



**A Narrative Review of Caregiver Training Programmes Aimed to
Improve Child Language Development in Low-Resource African Communities**

Candidate Number: 1048830

Word count: 18103

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Master's in Education and Child Development

13 August, 2021

Table of Contents

Abstract	3
List of Tables	4
List of figures.....	6
List of Abbreviations	7
Key Terms	8
Chapter 1: Introduction	9
Chapter 2: Literature Review.....	12
Chapter 3: Methodology	35
Search Strategy	40
Chapter 4: Results	46
Chapter 5: Discussion.....	77
Chapter 6: Conclusion.....	86
Appendix.....	98

Abstract

Most children in Southern and Eastern Africa are not reaching their language and literacy milestones at expected rates, hindering future development from a personal and economic perspective (UNESCO, 2019). Children learn through their interactions with their caregivers. There is potential for caregivers to positively impact their child's development, through their daily interactions and caregiving practices. The aim of this study was to determine what caregiver training programmes have empirical evidence regarding their level of effectiveness on child language and literacy outcomes and what is the quality of these programmes. The study is a narrative review of eligible caregiver training programmes from Southern and East African contexts, which aim to improve child language or literacy outcomes. A total of 905 studies were initially found from database and grey literature searches. A total of nine studies were screened to be eligible for inclusion in this review. The results of the study showed that there are effective caregiver training programmes in Southern and East Africa which show short term effects on child language or literacy outcomes, but the results show that the research studies fail to assess the medium to long term impact of the caregiver training programmes on child language or literacy outcomes. The results show that eligible training programmes do not align with all the optimal components of design and implementation, which implies that there is potential for caregiver training programmes to improve by increasing intensity, improving supervision, utilizing effective teaching strategies, and ensuring deep structural sensitivity of the programme is achieved.

List of Tables

Table 1	36
Table 2.1	39
<i>Table showing code-related emergent literacy skills eligible for inclusion</i>	<i>39</i>
Table 2.2	40
<i>Table showing meaning-related emergent literacy skills eligible for inclusion.....</i>	<i>40</i>
Table 3.1	52
<i>Summary of Quality Assessment of Eligible Studies Included in Review</i>	<i>52</i>
<i>Summary of Quality Assessment of Eligible Studies Included in Review</i>	<i>53</i>
Table 4	56
<i>The Effectiveness of Eligible Caregiver Training Programmes on Child Language or Literacy Development</i>	<i>56</i>
Table 5	60
<i>Table showing the intervention summaries of each programme change model.....</i>	<i>60</i>
Table 6	66
<i>Table of the Intervention and Service Delivery Protocol of Eligible Caregiver Training Programmes.....</i>	<i>66</i>
Table 7.1	69
<i>Table Showing the Micro Context Support and Surface Structure Cultural Sensitivity of Eligible Caregiver Training Programmes.....</i>	<i>69</i>
Table 7.1	71
<i>Table Showing the Macro Context Support and Deep Structure Cultural Sensitivity of Caregiver Training Programmes</i>	<i>71</i>
Table 8	75

<i>Evaluation Results of the Programme Components of Intensity, Supervision, Teaching Strategies, Community Partners and Ecological Context Support</i>	<i>75</i>
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List of figures

Figure 1: <i>The Conceptual Framework of Programme Theory</i>	32
Figure 2: <i>PRISMA flow diagram of the screening process</i>	48
Figure 3: <i>The Components of the Change Model</i>	58
Figure 4: <i>The Components of the Action Model of Implementation</i>	63
Figure 5: <i>Figure showing the adapted conceptual framework of the action model with the overarching influence of ecological context</i>	81

List of Abbreviations

ASQ	Ages and Stages Questionnaire
BEI	British Education Index
ECD	Early Childhood Development
CASP	Critical Appraisal Skills Programme
HLLE	Home Language Learning Environment
MISC	Mediational Intervention for Sensitizing Caregivers
PRISMA	Preferred Reporting Items for Systematic Reviews
RCT	Randomised Controlled Trial
UNESCO	United Nations Educational, Scientific and Cultural Organization

Key Terms

Caregiver

The term caregiver refers to a person who provides direct care to a child (Merriam-Webster, n.d-b). The term caregiver in this review refers to any person in the child's home or community who takes on caregiving duties. This may be the parent, grandmother, father, sibling or any other relevant figure.

Low-resource

A resource is refer to as a supply or support that enhances the quality of human life (Merriam-Webster, n.d-a). Low-resource communities refer to communities that lack supply and support necessary for holistic health and development. These include financial resources, social resources, health resources and structural resources.

Programme Theory

Programme theory is an programme evaluation framework which can be used to understand and evaluate the complex elements of interventions such as caregiver training programmes, which take place within open social systems (Chen, 2015).

Chapter 1: Introduction

The Importance of Early Language and Literacy Development

A child has the right to develop to their full potential as stated in Article 6 of the UN Convention of the Rights of the Child (United Nations Children's Fund, 1989). In the 21st century being able to communicate effectively and read to absorb knowledge are essential skills for personal, academic and economic success (*International Literacy Association: The case for children's rights to read*, 2018). Comprehensive early childhood development has the power to influence a child's future and adult trajectory in the development of these essential skills (Bowyer-Crane et al., 2008). The first few years of a child's life form a critical period of development, where a child has the potential to learn new skills at a rapid rate, such as expressive vocabulary, which is a foundational skill for further learning (Grantham-McGregor et al., 2007; Shuey & Kankaraš, 2018). The component skills required for reading comprehension begin to develop before primary schooling, which provides an opportunity for preventative reading interventions and programmes (Catts, 2018).

There has been compelling support from literature and policy change to invest in early childhood development research and programme development to support child development outcomes (Borisova et al., 2017; Raikes et al., 2014; Shuey & Kankaraš, 2018; Spaull & Pretorius, 2019). The UN Sustainable Development Goals recognize early childhood development as a core contributor to quality education, which highlights its importance for social justice and equality to be achieved in the future (United Nations Educational Scientific and Cultural Organizations, 2019).

Rationale for this narrative review

A child's ability to communicate and read is a catalyst for success in the modern world and the means to which further knowledge is accessed (Spaull, 2019). There is a persuasive body of evidence which consistently supports the importance of early childhood development on a child's cognitive and literacy development (Borisova et al., 2017; Raikes et al., 2014; Shuey & Kankaraš, 2018; Spaull & Pretorius, 2019). Literature further frames the home language and literacy environment of a child as having a significant influence on language and learning development (le Roux, 2020; Nag et al., 2018; Shuey & Kankaraš, 2018). Systematic reviews which have evaluated the impact of caregiver interventions on child language and literacy outcomes have failed to effectively capture the complex components of caregiver interventions (Jackson et al., 2019). Caregiver programmes take place in a complex, open social system and therefore many variables impact the overall outcome of an intervention such as the culture sensitivity of an intervention, the intensity intervention or the specific activities that are prioritised (Chen, 2015). To the researchers knowledge there is yet to be a systematic review that evaluates evidence-based caregiver interventions which intend to improve the language and literacy outcomes of disadvantaged children in Southern and East Africa. There is need to increase research within the African continent on effective caregiver interventions in order to diversify the current literature available (Rao et al., 2014; Roberts et al., 2019).

This systematic reviews aims to guide the improvement and development of current interventions aimed at the home literacy environment to improve child literacy development. The focus on Southern and Eastern Africa stems from the researcher's passion for the geographical area as well as the awareness of the poor literacy rates

prevalent in these countries (Shuey & Kankaraš, 2018) and the need for research within the African continent on appropriate caregiver interventions (Roberts et al., 2019). The nine countries in Southern Africa including, Angola, Zambia, Zimbabwe, South Africa, Lesotho, Mozambique, Namibia, Tanzania and Swaziland, present with rich African cultures, where the majority of children are taught in a different language to their home language (Spaull, 2019).

This systematic review aim to identify evidence-based caregiver programmes that have been implemented in South and Eastern Africa, describe the action models of implementation and compare components of the interventions with the currently literature available. This rationale is guided by the need to improve the quality of training within caregiver interventions, which aim to address the poor literacy and language outcomes of Southern and East Africa children.

Chapter 2: Literature Review

This chapter will present available literature relevant to the topic of caregiver training programmes in low-resource Southern and East African contexts. This chapter will further present available literature on caregiver training programmes that specifically aim to improve child language and literacy outcomes through caregiver training programmes.

The Home Language and Literacy Environment

All children are born ready to learn and absorb knowledge through their social environment and early learning experiences (Vygotskiĭ & Cole, 1978). Early childhood stimulation matters for a child's life trajectory and there is rich potential held in the contexts where children spend most of their time, which is often in their home, and the caregivers with whom they spend their time (Shuey & Kankaraš, 2018). According to Bronfenbrenner's (1986) bioecological model of human development, a child's family and caregivers form part of his/her primary microsystem and can be considered as one of the most important systems impacting a child's cognitive and socio-emotional development (Siraj & Mayo, 2014). It is widely recognized that children's ability to learn to read and write is impacted by their early learning experiences in the home and community (Cheung et al., 2021; Nag et al., 2018). There is sufficient evidence to support the proposal that a child's Home Language and Literacy Environment (HLLE) during the early years of development can either support or hinder language and literacy development which has the potential in turn to impact later school performance (Borisova et al., 2017; Cheung et al., 2021).

The quality of the HLLE of a child before school entry has consistently been shown to impact later school literacy performance and other developmental outcomes

(Nag et al., 2018; Siraj & Mayo, 2014). There are specific attributes of a child's social and physical home environment that predict language and literacy development (Nag et al., 2018). The Home Language and Literacy Environment (HLLE) consists of three dimensions of the home, namely the prevalence of books, the occurrence of home tutoring practices and adult literacy practices (Nag et al., 2018). The quality of an HLLE may vary based on multiple variables including culture and socio-economic status (Nag et al., 2018; Siraj & Mayo, 2014). Children living in low-resource settings are at risk of poor literacy attainment (Nag et al., 2018). Children entering schooling from low-income, low-resource homes are therefore already at a disadvantage to excel in the school environment (Maulik & Darmstadt, 2009). Caregiver interventions commonly aim to address these dimensions by providing books to the or by aiming to change the home tutoring and care practices of caregivers.

The Current State of Child Literacy Rates in Southern and East African Homes

Most children in Southern and Eastern Africa are not reaching their literacy milestones at expected rates, hindering future development from a personal and economic perspective (UNESCO, 2019). Low-income communities in Southern and Eastern Africa are faced with a magnitude of contextual risk factors impacting child development such as access to safe play spaces, adequate nutrition and quality healthcare. The World Bank (2021) refers to the term Learning Poverty, which is what children experiences when they are unable to read text by age 10. Countries in Southern and Eastern Africa consistently show disturbing results, with 90% of children in Ethiopia, 80% of children in South Africa and 83% of children in Uganda unable to read proficiently even in late primary school (World Bank, 2019). In an UNESCO (2019) report, the evidence shows that over 18% of children in Sub-Saharan Africa (including Southern and Eastern Africa) are not attending primary

school. Many children are therefore in need of effective evidence-based interventions to ensure a bright future and school attainment. An additional challenge for many African children is that they are required to transition from their home language to their second language upon entry to formal schooling, creating a further barrier to school achievement and success (Nag et al., 2018; Spaull & Pretorius, 2019). There is an urgent need for preventative intervention approaches to be initiated within the home environment in a child's early stages of development before school entry, given the large number of children struggling to read for meaning in Sub-Saharan Africa (UNESCO, 2019), specifically in low-resource communities (Spaull & Comings, 2019).

The Quality of the Caregiver-Child Interactions

Caregivers hold the power to influence their child's chance to develop to their full potential (Britto et al., 2015). Spaull and Pretorius (2019) propose that the most important contributor to literacy development is the quality of interaction between the caregiver and child. This notion is further supported by Vygotsky's social learning theory and the zone of proximal development where caregivers are seen to provide children with scaffolding opportunities to expand and build skills and abilities (Vygotskiĭ & Cole, 1978). Caregiver interventions that are aimed to improve caregiver-child interactions and ultimately child language and literacy outcomes are based on conceptual theories of change (Rao et al., 2014). Caregiver interventions are explained, designed, delivered, and implemented in various ways. Within the development of an intervention, it is essential to consider what is already known about child development, the quality of caregiver-child interactions, adult education principles and implementation science.

In the design of an intervention, it is important to know what behaviour change is desired of the caregiver. Desirable behaviours which have shown positive impacts on child language and literacy outcomes include increased responsive parenting which means responding to the child's gestures and cues (Lucas et al., 2018), increasing interactive dialogue between the parent and the child, allowing for the child to direct the learning or play (Case-Smith & O'Brien, 2015), ensuring positive effect during activities, and obtaining joint attention (Roberts et al., 2019). The Early Head Start Study showed that the child language development outcomes were mediated by improving the quality of interaction between a caregiver and their child (Raikes et al., 2014). Focusing on the parent child interaction and including specific content on responsive parenting in parent programmes is therefore important to consider in programme development. The focus on these components are supported by the results of a systematic review by Jeong et al. (2021), which showed that interventions which include content on responsive caregiving have significantly greater effects on child outcomes.

The desired caregiver behaviours relate to how we effectively teach children to read, which can be explained using the simple view of reading (Catts, 2018; Hoover & Gough, 1990). The simple view of reading states that oral language and decoding abilities are the two core components that interact to enable reading comprehension and fluency (Westerveld et al., 2020). It is therefore plausible that by improving the components contributing to oral comprehension, this will help to increase the school readiness of children (Raikes et al., 2014; Westerveld et al., 2020).

Caregiver interventions often use an activity-based approach (Roberts et al., 2019), such as dialogic book sharing or similar play-based activities. Play is

considered the primary tool for childhood learning and therefore an effective medium for language and literacy development (Case-Smith & O'Brien, 2015; Maulik & Darmstadt, 2009). The challenge lies in determining what activities are enjoyable for both the caregiver and the child, culturally acceptable and cost-effective to encourage engagement.

