) = 5.60$, $p = 0.03$). There were no significant intervention effects for parent-report of child behavior problems nor observed negative child behavior (ECBI intensity: $d = −0.29$; 95% CI [−0.77, 0.19], $F(1,65) = 1.43$, $p = 0.23$; ECBI problems: $d = −0.11$; 95% CI [−0.58, 0.37], $F(1,65) = 0.20$, $p = 0.68$; observed negative behavior: $d = 0.30$; 95% CI [−0.18, 0.78], $F(1,65) = 3.47$, $p = 0.07$).

3.4.3. Secondary outcomes

Results for parenting stress, parental depression, and perceived social support are summarized in Table 3. Although parents who

Table 3

Results summarizing secondary outcomes using multivariate mixed modeling and an intention-to-treat analysis.

Measure	Control (n = 34)		Intervention (n = 34)		F Statistic	Estimated mean difference ² [95% CI]	Effect size ³ [95% CI]
	Baseline M (SD)	Post-test ¹ M (SD)	Baseline M (SD)	Post-test ¹ M (SD)			
Parent Behavior							
Parenting stress ^a	24.20 (9.79)	22.40 (7.63)	21.90 (9.17)	20.53 (8.20)	0.96	−1.88 [−5.72, 1.96]	−0.23 [−0.71, 0.24]
Parental depression ^b	14.60 (10.41)	8.77 (8.59)	12.36 (10.78)	9.93 (10.02)	0.26	1.16 [−3.36, 5.68]	0.12 [−0.35, 0.60]
Social support ^c	58.60 (9.70)	57.44 (10.04)	55.65 (9.55)	60.07 (9.38)	1.25	2.63 [−2.07, 7.34]	0.27 [−0.21, 0.75]

^a $p < 0.05$; ^b $p < 0.01$; ^c $p < 0.10$.¹ Post-test means adjusted for baseline scores.² Difference in mean follow-up scores between intervention and waiting list control conditions adjusted for baseline scores.³ Bias corrected Cohen's d .^a Parenting Stress Index-Short Form.^b Beck Depression Inventory.^c Multidimensional Scale of Perceived Social Support.

received the parenting program reported improvements at immediate post-intervention assessment, there were no significant differences for any of the secondary outcomes in comparison with controls (parenting stress: $d = -0.23$; 95% CI [−0.71, 0.24], $F(1,65) = 0.95$, $p = 0.34$; parent depression: $d = 0.12$; 95% CI [−0.35, 0.60], $F(1,65) = 0.27$, $p = 0.61$; social support: $d = 0.27$; 95% CI [−0.21, 0.75], $F(1,65) = 1.23$, $p = 0.28$).

4. 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. Results suggest that the intervention had a positive effect on improving positive parenting but a potential iatrogenic effect on reduced positive child behavior. The moderate effect sizes for increased frequency of positive parenting in the intervention group provide some initial indications that the program may reduce risks of child maltreatment. 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 the risk of child maltreatment in South Africa (Meinck et al., 2013).

Results regarding harsh parenting were less conclusive with observational and self-report assessments indicating no differences between groups at post-intervention. Although observational assessments trended in a positive direction (i.e., $d = -0.34$), these effects had confidence intervals that included zero so should be considered with caution due the high probability of error. In regards to parent-report of harsh parenting based on the Parent-Child Conflict Tactics scale, post-hoc within-group analyses showed large reductions from baseline to post-test for both control and intervention groups. These findings may be due to a potential Hawthorne effect or the influence of social desirability as a result of participating in a study focused on reducing child maltreatment (Flay, 1986).

Conflicting results regarding the impact of the intervention on positive and harsh parenting behavior may also have been due to issues regarding cultural acceptability and intervention complexity. A mixed-methods process evaluation conducted alongside this RCT found that parents were initially more receptive to the positive parenting practices than the nonviolent discipline strategies, which were perceived as culturally dissonant and too complex to implement consistently (Lachman et al., 2016b). This was related in reports by community facilitators who experienced challenges distinguishing between the different applications of the nonviolent discipline strategies (e.g., ignoring negative attention seeking and demanding behavior versus Time-Out for aggressive, dangerous, and destructive behaviors). As a result, further program development and training of facilitators may be necessary to improve competency of delivery while strengthening the cultural acceptability of nonviolent discipline components as a replacement behavior to harsh parenting.

Results indicating a potential harmful effect of the intervention on reduced frequency of observed positive child behavior in comparison to controls at post-test are concerning. This may have been due to the emphasis of the latter stages of the program on limit-setting and discipline instead of on encouraging positive behavior, which was introduced in the earlier sessions. It is possible that this focus on learning new discipline practices resulted in more overbearing or intrusive parenting, which had a negative impact by reducing positive child behavior, in spite of increases in positive parenting (Pinquart, 2017). These findings are contrary to existing literature that show a small but positive impact of parenting programs on prosocial child behavior. For instance, a review of the effectiveness of the Incredible Years parenting program on prosocial behavior found an overall effect size of 0.39 for observational assessments of prosocial behavior (Menting, de Castro, Wijngaards-de Meij, & Matthys, 2014). As a result, further research is necessary to identify potential causal mechanisms regarding positive and harmful effects of the program, including mediation analyses of intervention effects and more in-depth qualitative research on how parents engage with the program content (Gardner et al., 2010; Holtrop, Parra Cardona, & Forgatch, 2014). Furthermore, it is highly recommended that revisions of the intervention are conducted prior to further implementation and testing in order to place a stronger emphasis on integrating and reinforcing the encouragement of positive child behavior throughout the program.