Early Child Development as a Priority

There is significant investment being made around the globe to address the devastating literacy levels of low-resource, low-income communities (Nag et al., 2018). Caregiver interventions are being implemented worldwide and have been endorsed by governments and well-known organizations such as UNICEF, UNESCO and Save The Children. Caregiver interventions are often appealing due to the relatively low cost of these interventions in comparison to other kinds of early learning interventions (Jackson et al., 2019). In a cost-benefit analysis comparing child development interventions, caregiver interventions were found to lead to high returns on investment due to the relatively low-cost and substantial gains in child outcomes (Rao et al., 2014). Caregiver interventions are based on a two-stage model where the interventions rely on a change in caregiver behaviour and practices to improve child development outcomes (Jackson et al., 2019). The theory of change of caregiver interventions places caregivers as the determinants or change agents necessary to improve child development outcomes (Chen, 2015).

Although there are significant efforts to promote early language and literacy development through parents and caregiver training, there is limited and mixed empirical evidence on the effects of these implemented programmes. For example, in a systematic review analyzing caregiver and community interventions to improve literacy development in low and middle-income countries, found that there was

minimal rigorous evidence of the effectiveness of most models being used by governments, NGO's and communities in low- and middle-income countries (Spier et al., 2016). It is a concerning reality that many conceptual models and interventions being used in low-income settings are not supported or tested by robust empirical research. The lack of evidence-based interventions in practice limits the reliability that these interventions will improve child language ability and literacy rates in these communities. Although there is a gulf between what is being implemented and what has been researched, there have been various other systematic reviews and meta-analyses within the last decade, which aim to synthesize what we know about caregiver interventions in various contexts. These reviews can help guide the development of caregiver training programmes and help further the field of early childhood education. These will be reviewed next.

Systematic Reviews of Caregiver Interventions

The results of systematic reviews on caregiver interventions show mixed results in terms of what works and why when looking to improve child language and literacy development. The most recent systematic review by Jeong et al. (2021) reviewed global parenting interventions which aim to promote early child development in the first three years of life. This systematic review analyzed 102 RCT studies of parenting interventions delivered to children in their first three years of life in 33 different countries. This review found that there were more studies available in high income countries compared to low-income countries, with 40 of the studies based in the United States of America.

This review primarily aimed to quantify the pooled effectiveness of caregiver interventions on ECD outcomes. A total of 46 studies provided 58 effect sizes of

parent interventions on child language development. The pooled effect sizes showed a moderately positive result on child language development (Standard Mean Difference = 0.28, 95% CI: 0.18 to 0.37, $P < 0.001$) (p.25). Based off these findings, parenting interventions significantly impact early child language development and parent-child interactions positively in low, middle and high-income countries.

This promising result is in line with a previous systematic review and meta-analysis, which analysed the impact of parent training programmes on language and communication outcomes of young children at risk of language impairments or experiencing language impairment (Roberts et al., 2019). The review analysed 76 studies and found a significant moderate relationship between parent training interventions and improved child language and communication outcomes (Mean [SE] Hedges g , 0.33 [0.06]; $P < 0.001$) (p.1). Most of the studies included in this review were published in North America and therefore the results may be bias towards a Western context and should be critically analysed in terms of transferability of results to an African context.

Another systematic review analysed the impact of parenting programmes in low and middle-income countries on child development (Britto et al., 2015). This review was commissioned by UNICEF to address the gaps in understanding of what works when implementing caregiver programmes in different contexts. This study reviewed a total of 105 studies of parenting programmes from a total of 36 countries. This study found six programmes in five countries, from Belarus, South Africa, Brazil, Turkey, and Jamaica, to have a significant positive impact on child cognitive development. The study included child language and literacy development under the umbrella term of cognitive development and found that programmes encouraging

active engagement of caregivers through psychosocial stimulation programmes to be effective in improving cognitive development in young children.

The literature has not always aligned as the results from a systematic review by Spier et al. (2016), which analysed the impact of caregiver and community based interventions to promote child literacy in developing countries. The review divided the eligible interventions into three categories: the effects of education television, the effects of parenting interventions to improve school readiness and the effects of tutoring interventions. The results of the parenting interventions on child literacy were not significantly effective across the studies, although some studies showed significant effects. The variation seen in caregiver programme effectiveness show that some interventions in low- and middle-income countries were effective in improving child language and literacy outcomes, and some are not. Due to the limited number of studies in this review, the researchers were unable to assess potential moderators on the improvement of child literacy outcomes.

There has been research that analyses the potential moderating effect of context or socio-economic status of the caregiver on child outcomes. Parenting interventions in low-resource settings targeting disadvantaged families have shown to be more effective on child outcomes compared to interventions focused on advantaged families and communities. In the systematic review by Jeong et al. (2021) the results reported that interventions in LMIC showed greater effects on holistic child development in comparison to HIC. The results from the systematic review by Jackson et al. (2019), contradicts this statement as the review found that there were mixed results of child outcomes from advantaged backgrounds compared to disadvantaged backgrounds with no clear greater effect. One point that remains clear

is that context does matter to the effectiveness, design and upscale of any caregiver intervention.

The concern that is voiced consistently in available systematic review is the limited knowledge available to answer why some caregiver interventions have been more effective than others and what core factors are impacting the effectiveness of an intervention (Britto et al., 2015; Jackson et al., 2019; Roberts et al., 2019; Spier et al., 2016). Researchers have struggled to isolate components such as intensity or teaching styles used due to the heterogeneity of these intervention components (McHenry et al., 2019). The lack of homogeneity presents as a challenge for synthesizing and understanding the cause and effect of these caregiver training components.

Components of Caregiver Interventions

Caregiver interventions vary in many different aspects, and little is known about what the most effective model looks like to ultimately improve child literacy attainments in low-resource African communities. Caregiver interventions differ in terms of the change model, delivery and intensity (Spier et al., 2016). There is yet to be a reliable model to guide the development of caregiver interventions that are contextually relevant for low-resource communities in Southern and East Africa. According to Spaul and Pretorius (2019), family or caregiver interventions require their own set of specific quality elements. The next few paragraphs will summarize what the evidence suggests about various characteristics and components of caregiver interventions.

Timing of the Programme

There is consensus that caregiver interventions should begin as early as possible to utilize the sensitive window in early child development (Baker-Henningham & López Bóo, 2010; Britto et al., 2015; Rao et al., 2017). Ideally, caregiver interventions should be initiated within the first two years of life (Baker-Henningham & López Bóo, 2010). A helpful finding was that studies starting prenatally, showed the most potential to improve child language outcomes (Jackson et al., 2019). Timing has been considered in other systematic reviews of parenting interventions, and authors suggest that the earlier caregiver interventions can begin the better due to factors such as the excitement of becoming a parent for the first time (Jackson et al., 2019). Although there is consensus to begin caregiver training early on, this is not always possible for at risk groups of children who are only identified at a certain age of development such as children who are diagnosed with severe acute malnutrition (SAM) or HIV.

Literacy Promotion

Encouraging caregivers to read with their children and providing parents with books has been a common intervention modality aimed to improve language and literacy outcomes of children. The literature reports that the most important component of these reading interventions is the interaction that takes place between the child and caregiver during the book reading (Barone et al., 2019). The literature suggests that dialogic book reading, which promotes interaction and communication between a parent and caregiver, is the style of reading that should be encouraged over traditional parent-directed reading (Barone et al., 2019). Dialogic book reading is considered as a more interactive approach where story elaboration and child directed conversations are encouraged, whereas shared book reading refers to when a parent reads to their child (Vally et al., 2015). The results of a systematic

review on home-based shared book reading by Barone et al. (2019), showed that only dialogic reading shows positive results on child outcomes, whereas shared booking reading is largely ineffective.

Intensity and Dosage

The duration of caregiver interventions has been advised to be implemented for a minimum of a year with weekly contact preferred over monthly contact (Ashley-Cooper et al., 2019; Baker-Henningham & López Bóo, 2010; Britto et al., 2015). Gains in child development outcomes have been found to increase with increased frequency of visits (Baker-Henningham & López Bóo, 2010). Programmes that are implemented in low dosages have shown non-significant results on child outcomes (Britto et al., 2015). It is suggested that intensity is increased by either including home visits or combining group sessions with individual sessions (Britto et al., 2015).

The most recent literature suggests that programmes which incorporate home visiting are more likely to have a positive impact on language outcomes for children (Britto et al., 2015; Henwood et al., 2020). A systematic review by Henwood et al. (2020) analysed the impact of a home visiting programmes for disadvantaged women on their child's language development. Henwood et al. (2020) found that most home visiting programmes improved child language outcomes, although the effect size is generally small.

A systematic review by Jackson et al. (2019) proposed that there may be a threshold dose of sessions required to produce optimal results, beyond which no significant benefits will occur. Jackson et al. (2019) further reports that the optimal duration is unclear.

Implementors and Training

The qualifications and training of the individuals delivering the caregiver training is an essential element of caregiver training. Close supervision of individuals implementing the intervention has been viewed as a success factor (Jackson et al., 2019). Britto et al. (2015) found that across studies the training and supervision of implementors was an important solution to ensure programme quality. Baker-Henningham and López Bóo (2010) and (Britto et al., 2015) both reported that trained paraprofessionals, such as a community health worker, are sufficient implementors of parenting programmes which is a helpful finding to ensure cost-effective programmes. This is supported by the promising child language results of the UNICEF Care for Child Development programme, which was implemented by community health workers (McHenry et al., 2019). The literature therefore suggests that paraprofessionals may be adequate for the general population of children, but that specialists may be required for at risk or developmentally delayed children. In contrast, a recent systematic review by (Roberts et al., 2019) explained that most studies that aimed to help children with known language development delays were implemented by specialist such as speech-language pathologists or PhD students. It is relevant to note that in the majority of training programmes effective in improving child outcomes, the implementors were provided with initial training, ongoing supervision and a manual (Baker-Henningham & López Bóo, 2010).

Caregiver Teaching Strategies

Caregiver training programmes aim to empower caregivers. Empowerment means to enable caregivers to further their own development and the development of others around them (Freire, 1972). According to (Freire, 1972), it is essential to take an emancipatory approach to training, where the knowledge of caregivers is respected and valued in the process of education. It is essential for caregivers to be treated with

respect and acknowledge that they will understand their needs better than anyone else.

Caregiver interventions aim to empower caregivers with knowledge and skills to improve the interaction they have with their child. Previous systematic reviews and literature have consistently reported the importance of in action learning and live demonstrations during caregiver training (Ashley-Cooper et al., 2019; Britto et al., 2015). Larger effect sizes on child outcomes were reported when parents practiced their new skills with their child during the training sessions, while the facilitator observed (Kaminski et al., 2008). This allowed for reinforcement and corrective feedback from the facilitator, which is an important characteristic of training that Rao et al. (2014) refers to as guided practice for parents. In the same review the techniques of modelling and homework were not found to be predictive of child outcomes (Kaminski et al., 2008). The research further suggests that caregiver training should take place with the child present in the sessions so that parents can practice in real life and have feedback on their actions (Ashley-Cooper et al., 2019; Britto et al., 2015). Baker-Henningham and López Bóo (2010) recommend the use of hands-on practice activities and caution the use of information sharing interventions that are primarily discussion based.

Purely teaching parents about child development has not shown to be successful or predictive of improving child outcomes according to two recent systematic reviews of caregiver training programmes (Kaminski et al., 2008; Rao et al., 2014). Caregiver training should therefore focus on practice and feedback, rather than teaching child development theory to be effective.

Cultural Sensitivity in Caregiver Programmes

Cultural Sensitivity is a term that is important to define, due to the complexity of this concept in practice. A caregiver training programme is either adapted to a new context or created within a context. The cultural sensitivity of a programme can therefore relate to the quality of adaption to the new context.

Resnicow et al. (2000) defines cultural sensitivity as:

The extent to which cultural characteristics, experiences, norms, values, behavioural patterns, and beliefs of a target population as well as relevant historical, environmental, and social forces are incorporated in the design, delivery, and evaluation of targeted health promotion materials and programs. (p.2)

This definition highlights the comprehensive nature of considerations required to ensure an intervention is sensitive to a culture. This conceptual framework by Resnicow et al. (2000) has been used to evaluate the level of cultural sensitivity of caregiver programmes. This model has been utilised in a systematic review of caregiver training programmes for ethnic minorities (van Mourik et al., 2017), and by Mejia et al. (2017) who used the model to explain cultural adaption of caregiver programmes.

Resnicow et al. (2000) conceptualizes cultural sensitivity by dividing the concept into two levels: surface structure sensitivity and deep structure sensitivity. Surface structure sensitivity refers to the fit of a training programme to the norms of a community, therefore ensuring that the programme is easily accessible and understood. This includes the intervention being delivered in the local language, the implementors being local to the area, the setting being familiar or accessible to the

community, the medium of delivery being valued by the community, and the material being familiar to the caregivers such as the toys being used.

Deep culture sensitivity refers to the extent that a programme considers the social, environmental and cultural values of a community on the behaviours of caregivers (Resnicow et al., 2000). Deep cultural sensitivity can therefore be achieved in the African context when a programme considers the perspectives of the caregivers and their values, and builds on their current caregiving practices and collaborates with the community or extended family in the design and delivery of the programme. The notion of building on the existing strengths of African caregiver practices, rather than imprinting Westernised practices is echoed by Serpell (2020) and by Amos (2013) who conclude that, “African culture is rich. Let us embrace our good parenting practices so we nurture responsible youth for the African continent.” (p.3)

Programme impact is affected by the cultural sensitivity of a caregiver training programme. This notion is supported by the findings of Lachman et al. (2016) and Jackson et al. (2019). According to Resnicow et al. (2000), although surface structure sensitivity is easier to achieve, deep structure sensitivity is what determines programme impact. Caregiver training programmes that are developed within the community they intend to serve will more likely present with deep cultural sensitivity and therefore, can be more likely to impact sustained caregiver behaviour change.

Cultural values influence a family’s routine, daily activities and what is expected of the child (Case-Smith & O'Brien, 2015). Effective caregiver interventions, therefore, need to be culturally sensitive and require sufficient consideration on what is accepted in a community and understanding of valued in a

community. Cultural and contextual consideration is important when aiming to impact the home language and literacy environment in a supportive way for child learning and development. According to a theory of change model created by Rao et al. (2014), the use of culturally appropriate materials, which is a surface structure sensitivity adaption, was a core component of effective caregiver interventions in developing countries. Caregiver programmes that are culturally sensitive have been shown to be more likely to impact caregiver behaviour. A meta-analysis analysed the impact that cultural adaptations have on caregiver training programmes for ethnic minority groups and found that programmes with cultural sensitivity are more effective in improving caregiver behaviour (van Mourik et al., 2017). The results showed that caregiver training programmes that had deep structure sensitivity showed the highest effect size (Cohen's $d = 0.54$), to improve caregiver behaviour based on self-reported and observable measures.

Unfortunately, there is limited research published in Africa in comparison to high-income, high resource Western regions. The majority of studies and frameworks of caregiver interventions have been developed and conducted in western societies. It is important to note that home language learning environments in western countries may differ in terms of social structures and cultural values compared to low-resource communities in the global south (Cheung et al., 2021). Although there are lessons to learn from effective caregiver interventions implemented in different cultural contexts, it is important to realize that the context of Africa is different and unique. Meyers et al. (2012) and van Mourik et al. (2017) argue that it cannot be assumed that the effectiveness of an intervention can transfer to a different community where context and culture differs. The effectiveness of an intervention from America cannot be assumed to be effective in low-resource communities in Africa. This notion is

based on the cultural and contextual differences in communities (van Mourik et al., 2017). These differences could include the kinds of resources considered contextually relevant and what practices are culturally accepted.

The African Culture: It Takes a Village to Raise a Child

In many low-resource African homes children are raised by their extended family, which can include grandparents, siblings, cousins or neighbours (Amos, 2013). Each African community will differ in their cultural norms and practices, although there are some common practices within African cultures. African communities also commonly assign other young children to supervise infants throughout the day (Serpell, 2020), and traditional gender roles often persist where women are expected to be the primary caregiver of children. In many African cultures, children are raised to respect their elders and value a strong community connection above individual gain. In a study by Lachman et al. (2016), African caregivers voiced that training interventions need to understand the emphasis of *intlonipho* (respect) and *ubuntu* (a shared social responsibility), which are values that the caregivers aimed to instil in their children.

There is often a tension between the cultural traditions of African communities and the goals of formal schooling, which are usually informed by Western ideals. The ideal of “education for all” was originally imposed on many African nations by Western societies and missionaries (Serpell, 2020). The belief that African children need to be “educated” according to the Western formal schooling system has continued to persist into modern society. According to Amos (2013) there are valuable African caregiver practices that are being forgotten and replaced by Western promoted norms, due to research and knowledge being produced in the

Western world and disseminated in African society. Some of these practices refer to folktale storytelling, the use of singing in the presence of your child and culturally embedded African games.

Many African children are brought up in a language different to their school language and brought up in homes that have different values and goals in comparison to the individualistic, academic goals of formal schooling and literacy development. The distance between the home environment and school environment, can be seen as a disadvantage to the development of educational skills. These are skills often required to succeed in the school environment, which is an environment infused by the influence and discourses a Western society (Serpell, 2020). Within African regions each community has its own unique cultural norms and values such as the role of a grandparent as the primary caregiver or the cultural meaning of song and dance, that are embedded in everyday caregiver behaviours. A child's language and literacy learning opportunities are based off the cultural practices of a community and their family (Case-Smith & O'Brien, 2015; Sibanda & Kajee, 2019). Cultural variation is also evident in the roles of specific family members, childbearing practices, gender norms and what is valued in terms of education. Due to the pivotal impact of culture on human behaviour, caregiver training programmes need to ensure cultural sensitivity to be accepted by a community, effective in changing caregiver practices and sustainable by building on existing behaviours. There is a strong intergenerational link of caregiver practices and behaviours, which are passed on from one generation to the next generation (Amos, 2013). By improving the parent-child interaction of the current generation, this will have an impact on all future generations to come.

Evaluating Caregiver Programmes

It is important to comprehensively evaluate intervention programmes with a conceptual framework to understand to evaluate the complex components which collectively impact the effectiveness of such programmes. Due to the complexity of caregiver programmes and the different implementation systems of each programme, it is very difficult to understand why a programme is effective or not, since multiple variables could be impacting the training of the caregivers, the behaviour of the caregivers and the child outcomes. The heterogeneity of caregiver programmes has been highlighted in various systematic reviews (Jeong et al., 2021; McHenry et al., 2019). Most caregiver training programmes differ in intensity, the level of cultural sensitivity, the implementors and their training, the style of caregiver training and the provision of resources to name a few. A very promising caregiver intervention may have an evidenced-based intervention, but fails to apply the optimal intensity of the intervention or provide training in the most effective style. Caregiver training programmes that have been ineffective, may still have the potential to bring about significant change in child outcomes by improving the action model of implementation and planning. It is important not to completely discard ineffective caregiver interventions which have not shown significant effects. Rather, it is important to analyse and breakdown the conceptual framework guiding the programmes to evaluate each component and characteristic which impacts the desired outcomes.

Programme theory is a programme evaluation framework which can be used to understand and evaluate the complex elements of interventions that take place within open social systems (Chen, 2015). Caregiver training programmes occur within open systems as they are influenced by the context and by human behaviour. Programme theory provides a helpful model to evaluate caregiver intervention

programmes as the framework considers the elements of an implementation system and the context of implementation (Chen, 2015). Figure 1 displays the conceptual framework of programme theory, which consists of a change model and an action model. A sustainable caregiver training programme needs to be based on a sound change model and have a well-designed action model to be effective in achieving desired outcomes (Chen, 2015). The conceptual model of programme theory suggests that every programme is based off a set of assumptions which guide the development of a *change model* of an intervention. The change model includes the desired goals and outcomes of the intervention, the determinants required to achieve these outcomes and the actual intervention as displayed in Figure 1.

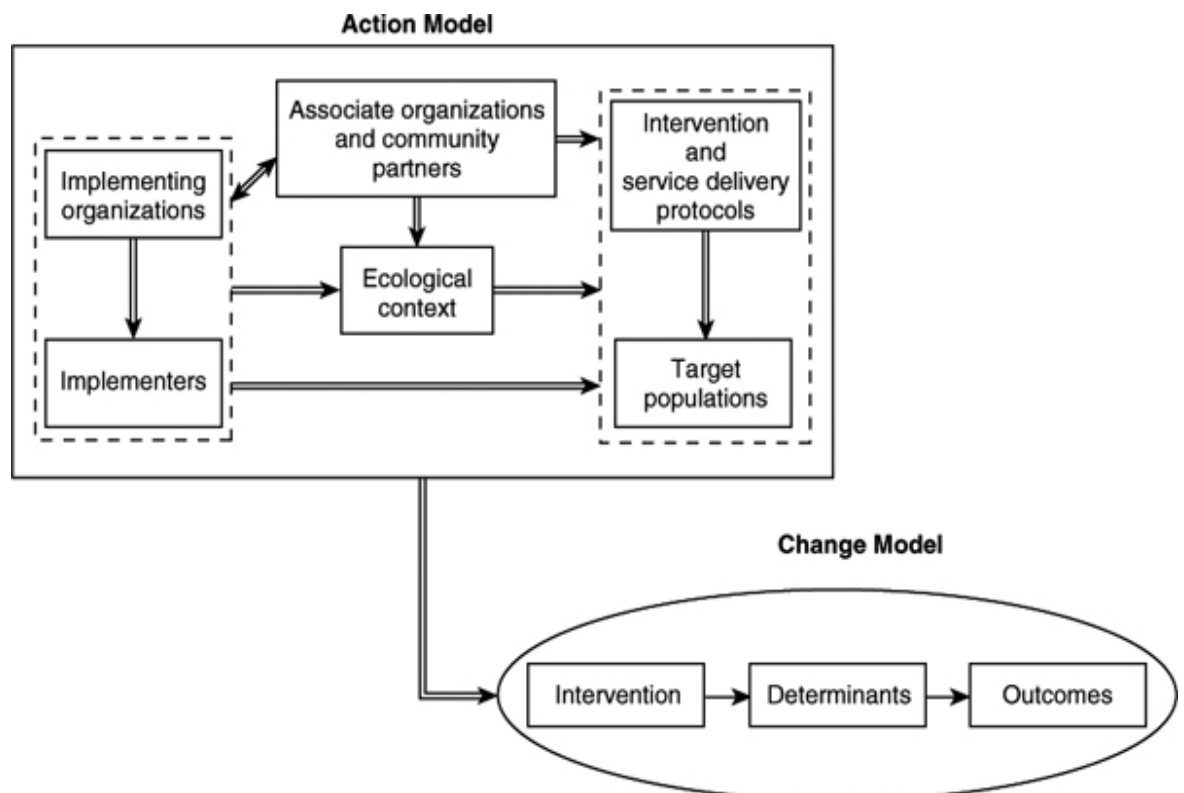
The goals of caregiver training interventions are intended to fulfil unmet needs, which in this case would be the need to improve child development. The common goal of caregiver training interventions of interest is to empower caregivers with skills and knowledge to enhance the quality of parent-child interactions and ultimately improve child development outcomes.

The *outcomes* of caregiver interventions are the measurable aspects such as the child expressive language score, which is used to evaluate if the goal is being achieved (Chen, 2015). The assumption is that caregivers are considered essential *determinants* or mediators that will help achieve the outcome of improved child development. The caregivers acceptance of the training, the caregiver perceived benefits of the training and the self-efficacy of the parent are all considered to impact the outcome of the intervention. The caregiver training intervention is made up of activities and sessions, which aim to change the determinant, which is the caregivers behaviour. According to the change model (Chen, 2015), the assumption is that by implementing these sessions and activities, the intervention changes the determinant

which will bring about the desired outcomes of child language or literacy development. As previously mentioned, caregiver interventions vary in what the training programme consists of.

Figure 1

The Conceptual Framework of Programme Theory



Note. Adapted from Chen's (2015) practical guide to programme evaluation

According to programme theory (Chen, 2015), the effects of an programme are based on the effectiveness of the intervention in combination with the specifics of the programme's implementation. The *action model* consists of important components to consider and plan to ensure quality implementation and delivery of an intervention. The action model consists of the intervention and service delivery protocols, a clear target population, the implementing organisation and implementors, the ecological context and community partners involved. The target

population for caregiver interventions of interest to this study are caregivers of young children from low-resource areas in Southern and East Africa. The *intervention and service delivery protocol* is the specific plan of the content of the intervention, the intensity, the delivery mode and the setting the caregiver training would take place. The implementing organisations and implementors play an important role in the quality of service delivery depending on their training, enthusiasm and cultural acceptability. Associate organisations or community collaborations are important factors impacting the sustainability and acceptance of a new intervention within a community.

Ecological context refers to context that the programme interacts with and highlights the need for programmes to be supported by the micro-level support and macro-level context to ensure programme feasibility and impact (Chen, 2015). Micro-level contextual support refers to the components of an intervention, social, psychological or material components, that support continued caregiver participation (Chen, 2015). The researcher proposes that micro-level support is similar to surface structure sensitivity of a training programme. For many caregiver programmes to take place, it is important to consider the financial strain the programme may place on the participants, the access to technology and the language of implementation to have an ecologically accepted and supported caregiver programme. According to Chen (2015), macro-level contextual support refers to substantial consideration for “community norms, cultures, and political and economic processes.” (p.10) The researcher proposes that macro-level support can refer to deep cultural sensitivity of a caregiver training programme. The components of the action model will be used to extract data within this dissertation in order to analyse each training programme in a structured and comprehensive manner.

The Research Gaps

There is limited knowledge on what caregiver interventions have empirical evidence regarding their level of effectiveness in Southern and East Africa. This is evident in the underrepresentation of studies based in Africa in the results found in the systematic reviews previously discussed (Jeong et al., 2021; Roberts et al., 2019). The impact of context and culture plays an important role in the feasibility and effectiveness of an intervention. Therefore, there is a need to increase the research base in Southern and East African regions. To the researcher's knowledge, this is the first narrative review available that specifically evaluates caregiver training programmes in Southern and East Africa.

The effectiveness of a caregiver training programme is impacted by the change and action model of implementation, which means that there are many components determining the impact and sustainability of an intervention. There is a need for research to evaluate the specific components, such as intensity, cultural sensitivity, and teaching strategies of caregiver training programmes in Southern and East Africa to understand where there are opportunities for improvement and adaptation. The need to evaluate specific components of caregiver training programmes has been voiced in previous systematic reviews (Baker-Henningham & López Bóo, 2010; Jeong et al., 2021; Rao et al., 2017). Jeong et al. (2021) recommends future research needs to unpack the variability of intervention characteristics components and level of effectiveness, to efficiently impact child outcomes and inform the scale-up of these interventions. Caregiver interventions are complex multi-component interventions. This is the reason for the need to unpack the specific features and implementation components of effective caregiver interventions in the Southern and East African context.

Chapter 3: Methodology

This chapter explains the rigorous steps that were followed to ensure that this review is methodologically valid and reliable. This chapter will explain the methods chosen to conduct this research and the reasons behind each process. This chapter will include information on the systematic review process, which includes the search strategy, the screening process, quality assessment, data extraction process and data synthesis.

Research Questions

1. What caregiver training programmes have been implemented in Southern and East Africa that have empirical evidence regarding their level of effectiveness on child language or literacy outcomes?
2. What are the change models of eligible caregiver training programmes?
3. What are the action models of eligible caregiver training programmes?
4. Do the components of eligible caregivers training programmes align with current literature on optimal intensity, quantity of supervision provided, teaching strategies used, community partners formed and ecological context support gained?

Research Design

The researcher had initially planned to complete a primary research study on a caregiver mobile-training intervention based in South Africa. The mobile-training intervention as developed by a South African organisation with the aim to improve cognitive abilities of young children through caregiver-child engagement. The researcher had adapted the script and images used in the mobile training and had planned to evaluate the impact of this mobile training on the quality of caregiver-

child dialogue. The method of data collection was planned to be video recordings of the caregiver and child interacting through play, which would have been coded and analysed. Due to the Covid-19 pandemic this primary research was unable to take place. The researcher, therefore decided to complete a narrative review of caregiver training interventions, within the same region of interest.