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, Dodd, & Williamson, 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, results may have been due to issues regarding the sensitivity of the Sinovuyo Observational Coding System, which was adapted for the purposes of this study. Although RCTs of similar parenting programs have found strong convergences of effects between self-report and observational assessments (Gardner, Burton, & Klimes, 2006; Hutchings et al., 2007; McGilloway et al., 2012), post-hoc tests of concurrent validity based on pairwise correlations was not established between observational and self-report measures of child behavior.

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 were not feasible due to very high neighborhood crime levels, future program delivery should include weekend sessions to overcome barriers to participation for employed parents. 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, Gooskens, Kahn, Moses, & Seekings, 2010).

Additionally, more research is needed on the psychometric properties of self-report measurements and observational methods. Potential cultural, linguistic, or contextual issues may 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.

Finally, 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 with limit-setting and nonviolent discipline in order to implement them (Whittingham, Sofronoff, Sheffield, & Sanders, 2009). A longer-term follow-up with multiple post-intervention assessments would have enabled us to examine potential delayed treatment effects, as well as the possible mediation between positive parenting, child behavior, and child maltreatment (Kumkale & Albarracin, 2004).

Despite these limitations, there were also a number of strengths of the study. 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 in South Africa. The study had high levels of recruitment and retention, as well as strong reliability of parent-report and observational measures. The rigorous randomization procedures, which included allocation concealment, blinding of assessors, and intention-to-treat analyses, contributed to the robustness of the study. Moreover, the combination of self-report and observational assessments provided an opportunity to analyze intervention effects from multiple perspectives, thus diminishing potential reporting biases due to social desirability.

Results highlight a number of key recommendations for program development. 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.

It is possible that the program may need to be delivered by higher skilled professionals in order to achieve more robust intervention effects. Many evidence-based parenting programs developed in high-income countries are delivered by practitioners with qualifications in social work or psychology (Chen & Chan, 2015). Nonetheless, one of the objectives of this study was to test the effectiveness of a parenting program designed specifically for resource-poor settings in low- and middle-income countries. In order to reduce the overall cost while increasing its scalability, community-based facilitators with basic education in early childhood development were used as an alternative to higher skilled practitioners. The program fidelity and quality of delivery by paraprofessionals was assessed in a mixed-methods feasibility study conducted in parallel to this RCT. Findings from this study suggested that although there were some initial challenges encountered with the nonviolent discipline strategies, the program was delivered with a high degree of fidelity (Lachman et al., 2016b). Nonetheless, future research using factorial experimental designs is recommended in order to explore the differential effects of delivering parenting programs in LMICs by higher- or lower-skilled practitioners.

In addition to these recommended revisions to address the mixed results from this study, further research is necessary before the program can be considered for wider implementation. A large-scale randomized controlled trial with multiple follow-up assessments is planned in order to have greater power to examine the effectiveness of the intervention on reducing the risk of child maltreatment. This longitudinal design will allow for the examination of behavior change and intervention effects over a longer period of time. An

increased sample size will also provide sufficient power for mediation and moderation analyses in order to investigate mechanisms regarding theory of change models as well as potential differential effects for specific characteristics of the population (Kraemer, Wilson, Fairburn, & Agras, 2002; Wang & Ware, 2011).

This study makes an important contribution to the literature regarding the transportability and effectiveness of parenting programs to reduce the risk of child maltreatment in LMICs. Instead of making a stark choice between transporting evidence-based interventions from other contexts or developing new interventions that are tailored to specific populations, the intervention presents an alternative approach by integrating core evidence-based parenting components within the local cultural context of low-income Xhosa families in South Africa (Lachman et al., 2016a). While results are somewhat mixed, the positive gains suggest that this approach – establishing cultural sensitivity towards local contexts while adhering to core evidence-based components that have been shown to be essential for the effectiveness of parenting programs (Mejia et al., 2016) – may provide a way forward for the implementation of parenting programs in LMICs.

In summary, it is important to reemphasize that the results should be treated with caution at this early stage of intervention testing. The small-scale RCT lacked sufficient statistical power to detect significant intervention effects on most outcomes (Arain, Campbell, Cooper, & Lancaster, 2010). Nevertheless, the initial results regarding improvements in observed and self-reported positive parenting behavior provide a useful platform for further research on the effectiveness of the intervention. At the same time, due to the negative results regarding reduced observed positive child behavior and null effects for other outcomes, additional revisions are recommended to strengthen program content and delivery prior to subsequent testing and implementation.

Author note

We wish to draw the attention of the reader to the following facts, which may be considered as potential conflicts of interest to this work. The intervention tested in this study, the Sinovuyo Caring Families Program for Young Children, was developed and implemented by Lachman, Cluver, Ward, Hutchings, and Gardner. Intellectual property for the intervention is held under a Creative Commons Attribution-No Derivatives and Noncommercial 4.0 International Public License. In addition, Jamie M. Lachman, is the Executive Director of Clowns Without Borders South Africa, the not-for-profit partner organization responsible for implementation of the program during in this study.

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