This study is a systematic review of parenting programmes in Southern and East Africa that aim to improve child language or literacy development. This study uses a narrative review design to evaluate evidence-based caregiver programmes based in Southern and East Africa which aim to improve child language and literacy outcomes. This review will evaluate the eligible studies using an evaluation framework (Chen, 2015), to assess the evidence-based design of each programme. A narrative review is required to synthesize the research as determined by the configurative nature of the research questions and broad inclusion criteria (Gough et al., 2012). Configurative reviews are a type of systematic review, which try to understand the world by arranging and developing concepts (Gough et al., 2012). According to Gough et al. (2012), configurative reviews are advised when identifying patterns provided by heterogeneity, which caregiver training programmes present with. The PRISMA reporting framework will be used for the reporting of this systematic review (Page et al., 2021). A summary of the inclusion and exclusion criteria can be seen in Table 1.

Table 1

Inclusion and Exclusion Criteria used in the Screening Process

Component	Inclusion criteria	Exclusion	Rationale
Study design	Randomized Controlled Trials.	All other study designs	Improve the methodological quality of the studies by reducing bias (Slavin, 2008).
Participants at time of intervention	Children from birth to six years of age at the time of intervention.	Child above six years of age at the time of intervention.	Lower limit due to learning beginning from birth. Upper based on the beginning of primary schooling in most African countries (The World Bank, 2020).
Context	Low-resource communities based in a Southern or East African Country.	High-resource communities. Countries outside of Southern or East Africa.	To ensure the interpretations of the findings are valid for low resource communities in Southern and East Africa.
Intervention	Includes a form of caregiver training.	Combined interventions	Combined interventions are excluded to be able to isolate the intervention causing the results.
Intervention focus	Interventions that incorporate caregiver training targeted at caregiver-child interaction.	Purely tech based intervention or e-learning that do not involve the caregiver in training.	A child's caregiver plays an important role in their development (Nag et al., 2018). Caregivers play a significant role in their child's language and literacy development (Cheung et al., 2021).
Outcome measures	All measures of a child's language outcome, pre-literacy outcome or literacy outcome or a child's motivation and affect towards language and literacy. See Table 2.1 and 2.2 for further information.	Only caregiver measures.	There is a lack of heterogeneity in the outcome measures chosen by researcher. In order to capture as many eligible studies as possible, all outcome measures of language or literacy will be included.
Types of literature	Studies published between January 2011 – May 2021.	Studies published prior to 2011.	This review seeks to evaluates the most up-to-date studies, which has guided the inclusion of only studies published in the last ten years.
Language	Studies with abstracts in any language.		To reduce bias towards English publications.

Types of Participants Included

The participants of the intervention studies included children from birth to the age of 0 to 6 old. The participants were from a Southern or East African country living in a low resource community, based on the authors description. The age band

was chosen as children typically enter primary schooling or foundation phase at the age of six in South and Eastern Africa (The World Bank, 2020). The age band for the age of child assessment was from birth to 10 years to allow for follow-up assessments on children's language and literacy development. Research that included children with disabilities was included in this study, although this was not the focus of the research. Caregivers of any age or gender were included.

Types of Interventions Included

This review included only primary intervention studies that were Randomized Control Trials. This review did not include any systematic reviews. The interventions eligible had to include a form of caregiver training aimed to improve caregiver-child interaction and engagement. The location of the caregiver training was not specific. All caregiver training delivery modes were included such as workshops, one to one training or online training. Combined intervention were excluded, which refers to interventions that are multi-component such as a stimulation and nutrition training programme for caregivers. Purely nutrition education training programmes and hygiene education training programmes were excluded.

Comparator

Eligible intervention studies required to have a treatment and control group in order to increase methodological rigour and increase reliability of results (Bryman, 2012). The presence of a control group increases the internal validity of a study, by eliminating possible reason for a change in outcome (Bryman, 2012). The control group could be active or passive, which allowed for studies with a business as usual control group. An example of an active control group would be a nutrition programme acting as the control group.

Types of Outcomes included

The outcomes included were any emergent literacy or language skills. These skills could be cognitive-linguistic outcomes or affective-motivational outcomes.

Table 2.1 and 2.2 represents relevant emergent literacy skills that were included. This table is adapted from Westerveld et al. (2020) and includes predictors of later literacy development skills.

The measurement tools used could be standardised assessments, locally developed assessments or assessment developed specifically for the study. This was allowed since standardised assessments are not always available in South African languages or standardised for the African context.

Table 2.1

Table showing code-related emergent literacy skills eligible for inclusion

Code-related emergent literacy skills	Definition of skill	Examples of assessment tasks ^a
Phonological awareness	The child's ability to consciously identify sounds in spoken language, including syllables, onset-rime, and individual sounds (phonemes).	Syllables: How many syllables/claps in <i>umhlobo</i> (friend)? Answer: 3: um/hlo/bo Onset-rime: what is the first sound in <i>usapho</i> (family)? Answer: /u/ Phonemes: how many sounds in <i>funda</i> (read)? Answer: 2: fun/da
Alphabet knowledge (phonics)	The child's ability to name and/or provide the sounds of printed letters.	Single letters: all 26 letters of the alphabet. Digraphs: /hl/ /um/ /en/ etc Trigraphs: /uku/ /isi/ etc
Emergent (name) writing	The child's ability to write letters when requested and/or to write his/her own name	Provide the child with a blank piece of paper and a pen/pencil: Can you write your name?
Rapid automatic naming (RAN) of letters/digits/objects and colours	The child's ability to rapidly name a sequence of letters/digits/pictures or colours	The child is provided with a sheet of paper containing familiar pictures, digits, or coloured shapes and asked to name as many as they can in 60 seconds.

Phonological memory	The child's ability to remember verbal information for a short period of time	For example, ask the child to repeat non-words: <i>flibvat</i>
Print concepts	The child's knowledge of print conventions. A child's motivation and affect towards print.	For example, reading from left to right and understanding that written text carries meaning. A child's motivation to read.

Note. Adapted emergent literacy skills with definitions from Westerveld et al. (2020).

^aThe examples have been adapted from English into Xhosa to use examples which are contextually relevant. Xhosa is an official South African language.

Table 2.2

Table showing meaning-related emergent literacy skills eligible for inclusion

Meaning-related emergent literacy skills	Definition of skills	Examples of assessment tasks
Vocabulary	Includes expressive and receptive vocabulary. The child's knowledge of spoken words.	The child is asked to point to a picture (choice of four) in response to a spoken word.
Grammar	The child's knowledge of the rules of the English language.	The child is asked to point to a picture (choice of four) in response to a short sentence.
Narrative skills	The child's ability to comprehend and re/tell a coherent well-sequenced story.	The child is asked several questions after listening to a novel story. The child is then asked to re/tell the story.

Note. Adapted emergent literacy skills with definitions from Westerveld et al. (2020).

Search Strategy

Five databases were used to search for eligible studies. The following databases used were ProQuest Social Sciences Premium Collection, Psych Info, BEI, Africa-Wide and ProQuest & theses global. These data bases were chosen through discussion with an experienced Librarian from the University of Oxford to ensure the researcher was guided to relevant sources. Two core considerations in deciding on the

databases included the capacity of the researcher in the given time frame and the relevance of the databases to the review. The databases chosen cover academic fields of Education, Special Education, Speech and Language Therapy, Psychology, African Studies, Sociology and Linguistics. Five data bases were chosen based on the amount of time available to rigorously search the chosen sources and to cover a range of disciplines. To access unpublished literature the UNICEF, UNESCO and the World Bank Open Knowledge Repository centre were used for in-hand searches.

Scoping Searches

Scoping searches were carried out to ensure that there was sufficient literature on the topic of interest for this review. The scoping searches were carried out prior to the main search as advised by Dunder and Fleeman (2017). The scoping searches helped to finalise the inclusion and exclusion criteria and research questions.

Search Terms

The search terms were developed based of the key terms used in identified studies identified in the scoping search and systematic reviews. The search terms used for the official search can be found in Appendix A. The terms were adapted for each database to ensure relevant studies appeared in the results. The search terms were initially guided by the search terms used in a previous systematic review on the topic of caregiver interventions on child literacy outcomes (Spier et al., 2016). Once four eligible studies were identified in the scoping searches, the key terms from these articles were included in the search terms. The search terms were searched in the studies abstracts and title. The final database search string can be found in Appendix A. The Boolean operations of “OR” and “AND” were used to improve the efficiency and specificity of the search. The same search string was used in all databases, the

only exception was in Psych Info where the quotation marks were removed to adapt to the specifics of this database.

Data Management

This systematic review used EndNote X9 to initially transfer the relevant articles from the chosen databases. EndNote X9 was used to delete any duplicate articles. The articles were then transferred to Rayyan, which is a data management software, for screening and data extraction. This data software was useful as it improved the efficiency and reliability of screening and selecting eligible studies. Rayyan allowed for the researcher to make notes on each study and label the reason for exclusion within the software.

Screening and Selection Process

Studies were screened in Rayyan by the primary researcher to assess if each study was eligible for the systematic review based on the above eligibility criteria. The primary researcher initially screened the abstracts and titles of the studies. If the study appeared to potentially meet the eligibility criteria, the full text was obtained. If the abstract did not provide sufficient information the full text was still obtained to assess the study's eligibility for inclusion. Fifty percent of the full texts of all the identified studies were dual screened by two researchers, the primary researcher and an assistant researcher, for inclusion or exclusion. A screening tool was created and trialled with two studies. An iterative process took place where the tool was improved by adding a row to exclude combined interventions and specifying the context as low-resource. The screening tool was filled out for each study to determine if the study was eligible for inclusion, please see Appendix B for the blank screening tool. The assistant was a trained Speech and Language Therapist with experience in data

management and research. If there was a disagreement with the inclusion of a study, the researcher and second screener would discuss the study and come to a conclusion through mutual agreement.

Quality Assessment for Methodological Rigour

Each eligible study was assessed for methodological rigour based on the extent to which the paper demonstrated adherence to principles of methodological rigour, specifically validity and reliability. Each eligible RCT study was screened using the Critical Appraisal Skills Programme: Randomised controlled trial checklist (2020), to assess the quality of each study. This checklist was recommended by Boland et al. (2017) as an effective checklist to assess methodological rigour of RCT studies. The checklists were completed by the primary researcher once and then checked again ten days later when the researcher was more familiar with the studies to ensure reliability of assessment. The studies were screened twice by the primary research as it was not possible to access a second screener. See Appendix C for an example of a completed checklist. The original checklist can be accessed through the following link: https://casp-uk.b-cdn.net/wp-content/uploads/2020/10/CASP_RCT_Checklist_PDF.pdf.

Data Extraction

An initial data extraction form was created and used to extract relevant information from eligible studies. Refer to Appendix D for the initial data extraction form. The data extraction form was piloted using three eligible studies to guide adjustments and ensure the questions sufficiently extracted relevant information. Data extraction was performed by the primary researcher.

Risk of bias/trustworthiness of individual studies

Each study was assessed for methodological rigour based on the extent to which the paper demonstrated adherence to principles of methodological rigour, specifically validity and reliability. A check list was completed for each study by the primary researcher. Only RCT study designs were included in this review as RCT studies are deemed as high quality study designs within educational research (Slavin, 2008).

Methods of synthesis

Methodological Quality synthesis

The results of the CASP checklists were synthesized in a table template adapted from Greenhalgh and Brown (2017) to display and evaluate the results of the quality assessment.

Data extraction synthesis

The results were synthesised using the conceptual evaluation framework of programme theory to evaluate the change model and action model of the eligible caregiver training programmes (Chen, 2015). All studies were further evaluated according to the evaluation table designed by the researcher (see Table 8 in results section). This table was designed based on the moderators found to impact effectiveness of caregiver interventions in previous systematic reviews and research, which are reported in the literature review of this study. The data was synthesized by evaluating the components of intensity, quantity of supervision provided, teaching strategies used and ecological context support.

Meta-biases

It is important to note that publication bias is a concern as it may be more likely to only find studies that have shown to be effective (Slavin, 2008). Publication bias was reduced by including in hand searches for grey literature and including unpublished theses if eligible. Language bias was prevented by including studies in any language and not only English if these were captured in the search strategy.

Confidence in Cumulative Evidence

The strength of this systematic review was assessed using the *Critical Appraisal Skills Programme: Systematic Review Standard Checklist* (2018) to assess the rigour of the present systematic review https://casp-uk.b-cdn.net/wp-content/uploads/2020/10/CASP_RCT_Checklist_PDF_Fillable_Form.pdf. The PRISMA (2020) checklist was completed by the primary researcher to ensure the review is reported comprehensively. The use of a second screener was used to reduce bias in the selection process of eligible studies and increase confidence in the cumulative evidence.

Sources of Funding

No funding was required for the completion of this Masters dissertation research.

Chapter 4: Results

This chapter provides the results of the review. This chapter is comprised of three sections, the screening of results, the quality assessment results which includes design rigour and methodological rigour, and the data extraction results. The descriptive results are presented logically using the research questions of this review.

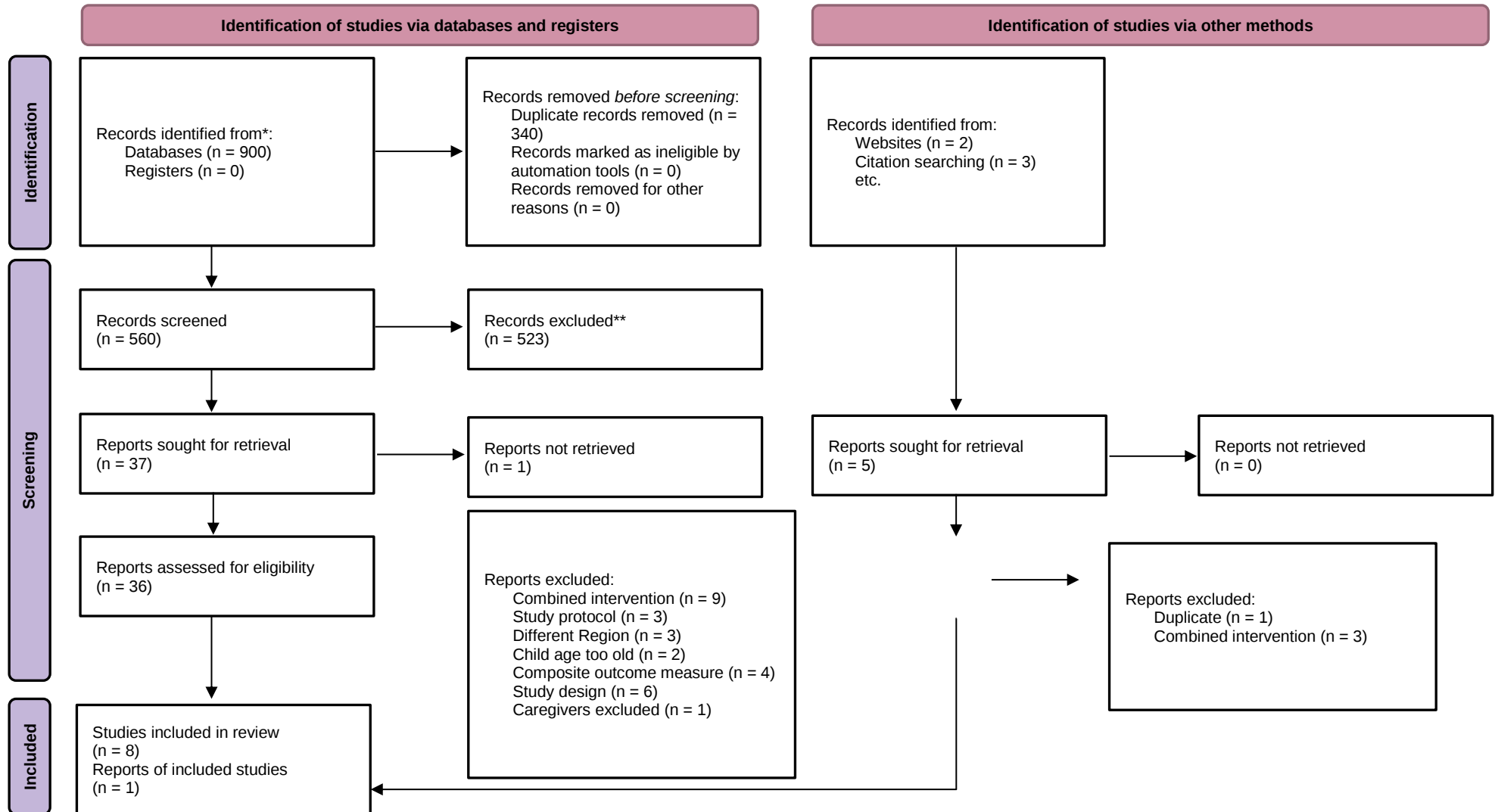
Screening Results

The database search took place on the 23rd of June 2021. The results of the search are presented using the PRISMA flow diagram (see Figure 2 for a complete summary). There was a total of 900 studies identified in the databases searched. The number of articles identified from each relevant database can found in Appendix E. Duplicates were removed in EndNote X9, which was a total of 340 duplicate articles. A total of 560 articles were then screened in Rayyan, by assessing the titles and abstracts of each article. The full texts of 37 articles were retrieved to screen for eligibility and 523 articles were excluded in Rayyan. A total number of five records were identified and retrieved via the UNESCO website and citation chasing. The full texts of the 42 studies identified via databases and other methods were then screened using the screening tool. The screening tool was developed according to the inclusion and exclusion criteria (see Appendix B for the screening tool template). The tool was completed for each study and a reason was provided for exclusion, if applicable. A total of 29 studies were excluded for various reasons (refer to Figure 2 for specified reasons). The two most common reasons for exclusion was the type of study design or the intervention combining multiple interventions in the treatment arm, such as nutrition support and teacher training. A second screener screened fifty percent of the 42 studies identified the and inter-rater agreement was 100%, therefore no discussion

was required for disagreements. A total of nine studies were eligible for inclusion in this review.

Figure 2

PRISMA flow diagram of the screening process that took place in this review



Note. This flow diagram was adapted from Page et al. (2021)

Quality assessment results

Design Rigour

Overall, the studies included in this review present with strong design quality, due to the RCT study design. This study design is viewed as a high quality design, due to the presence of a pre-test, post-test and a control group (Greenhalgh & Brown, 2017). The presence of a control group in RCT's reduces bias and produces more reliable and valid results. This review presents with high design rigour, due to the inclusion of only RCT study designs.

Methodological Rigour

The results from the CASP questionnaire revealed the methodological strengths and weaknesses of the eligible studies. Please refer to Table 3.1 and 3.2 for a summary of the results. The methodological quality of the studies overall can be considered as moderately strong. This statement is based on the results of all the studies controlling for baselines differences and scores, true randomization taking place, blinding of assessors and sufficient reporting of attrition. Reporting of limitations in the studies was insufficient impacting the quality of the overall studies.

The assessment results revealed that all the studies had true randomisation and all studies had controlled for baseline scores, if applicable. Blinding of the assessor was achieved by the majority of the studies, except the study by Knauer et al. (2020). A concern noted in three of the studies, (Boivin et al., 2013a; Boivin et al., 2013b; Vally et al., 2015), was the lack of comprehensive reporting of the limitations, which limits the transparency of the research and trust in the authors. A concern of methodological quality in Abessa et al. (2019), was that less than 80% of the

caregivers received the minimum number of training sessions and less than 80% were included in the final analysis, which reduces the reliability of the results.

Table 3.1

Summary of Quality Assessment of Eligible Studies Included in Review

Study	Randomisation		Baseline Scores			Blinding
	True Randomisation achieved	Allocation Concealment	Equivalence achieved for characteristics of children and caregivers	Equivalence achieved for baseline language/pre-literacy scores	Differences in scores controlled for in the data analysis	Assessors blind to allocation
Abessa (2019)	✓	✓	✗	✓	✓	✓
Abimpaye (2020)	✓	✓	✗	NR	✓	✓
Bass (2017)	✓	✓	✓	✓	✓	✓
Boivin (2013a)	✓	✓	✓	✓	✓	✓
Boivin (2013b)	✓	✓	✗	✓	✓	✓
Boivin (2017)	✓	✓	✗	✓	✓	✓
Knauer (2020)	✓	✓	✗	✓	✓	✗
Vally (2015)	✓	✓	✓	✗	✓	✓
Worku (2018)	✓	✓	✗	✓	✓	✓

Note. NR = Not Reported. Table adapted from quality screening tools in Greenhalgh and Brown (2017)

Table 3.2

Summary of Quality Assessment of Eligible Studies Included in Review

Study	Attrition		Reporting			Treatment	
	>80% of participants in final analysis	Reasons stated for attrition	Inclusion criteria specified	Limitations comprehensively reported	All literacy and language outcomes reported	Both groups treated equally apart from intervention	>80% received minimum treatment sessions in intervention group
Abessa (2019)	✗	✓	✓	✓	✓	✓	✗
Abimpaye (2020)	✓	✓	✓	✓	✓	✓	✓
Bass (2017)	✓	✓	✓	✓	✓	✓	✓
Boivin (2013a)	✓	✓	✓	✗	✓	✓	✓
Boivin (2013b)	✓	✓	✓	✗	✓	✓	✓
Boivin (2017)	✓	✓	✓	✓	✓	✓	✓
Knauer (2020)	✓	✓	✓	✓	✓	✓	✓
Vally (2015)	✓	✓	✓	✗	✓	✓	✓
Worku (2018)	✓	✓	✓	✓	✓	✓	✓

Note. Table adapted from quality screening tools in Greenhalgh and Brown (2017)

Data Extraction Results

A total of nine caregiver intervention studies were eligible for data extraction. The studies were from a total of five countries. Two based in Ethiopia (Abessa et al., 2019; Worku et al., 2018), four based in Uganda (Bass et al., 2017; Boivin et al., 2013a; Boivin et al., 2013b; Boivin et al., 2017), one based in Kenya (Knauer et al., 2020), one based South Africa (Vally et al., 2015) and one based in Rwanda (Abimpaye et al., 2020).

Research Question 1: What Caregiver Training Programmes have been Implemented in Southern and East Africa that have Empirical Evidence Regarding their Level of Effectiveness on Child Language or Literacy Outcomes?

Data was extracted on the effectiveness of each intervention on child language or literacy outcomes, which is presented in Table 4. Fifty six percent of studies showed that the caregiver training programme was significant in improving at least one component of child language or literacy at post-test. A total of 22% of the studies reported significant general expressive vocabulary improvement (Boivin et al., 2013a; Vally et al., 2015), and 22% reported improvement in a composite language score (Abimpaye et al., 2020; Worku et al., 2018). The remaining 44% of the studies showed no significant results on child language or literacy at post-test. The included studies presented with variation in the assessment tools used to measure language or literacy outcomes. The two studies promoting dialogic book sharing showed mixed results (Knauer et al., 2020; Vally et al., 2015).

The study by Knauer et al. (2020) had four intervention arms. Intervention arm two and intervention arm three only showed improvement on expressive language specific to the storybooks. Expressive language did not significantly

improve when scored on the BPVS III. The intervention arm four of this study, which included storybook provision, basic training, booster training and a home visit did not show any significant results on child language. Intervention arm four was the most intensive intervention, which would be hypothesized to have the largest effect on child language. The results are contradictory to this hypothesis as this intervention arm does not produce significant results. There is insufficient information provided in the study to understand the reason behind this outcome.

The results of the study by Vally et al. (2015) showed significant improvement on the McArthur Bates CDI measure of lexical comprehension, expressive vocabulary and objective comprehension. The McArthur Bates CDI measure is a self-reported measure and therefore subject to bias (Bryman, 2012). In contrast, results were insignificant for the objective measure of the adapted Peabody Picture Vocabulary Test II (PPVT II). This mixed result limits the reliability of the findings, especially since the significant result was a self-report measure.

The last two columns in Table 4 show that only 22% of the studies, by Bass et al. (2017) and Boivin et al. (2017), had follow up assessments. The follow up assessments took place one year after post-test. Seventy eight percent of the studies did not have any follow up assessment to evaluate the longer term impact of the intervention on child outcomes. None of the studies which showed significant results on child language or literacy development at post-test included follow up assessments. There is, therefore, no empirical evidence available on the impact of the of these caregiver training programmes on the long- term child literacy and language development, due to lack of longitudinal study designs or follow up assessments.

Table 4*The Effectiveness of Eligible Caregiver Training Programmes on Child Language or Literacy Development*

Study ID	Intervention provided	Outcome measure	Did this study show significant child language or literacy outcomes at post-test? (Yes/No or mixed results)	Was there a follow up assessment?	Did the results persist at follow up?
Abessa et al. 2019	Play based stimulation training	Denver II Jimma	No	No	N/A
Abimpaye et al. 2020	Arm 1: Light touch	ASQ	Yes, ASQ communication	No	N/A
	Arm 2: Full intervention	ASQ	Yes, ASQ communication	No	N/A
Boivin et al. 2013a	MISC training programme	MELS	Yes, MELS expressive and receptive vocabulary	No	N/A
Boivin et al. 2013b	MISC training programme	MELS	No	No	N/A
Bass et al., 2017	MISC training programme	MELS	No	Yes	No
Boivin et al. 2017	MISC training programme	MELS	No	Yes	No
Knauer et al.,2020	Arm 1: Only storybooks	BPVS III and storybook specific vocabulary	No	No	N/A
Knauer et al.,2020	Arm 2: Storybooks + training	BPVS III and storybook specific vocabulary	Mixed results. Insignificant BPVS III score Significant storybook expressive vocabulary	No	N/A

Study ID	Intervention provided in study	Outcome measure	Did this study show significant child language or literacy outcomes at post-test?(Yes/No or mixed results)	Was there a follow up assessment?	Did the results persist at follow up?
Knauer et al.,2020	Arm 3: Storybooks + training + booster training	BPVS III and storybook specific vocabulary	Mixed results. Insignificant BPVS III score Significant storybook expressive vocabulary	No	N/A
Knauer et al.,2020	Arm 4: Storybooks + training + booster + home visit	BPVS III and storybook specific vocabulary	No	No	N/A
Vally et al., 2015	Dialogic book reading training	McArthur-Bates CDI and adapted PPVT	Mixed results. Significant McArthur Bates CDI measure of lexical comprehension, expressive vocabular and objective comprehension score. Insignificant adapted PPVT score.	No	N/A
Worku et al., 2018	Play assisted stimulation training	Denver II Jimma	Yes, Denver II Jimma language score	No	N/A

Note. MISC = Mediation Intervention for Sensitizing Caregivers; ASQ = Ages and Stages Questionnaire; MELS = Mullen Early Learning Scale; BPVS = British Picture Vocabulary Scale; PPVT = Peabody Picture Vocabulary Test. N/A = Not Applicable.

Research Question 2: What are the Change Models of Eligible Caregiver Training Programmes?

The change model of caregiver training programmes consist of the desired outcomes to improve child language or literacy development and caregiver child interaction, the determinants to achieve these outcomes which include the caregiver’s behaviour or self-efficacy and the specific intervention programme (See Figure 3).

Figure 3

The Components of the Change Model



Note. Model adapted from the conceptual framework of programme theory by Chen (2015).

Table 5 explains the intervention programmes of eligible studies, which forms part of the change model. Table 5 provides a summary of the intervention, the specific child population, as well as an excerpt from the study to explain the intervention.

All of the caregiver interventions are delivered through group workshops or individual sessions. Twenty two percent of the interventions are play-based training programmes which aim to improve the quality of play between the caregiver and

child (Abessa et al., 2019; Worku et al., 2018). Twenty two percent of the interventions are dialogic book sharing training programmes, training caregivers to engage with their children through interactive reading (Knauer et al., 2020; Vally et al., 2015). Eleven percent of the interventions train caregivers by promoting a combination of play and reading to promote child development (Abimpaye et al., 2020). Forty four percent of the interventions use the Mediational Intervention for Sensitising Caregivers training, which trains caregivers to engage meaningfully with their child through everyday activities (Bass et al., 2017; Boivin et al., 2013a; Boivin et al., 2013b; Boivin et al., 2017).

Table 5

Table showing the intervention summaries of each programme change model

Study ID	Specific child population	Intervention
Abessa et al. 2019	Severely malnourished children	Play based psychosocial stimulation training: This intervention was about teaching the caregiver how to meaningfully stimulate their child through play to promote holistic development. Stimulation was encouraged through the use of play and play resources. The caregiver were provided with toys at discharge and provided with ideas of toys to use within the home at home visits. "Empowerment of the caregivers included training on how to stimulate the SAM child. The key issue in the intervention was enhancing interactions between the care- givers and the target child through play, guided by a principle of Safety, Enjoyment and Stimulation" (p. 4)
Abimpaye et al. 2020	All children	First Steps parent training: This intervention was about training caregivers to be responsive to their children, teaching them how to stimulate their children through play and teaching them about using baby books to promote literacy and language development. Caregivers were provided with a training manual for this intervention. "A holistic parenting education program with specific curricula around four sets of parenting interventions: providing a good socio-emotional foundation through responsive caring and bonding; stimulating and improving cognitive and language development through playful learning; providing strong and physical health beginnings; and promoting emergent literacy in the home by increasing access and use of baby books " (p.206)
Boivin et al. 2013a	HIV exposed uninfected children	MISC training: The intervention was about training caregivers to engage with their children in meaningful and sensitive ways in everyday interactions to promote development. The Mediational Intervention for Sensitising Caregivers involves teaching caregiver how to focus their child, how to excite their child, how to expand their child's learning, encouraging their child through emotional support and help their child to regulate their behaviour.

Study ID	Specific child population	Intervention
		"Learning the MISC approach is accomplished by training caregivers in mediational processes such as focusing (gaining the child's attention and directing them to the learning experience in an engaging manner); exciting (communicating emotional excitement, appreciation, and affection with the learning experience); expanding (making the child aware of how that learning experience transcends the present situation and can include past and future needs and issues); encouraging (emotional support of the child to foster a sense of security and competence); and regulating (helping direct and shape the child's behaviour in constructive ways with a goal towards self-regulation). Most of the MISC training of caregivers is devoted to helping parents become aware and develop practical strategies for focusing, exciting, expanding, encouraging, and regulating the child as learning opportunities arise in the course of natural everyday caregiver/child interactions" (p. 4).
Boivin et al. 2013b	HIV infected children	MISC training (please see above)
Bass et al., 2017	HIV infected children	MISC training (please see above)
Boivin et al. 2017	HIV exposed uninfected children	MISC training (please see above)
Knauer et al., 2020	All children	Dialogic book reading training: The intervention was about training caregiver to engage regularly with their children in dialogic book reading. The parents were taught reading skills and strategies which encourage interaction, elaboration, dialogue, active listening and encouragement. Caregivers were provided with storybooks. "The core reading skills taught to parents were to identify objects in the illustrations, ask the child to identify objects in the illustrations, read the words that they knew how to read (or elicit help from others), and/or to support the attempts of their child to sound out words, ask the child simple (yes/no, who/what) questions, ask the child open-ended questions to elicit a dialogue, actively listen to the child and follow the child's lead in the conversation, and then to repeat what the child has said and expand on the child's responses by adding detail, and/or relating the story or illustrations to the child's life (Zevenbergen & Whitehurst, 2003). Parents received suggestions on how to select storybooks appropriate age for their child, how to follow their child's lead when reading, and how to praise and encourage their child's engagement. We encouraged parents to read to their children as often as possible, with the goal of establishing a daily reading habit." (p.181)

Study ID	Specific child population	Intervention
Vally et al., 2015	All children	Dialogic book sharing training: The intervention was about training caregivers to engage regularly with their children in dialogic book reading. The parents were taught reading skills and strategies to encourage active engagement of their child, support pointing and naming, supporting the child to direct the reading, encouraging active questioning and linking the book content to the child's environment. Caregivers were provided with story books. "Carers use book sharing to scaffold children's mastery of language by initiating, supporting and encouraging the acquisition of new words and concepts. They achieve this by engaging in extensive labelling of objects, questioning, and commenting about the pictures depicted in what is termed 'decontextualized talk', that is, talk that extends beyond the pictorial representations in the book to include additional new and unfamiliar." (p.866). "The training programme included the following basic components of dialogic reading and endeavoured to provide guidance in acquiring these necessary skills. Active child participation: The infant should be encouraged to actively participate in the book-sharing experience rather than simply being a passive listener being read to. Pointing and naming: The carer is encouraged to point to and name objects in the infant's visual field, indexed by simple looking, patting, banging, or scratching the picture. Emphasize the stimuli to which the baby attends. Active questioning using 'where' style questions. Active questioning using 'what' or 'who' style question. Active linking of book content to the baby's real world: The carer is encouraged to link the content illustrated in the book to the infant's own experience (e.g. encourage the infant to imitate a character's actions; take turns to point to a pictured animal's nose, and then find their own nose and the carer's nose, the carer saying the word along with each point." (p.869)
Worku et al., 2018	Children in foster care	Play assisted stimulation training: The intervention was about training caregivers to engage in play with their child to stimulate their child and promote their child's development. Caregiver were provided with play resources. "The intervention focused on activities to promote developmental skills and emphasized direct mother child interactions. Mothers were regularly reminded and motivated to continue practicing the activities and cultural games learned during the home visits" (p.3). The intervention focused on activities to promote developmental skills and emphasized direct mother-child interactions. During every home visit, the nurses played with the children (including mothers), progressively trained the mothers, and transferred play skills" (p.4)

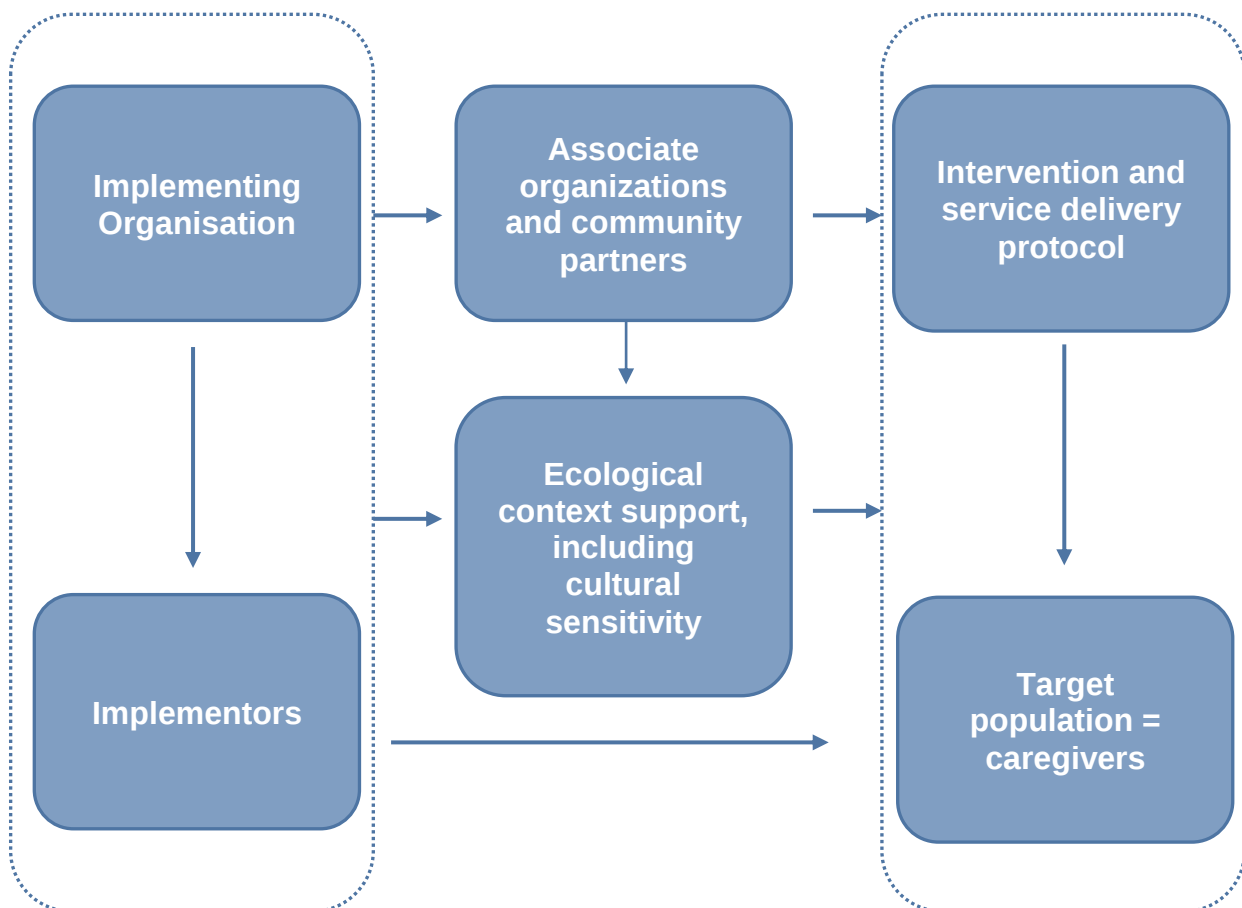
Note. (*) = Refers to text written by the researcher. Direct quotes are in quotation marks. MISC = Mediation Intervention for Sensitising Caregivers; SAM = Severe Acute Malnutrition.

Research question 3: What are the action models of eligible caregiver training programmes?

The components of the action implementation model are displayed in Figure 4. Table 6 shows the intervention and service delivery protocols of each training programme. This table shows the duration of the caregiver training, the frequency of training, the setting of the training, the teaching strategies used and the ratio of caregiver to implementor. Appendix F presents the data extracted on the characteristics of the implementors of the programmes and the training they received.

Figure 4

The Components of the Action Model of Implementation



Note. Figure adapted from Chen (2015) conceptual framework of programme theory

Table 7.1 and 7.2 evaluate the level of ecological support of each intervention. Table 7.1 evaluates the surface structure sensitivity and micro context support. All studies achieved surface structure sensitivity based on the components that were reported, although a total of 55% of the studies failed to report on all relevant components used to evaluate surface structure sensitivity (Bass et al., 2017; Boivin et al., 2013a; Boivin et al., 2013b; Boivin et al., 2017; Worku et al., 2018).

Table 7.2 evaluates the deep cultural sensitivity and macro context support. Deep structure sensitivity was achieved by 66 % of studies, based on what the researchers reported in the studies. Limited reporting was found in the study by Abessa et al. (2019), as the researchers failed to report what specific local material were used in the training. Limited reporting was also found in the study by Worku et al. (2018) where the researchers failed to report what specific cultural games were used or who decided the games were culturally relevant to that community.

Research question 4: Do the components of eligible caregivers training programmes align with current literature on optimal intensity, quantity of supervision provided, teaching strategies used, community partners formed and ecological context support gained?

All studies were evaluated according to the evaluation table designed by the researcher (see Table 8). This table was designed based on the moderators found to impact effectiveness of caregiver interventions in previous systematic reviews and research, which reported in the literature review. Table 8 shows the results of the evaluation which assesses the intensity, supervision provided, teaching strategies used and ecological context support of each caregiver training programme. Table 8 reports that only 44% of the studies continued for a duration of at least a year (Bass et al.,

2017; Boivin et al., 2013a; Boivin et al., 2013b; Boivin et al., 2017) and only 33% of the studies provided weekly contact (Abimpaye et al., 2020; Vally et al., 2015; Worku et al., 2018). A total of 88% of the studies successfully provided home visits as part of the programme and incorporated the child within the caregiver training. Thirty three percent of the studies successfully provided consistent supervision for the implementors throughout the intervention (Abimpaye et al., 2020; Knauer et al., 2020; Vally et al., 2015). The teaching strategies of all of the studies except Abimpaye et al. (2020) and Worku et al. (2018), utilized both role play and corrective feedback during the training sessions which are effective teaching strategies. Lastly, partnerships with community organisations was only reported in 44% of the studies.

Table 6

Table of the Intervention and Service Delivery Protocol of Eligible Caregiver Training Programmes

Study ID	Duration	Frequency and Length	Setting	Teaching strategy	Ratio of implementor to caregiver
Abessa et al. 2019	Less than six months. Exact length not reported.	In hospital: Frequency: 8-10 sessions in total Length of session: 20-40 mins each. Home visits: Frequency: 3 home visits. One in the 3rd week, 7th week and 13th week.	In-hospital playroom sessions and home visits	1. Demonstration of stimulation techniques. 2. Role play with child 3. Verbal presentation	One to one
Abimpaye et al. 2020	17 weeks	Frequency: Weekly Length of each session: 1.5 hour sessions Full intervention arm received additional 3/4 home visits	Village community centre + home visits	1. Auditory presentation via Radio programme which was delivered in a soap opera narrative style. 2. Interactive Workshop encouraging discussion with the parents using a flipchart and training manual.	Maximum 20 families
Boivin et al. 2013a	One year	Frequency: Biweekly Length of each session: 1 hour	Alternating between home and study office	1. Verbal presentation 2. Video recording feedback of caregiver-child interactions.	One to one

Study ID	Duration	Frequency and Length	Setting	Teaching strategy	Ratio of implementor to caregiver
Boivin et al. 2013b	One year	Frequency: Biweekly Length of each session: 1 hour	Alternating between home and study office	1. Verbal presentation 2. Video recording feedback of caregiver-child interactions.	One to one
Bass et al., 2017	One year	Frequency: Biweekly Length of each session: 1 hour	Alternating between home and study office	1. Verbal instruction 2. Video recording feedback of caregiver-child interactions.	One to one
Boivin et al. 2017	One year	Frequency: Biweekly Length of each session: 1 hour	Alternating between home and study office	1. Verbal presentation 2. Video recording feedback of caregiver-child interactions.	One to one
Knauer et al., 2020	T1 : No training T2: One day training + one week of SMS reminders T3: One day training + booster day + one week of SMS reminders. T4: One day training + booster day + home visit. Total of three days	Length of initial training session: 3 hours Length of booster training: 1hour 30 mins Length of home visit: 1hour	T2 + T3: Central meeting place in the community T4: Central meeting place in the community + home visit	1. Verbal and PowerPoint Presentation 2. Brain storming sessions. 3. Questions and answer time. 4. Positive reinforcement using SMS reminder and airtime reward. 5. Role play in pairs 6. In-action feedback	Training was in groups sessions. Home visit was one to one.

Study ID	Duration	Frequency and Length	Setting	Teaching strategy	Ratio of implementor to caregiver
Vally et al., 2015	Eight weeks	Frequency: once a week Length of session: 90 minutes	Community centre	1. Demonstration 2. Discussion 3. Role play 4. Feedback 5. Modelling	5 to 6 caregivers in each group sessions.
Worku et al., 2018	6 months	Frequency: once a week Length of visit: 1 hour	Home-based sessions	1. Modelling 2. Demonstration 3. Role- play	One to one

Note. T1 = Treatment arm 1; T2 = Treatment arm 2; T3 = Treatment arm 3; T4 = Treatment arm 4.

Table 7.1

Table Showing the Micro Context Support and Surface Structure Cultural Sensitivity of Eligible Caregiver Training Programmes

Study ID	Local language used	Implementors familiar to the local community	Familiar or accessible local setting	Appropriate training for low literacy rates of caregivers	Materials reported as culturally appropriate	Collaboration with associate organisations, community partners or micro-community
Abessa et al. 2019	✓	✓	✓	✓	✓	Yes, the neighbours and community were included in the training if they were present during the home visits. "The child and caregiver (including family members and child's playmates in the neighbourhood) were then introduced to techniques of play using the newly provided play materials, taking into account the level of the developmental status of the child. Siblings and peers in the neighbourhood were also encouraged to play with the target child." (p.4)
Abimpaye et al. 2020	✓	✓	✓	✓	✓	Yes, collaboration with a local organisation called Umuhuza as well as local publishers. "First Steps program was implemented in partnership with a local organization, Umuhuza, who have significant experience in community mobilization and working with local volunteers." (p. 2) "The First Steps intervention also leveraged collaboration with the local publishing sector to encourage publishers to develop a line of high-quality, age appropriate local language babies' and children's books and to offer local bookstall operators a low-risk "sale- or-return" arrangement to encourage them to sell books in areas where there has traditionally been low demand." (p. 2)

Study ID	Local language used	Implementors familiar to the local community	Familiar or accessible local setting	Appropriate training for low literacy rates of caregivers	Materials reported as culturally appropriate	Collaboration with associate organisations, community partners or micro-community
Boivin et al. 2013a	✓	NR - University students	NR - location of office unknown	✓	✓	Not reported for the intervention group. The only collaboration was with UCOBAC (Uganda Community Based Organization for Child Welfare) who delivered the control intervention.
Boivin et al. 2013b	✓	NR - Ugandan Field team	NR - location of office unknown	✓	✓	Not reported for the intervention group. The only collaboration was with UCOBAC (Uganda Community Based Organization for Child Welfare) who delivered the control intervention.
Bass et al., 2017	✓	NR - University students	NR - location of office unknown	✓	✓	Not reported for the intervention group. The only collaboration was with UCOBAC (Uganda Community Based Organization for Child Welfare) who delivered the control intervention.
Boivin et al. 2017	✓	NR - University students	NR - location of office unknown	✓	✓	Not reported for the intervention group. The only collaboration was with UCOBAC (Uganda Community Based Organization for Child Welfare) who delivered the control intervention.
Knauer et al., 2020	✓	✓	✓	✓	✓	Yes. The researchers collaborated with the local Kenyan-owned Moran Publisher to create age appropriate books in the local language.
Vally et al., 2015	✓	✓	✓	✓	✓	Not reported.
Worku et al., 2018	NR	NR - Nurses	✓	✓	✓	Yes. “We greatly thank managements of SOS Village and Jimma town’s Women’s and Children’s Affairs Officers for facilitating us the study setup.” (p.9)

Table 7.2

Table Showing the Macro Context Support and Deep Structure Cultural Sensitivity of Caregiver Training Programmes

Study ID	Direct quotations informing the level of sensitivity of the training programme	Deep sensitivity : Social, cultural, environmental, psychological, historical consideration of the training programme
Abessa et al. (2019)	"The mothers were encouraged to use additional local materials besides the commercial toys provided by the intervention nurses. Toys such as 'African Family' and 'African Animals', picture cards, cubes, acrobats and balls were provided for each child (p.4). "The child and caregiver (including family members and child's playmates in the neighbourhood) were then introduced to techniques of play using the newly provided play materials, taking into account the level of the developmental status of the child. Siblings and peers in the neighbourhood were also encouraged to play with the target child (p.4)."	Yes, the content and delivery of the programme considers the culture of the community. The intervention was developed by a team of local and European professionals and practitioners. The training considered the cultural norms around play, games and learning. The extended family was included in the training if they were present during the home visits, which shows consideration to the value of social responsibility in the African culture.
Abimpaye et al. (2020)	"For the radio program, the content in the curriculum was weaved into a fictional story line to give a balance of both entertainment and education using a soap opera format commonly appreciated in Rwanda. (p.2)"	No, although the delivery of the intervention was culturally sensitive there is no mention of how the content of the information provided was culturally sensitivity to the community.

Study ID	Direct quotations informing the level of sensitivity of the training programme	Deep sensitivity : Social, cultural, environmental, psychological, historical consideration of the training programme
Bass et al. (2017); Boivin et al. (2013a); Boivin et al. (2013b); Boivin et al. (2017). ^a	Boivin et al. (2013a) "The Mediatlional Intervention for Sensitizing Caregivers (MISC) approach is a training program providing caregivers with strategies for enhancing the development of their children through day-to-day interactions in the home. The MISC approach was developed by Dr. Pnina Klein who documented the effectiveness of this approach with impoverished children in Africa and globally (p.1)" "We believe that this approach for enhancing cognition in at-risk HIV children is feasible in the rural African household (p.1)" "The cultural emphasis in African village life on the nurturing of children is a good fit for the MISC, which is a method for sensitizing mothers to the positive aspects of their current childrearing interactions. Similarly to what Klein found in Ethiopia, we conclude that MISC can be readily understood and implemented by caregivers as part of their own childrearing goals.9 MISC principles can be readily translated into actions within the cultural and contextual constraints of everyday living in each of their families (p.7)." Boivin et al. (2013b) "We selected MISC for our caregiver training intervention because it is culturally adaptable in low resource settings and significantly enhanced cognitive, language, behavioural, and academic outcomes in impoverished children in Addis Ababa, Ethiopia." (p.1). "The cultural emphasis on the nurturing of children is a good fit for the MISC, which is a method for sensitizing mothers to the positive aspects of their current childrearing interactions. Similar to the studies by Klein et al, we conclude that the principles of MISC can be understood by Ugandan caregivers in HIV- affected households and incorporated into their own child- rearing approach." (p.6)	Yes, the content and delivery of the MISC training programme was culturally sensitive and adapted to the needs of the community. The content of the programme considered the daily caregiving practices of the caregivers and how the promoted practices can be incorporated into existing behaviours.

Study ID	Direct quotations informing the level of sensitivity of the training programme	Deep sensitivity : Social, cultural, environmental, psychological, historical consideration of the training programme
Knauer et al. (2020)	"We designed a modified dialogic reading training adapted to the cultural context and appropriate for a setting in which many caregivers had low levels of literacy and limited reading experience." (p.3) "We adapted the PEER sequence to one that would be memorable and relevant to our context, "Read, Talk, Listen, and Expand." (p.3) "The group session included a question and answer period to address common barriers to reading with their children (e.g., too busy, child is uninterested), and to brainstorm solutions to challenges." (p.3) "We distributed these pilot books to households in peri-urban and rural communities surrounding Kisumu, and conducted follow-up interviews and focus groups to understand which books recipients had liked and why." (p.3)	No. Although the researchers ensured the training content was accessible and appealing to the caregivers at each step of the programme, the caregiving practice of "reading" is a new practice to these caregivers, which is not a part of their current caregiver practices. The training programme is therefore not sensitive to the existing practices of the caregivers.
Vally et al. (2015)	"Notably, there is no culture of sharing books with young children within this community." (p.3)	No. Although the researchers ensured the training content was accessible and appealing to the caregivers at each step of the programme, the caregiving practice of "reading" is a new practice to these caregivers, which is not a part of their current caregiver practices. The training programme is therefore not sensitive to the existing practices of the caregivers.
Worku et al. (2018)	"They were also trained on key play principles such as safety, enjoyment and stimulation [36], and effective communication with children and mothers in the context of extreme poverty." (p.4) "The play materials used to assist the developmental stimulation included culturally appropriate and child friendly dolls, toys, puppets, picture books, card games, cognitive games, drawings, colour pencils and papers, simple and playful musical	Yes, the content and delivery of the intervention was culturally sensitive and adapted to the needs of the community. The content of the programme included games familiar to the caregiver and the culture of the community.

Study ID	Direct quotations informing the level of sensitivity of the training programme	Deep sensitivity : Social, cultural, environmental, psychological, historical consideration of the training programme
	instruments, bells, balls and blocks. Cultural play and games were also used based on the age level of a child.” (p.4)	

Note. ^a Four of the studies used the Mediation Intervention for Sensitising Caregivers approach. These studies have been combined when assessing the deep structure sensitivity of the training programme, since they all use the same programme. Direct quotes are used from two of the four studies.

Table 8

Evaluation Results of the Programme Components of Intensity, Supervision, Teaching Strategies, Community Partners and Ecological Context Support

Study ID	Intensity			Supervision	Teaching strategy			Ecological context support		
	Duration for a minimum of a year	Weekly contact provided	Home visits provided	Continued supervision throughout intervention	Role play included	Corrective feedback provided	Child present for most of the training	Surface structure cultural sensitivity	Deep structure cultural sensitivity	Community partners sought
Abessa et al. 2019	✗	✗	✓	NR	✓	✓	✓	✓	✓	✓
Abimpaye et al. 2020	✗	✓	✓	✓	✗	✗	✓	✓	✗	✓
Boivin et al. 2013a	✓	✗	✓	✗	✓	✓	✓	✓	✓	NR
Boivin et al. 2013b	✓	✗	✓	✗	✓	✓	✓	✓	✓	NR
Bass et al., 2017	✓	✗	✓	✗	✓	✓	✓	✓	✓	NR
Boivin et al. 2017	✓	✗	✓	✗	✓	✓	✓	✓	✓	NR

Study ID	Intensity			Supervision	Teaching strategy			Ecological context support		
	Duration for a minimum of a year	Weekly contact provided	Home visits provided	Continued supervision throughout intervention	Role play included	Corrective feedback provided	Child present for most of the training	Surface structure cultural sensitivity	Deep structure cultural sensitivity	Community partners sought
Knauer et al., 2020	✗	✗	✓	✓	✓	✓	✗	✓	✗	✓
Vally et al., 2015	✗	✓	✗	✓	✓	✓	✓	✓	✗	NR
Worku et al., 2018	✗	✓	✓	✗	✓	NR	✓	✓	✓	✓

Note. NR = Not Reported

Chapter 5: Discussion

This study used a narrative review design to investigate caregiver training programmes in Southern and East Africa, which aim to improve child language and literacy development. This chapter will discuss the results in relation to relevant literature. This chapter will include discussion on the lack of follow up assessments and poor reporting found in the studies, the use of programme theory to evaluate caregiver training programmes in the African context and the development of deep structure sensitivity in caregiver training programmes. This chapter will highlight the limitations of this study and recommend future research directions.

The Evidence Base of Empirical Research on Caregiver Training Programmes in Southern and East Africa

The results of this study have shown that there is limited research available on caregiver training programmes that aim to address child language and literacy development in Southern and East African region. This is evident by the total of nine studies eligible for inclusion this review. The results further show that 56% of these studies improved child language or literacy outcomes at post-test. This means that some of the caregiver training programmes were significantly effective and others were not, which mirrors the findings of a previous systematic review of caregiver interventions in low and middle income countries (Spier et al., 2016). Of these successful studies none of them have been replicated to show repeated significant results. Only the study by Boivin et al. (2013a) was replicated using a different child population, which then showed insignificant results upon replication. Replicating studies helps to reduce researcher bias and increase the reliability of the findings

(Bryman, 2012). There is, therefore a need for future research to replicate eligible interventions that have been identified in this study (Abimpaye et al., 2020; Boivin et al., 2013a; Knauer et al., 2020; Vally et al., 2015; Worku et al., 2018). Prior to replication, it is advised for researchers to consider the methodological quality results in Table 3.1 and 3.2 and the evaluation tables presented in Table 7.1, Table 7.2 and Table 8. These evaluation results provide guidance on which components require further attention and adaption, to increase the impact of the interventions on child outcomes.

The Absence of Follow-up Assessments to Assess Child Language and Literacy Outcomes

The results show that there is a major design floor in the RCT studies of caregiver training programmes as there are no follow-up measures of child outcomes. This is a major concern, as the rationale behind many of these programmes is to improve the literacy rates of children once they enter the schooling system, yet this is not being measured within the study design. The need for longer time scales in educational RCT programme evaluations has been marked as a concern impacting our ability to understand the sustainable effects of programmes (Asfaha & Nag, in press; Rao et al., 2017). This narrative review supports the pressing need for longitudinal research designs to measure the long-term impact of caregiver training programmes on child language and literacy outcomes in Southern and East Africa. The long-term results will help guide policy development and future practice. It is recommended that all future caregiver training programme studies include a follow-up assessment more than one year post intervention.

Poor Reporting of the Caregiver Training Programmes

The results of this narrative review support the need for reporting to be improved to be able to understand, synthesise and compare RCT studies. Although RCT designs are valued for their reliable methodology, RCT's have been criticized by Asfaha and Nag (in press) for the lack of consideration and focus on socio-cultural contexts of the interventions studied. Insufficient information made it difficult to comprehensively evaluate the cultural sensitivity and contextual support of the studies. Poor reporting is a limitation frequently reported in the previous systematic reviews of caregiver interventions (Henwood et al., 2020; McHenry et al., 2019). Insufficient reporting has been a limitation which impacts the feasibility of being able to evaluate what works and why. In a meta-analysis by Kim et al. (2020), which analyzed the impact of literacy interventions in low and middle income countries, a critical limitation was the lack of information available to analyze and compare the interventions.

The issue of poor reported is unlikely to be solved unless reported guidelines are enforced to ensure quality reporting is achieved. It is advised that researchers are required to provide specific information on areas that are repetitively under-reported. From the results of this study, caregiver training programmes need to improve on comprehensively reporting the following components: the training setting, characteristics of the implementor, the level of supervision provided to the implementors, the cultural adaptation process of the programme and collaborations with community organisations or community partners.

The Variation of Caregiver Training Programmes

It is a major challenge to determine what works and why, due to the multi-dimensional nature of caregiver training programmes. The results of the change and action models demonstrate that there is heterogeneity in the components of the

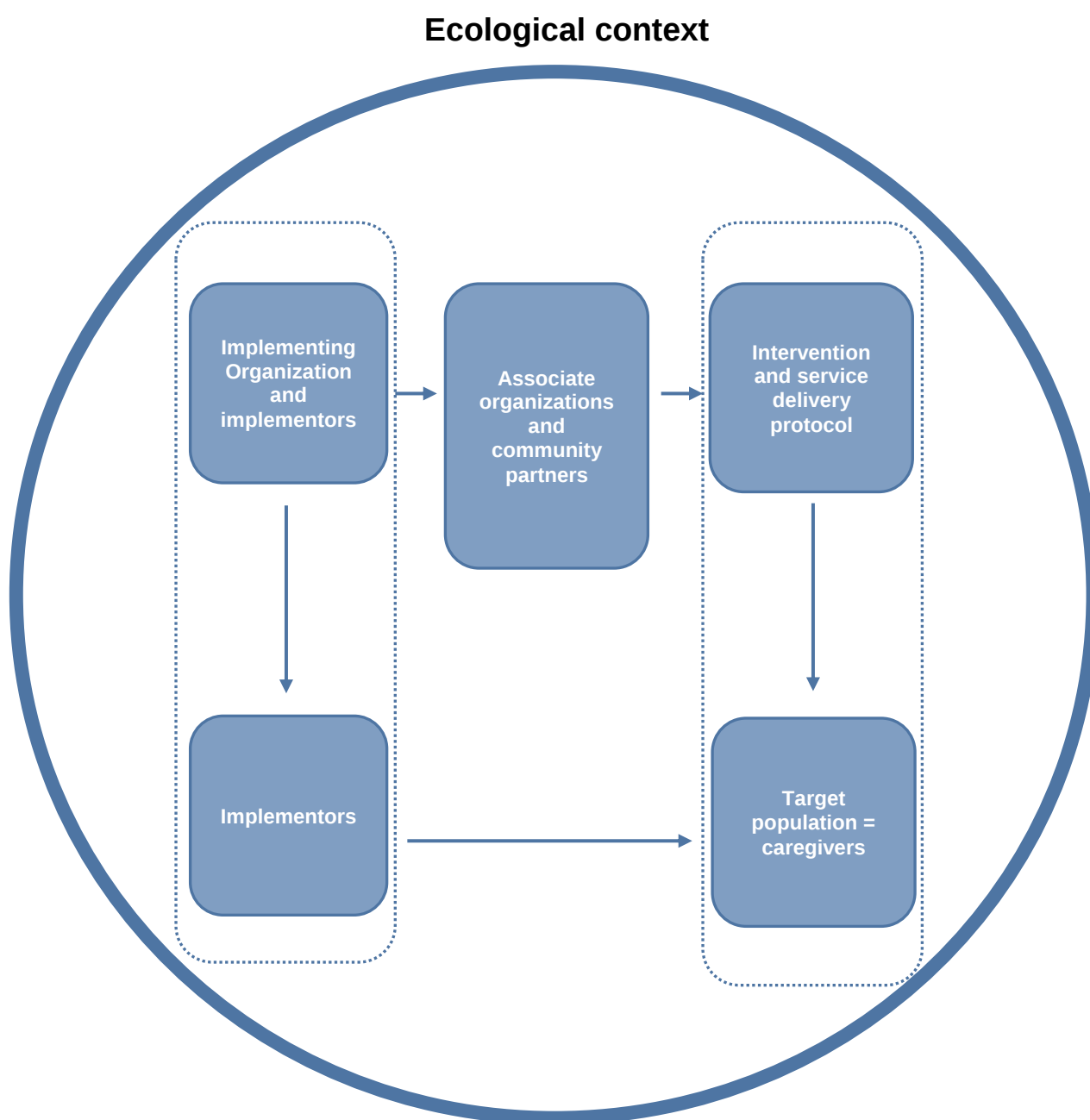
programmes. The variation makes it very difficult to isolate and compare the studies to one another, which has been highlighted as a limitation in three previous systematics reviews which analyse caregiver training programmes (Britto et al., 2015; Jeong et al., 2021; McHenry et al., 2019). Using the conceptual framework of programme theory by Chen (2015) to evaluate the studies was helpful to capture the diverse components impacting feasibility and effectiveness of caregiver training programmes in context.

A Critique of Programme Theory Conceptual Framework

A critique and limitation of using programme theory as a model within this review is the isolation of ecological context as a single component within the action model, rather than an overarching consideration that influences all components within the action model. The researcher argues that every aspect of the action model is impacted by the support of the micro and macro context. The researcher suggests that the ecological context should be the overarching element impacting each component of action model. This adaption would guide developers and evaluators of caregiver training programmes to consider macro and micro contextual support to achieve deep cultural sensitivity for each component of the programme. This would help ensure optimal impact and sustainability of the programme according to Resnicow's theory (2000) of cultural sensitivity. Please see Figure 5 for the adapted action model.

Figure 5

Figure showing the adapted conceptual framework of the action model with the overarching influence of ecological context



Note. Action model adapted from Chen (2015)

Deep Structure Sensitivity and Sustainable Behaviour Change

The results of this review demonstrate the application of Resnicow's (2000) framework of cultural sensitivity to assess deep structure sensitivity of caregiver programmes. The results of this study show that surface structure sensitivity is easier to achieve depicted by all eligible studies demonstrating surface structure sensitivity, compared to deep structure sensitivity which fewer studies demonstrated. The challenge of achieving deep structure sensitivity of a programme has previously been reported in a systematic review of programmes for ethnic minority caregivers (van Mourik et al., 2017), and further reported as a challenge in the development of caregiver programmes (Mejia et al., 2017).

The results of this review demonstrate that the majority of eligible caregiver training programmes in Southern and East African present with deep structure cultural sensitivity. This is a promising results as deep structure sensitivity has been shown to increase the impact of caregiver interventions on child outcomes. The deep structure sensitivity has been validated as a significant moderator in a systematic review by van Mourik et al. (2017). This present review demonstrates examples of how deep structure cultural sensitivity can be enhanced in caregiver training programmes. The use of cultural games which was used in the study by Worku et al. (2018) and the use of the caregivers daily routine practices to guide the development of the training (Bass et al., 2017), are two suggestions which can enhance deep structure sensitivity of a training programme. The results of this study show that it is possible to build on the existing culturally accepted and embedded practices of play and learning to guide the prioritized literacy and language activities used in interventions. The importance of considering cultural and social processes when

prioritising certain literacy or language activities is essential to increase the chances of a new intervention being adopted by a community (Asfaha & Nag, in press).

The Untapped Potential of Caregiver Training Programmes in Southern and East Africa to Improve Child Language and Literacy Development

The results of this narrative review show that the specific components of caregiver training programmes do not utilize optimal components which have been shown to moderate effectiveness in previous reviews. These components specifically refer to the minimum duration advised of one year for caregiver training programmes (Baker-Henningham & López Bóo, 2010), the use of home visits at part of the training (Henwood et al., 2020), ensuring sustained supervision (Baker-Henningham & López Bóo, 2010), using effective teaching strategies such as corrective feedback (Kaminski et al., 2008) and ensuring ecological context support and deep cultural sensitivity of the programme (van Mourik et al., 2017). This means that there is potential for these caregiver training programmes to improve on individual components to potentially produce more effective results on child language and literacy outcomes. The researcher hypothesizes that if the training programmes adapted to ensure sufficient intensity, consistent supervision, effective teaching strategies and deep cultural sensitivity, the programme would have a greater impact on child language and literacy development outcomes. Further RCT studies are required to test this hypothesis through empirical research.

Limitations

It is important to highlight the limitations of this narrative review. A limitation of this study is that no causal claims can be made due to the narrative design of the review. This review evaluates the interventions against a developed criteria form,

which has been created based on the results of previous systematic reviews. This tool has been informed by literature on culturally sensitivity and programme theory, although it has not been used to evaluate studies in the past.

A second limitation of this narrative review is that, due to time constraints and the capacity of the researcher, only a limited number of databases were included in the search strategy and limited websites were searched for grey literature. This narrative review is limited in the studies it was able to find, as it only included studies that have reached international publication and therefore may not have reached eligible unpublished studies. The results found no studies in a local language and all studies are in English, which can be seen as a limitation of being unable to access diverse and local knowledge.

Within the nine studies included in this review, there were research groups that were prominent and many authors appeared in more than one eligible study. This presents as a limitation as there is lack of independence in research groups investigating caregiver training programmes in the Southern and East African region, which may bias the results. This can impact the diversity of research methods used and an over representation of certain programmes, such as the MISC programme in this narrative review (Boivin et al., 2013a). There is, therefore a need for diversification in the research on caregiver training programmes in South and Eastern Africa.

A further limitation of this review was that the second screener was only able to assess 50% of the studies for inclusion, although the inter-rater reliability was 100% for the percentage of studies that were dual screened. The absence of a second screener to assist with the quality assessments of eligible studies was a limitation,

although the reliability was increased by the researcher replicating the quality screening process ten days later.

Chapter 6: Conclusion

This study used a narrative review design to investigate caregiver training programmes in Southern and East Africa, which aim to improve child language and literacy development. The study included nine eligible caregiver training programmes in this review. The results have shown that the majority of caregiver programmes have a significant short-term impact on child language and literacy development, but there is no evidence to support medium to long-term impact of these training programmes on child language and literacy development. The results of this review have shown that literacy and language activities promoted in the change models of these interventions often use play or dialogic-book reading to promote literacy development. This review has indicated that the action models of eligible caregiver training programmes present with complex variation.

The evaluation of these caregiver training programmes using programme theory (Chen, 2015), has shown there is potential for improvement in the design and implementation of specific components of these programme. These components specifically refer to increasing the duration of caregiver training programmes (Baker-Henningham & López Bóo, 2010), the use of home visits at part of the training (Henwood et al., 2020), ensuring sustained supervision (Baker-Henningham & López Bóo, 2010), using effective teaching strategies such as corrective feedback (Kaminski et al., 2008) and ensuring ecological context support and deep cultural sensitivity of the programmes (van Mourik et al., 2017). The untapped potential for caregiver training programmes to improve on individual components is promising for the future impact of these programmes on child language and literacy development in Southern and East Africa.

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Appendix

Appendix A

Search String used in all databases, except Psych Info

(“child*” OR “infant*” OR “parent-child dyad*” OR “adult-child*” OR “disadvantaged child*” OR “poor child*” OR “pre-school*” OR “at risk” OR “pre-primary” OR “parent* program*” OR “parent* train*” OR “parent* education” OR “parent* support” OR “parent* involvement” OR “parent* style” OR “parent literacy program*” OR “home-based program*” OR “home-based training*” OR “home literacy environment*” OR “caregiver program*” OR “caregiver training” OR “caregiver education*” OR “caregiver intervention*” OR “caregiver support” OR “pre-school education” OR “play-based stimulation” OR “development* stimulation” OR “early development intervention” OR “early child* intervention” OR “read* instruction*” OR “read* intervention*” OR “book-sharing”) AND (“child* development” OR “early child* development” OR “early language” OR “language development” OR “emergent literacy” OR “school readiness” OR “developmental performance” OR “vocab*” OR “ECD” OR “literacy development” OR “emergent literacy skill*” OR “cognitive” OR “infant language” OR “child* performance”) AND (“Randomized controlled trial*” OR “controlled trial*” OR “intervention*” OR “program* effective*” OR “effective intervention*”) AND (“Angola” OR “Botswana” OR “Burundi” OR “Comoros” OR “Democratic Republic of Congo” OR “Eritrea” OR “Eswatini” OR “Ethiopia” OR “Kenya” OR “Lesotho” OR “Madagascar” OR “Malawi” OR “Mauritius” OR “Mozambique” OR “Namibia” OR “Rwanda” OR “Seychelles” OR “Sao Tome & Principe” OR “Somalia” OR “South Africa” OR “South Sudan” OR “Sudan” OR “Tanzania” OR “Uganda” OR “Zambia” OR “Zimbabwe” OR “Southern Africa” OR “Sub-Saharan Africa” OR “East Africa” OR “low-resource”)

Search String used in Psych Info

(child* OR infant* OR parent-child dyad* OR adult-child* OR disadvantaged child* OR poor child* OR pre-school* OR at risk OR pre-primary OR parent* program* OR parent* train* OR parent* education OR parent* support OR parent* involvement OR parent* style OR parent literacy program* OR home-based program* OR home-based training* OR home literacy environment* OR caregiver program* OR caregiver training OR caregiver education* OR caregiver intervention* OR caregiver support OR pre-school education OR play-based stimulation OR development* stimulation OR early development intervention OR early child*

intervention OR read* instruction* OR read* intervention* OR book-sharing) AND (child* development OR early child* development OR early language OR language development OR emergent literacy OR school readiness OR developmental performance OR vocab* OR ECD OR literacy development OR emergent literacy skill* OR cognitive OR infant language OR child* performance) AND (Randomized controlled trial* OR controlled trial* OR intervention* OR program* effective* OR effective intervention*) AND (Angola OR Botswana OR Burundi OR Comoros OR Democratic Republic of Congo OR Eritrea OR Eswatini OR Ethiopia OR Kenya OR Lesotho OR Madagascar OR Malawi OR Mauritius OR Mozambique OR Namibia OR Rwanda OR Seychelles OR Sao Tome & Principe OR Somalia OR South Africa OR South Sudan OR Sudan OR Tanzania OR Uganda OR Zambia OR Zimbabwe OR Southern Africa OR Sub-Saharan Africa OR East Africa OR low-resource)

Appendix B

Table 9.1

Table showing the screening tool used to assess studies in the screening process for inclusion

Inclusion criteria (Based on PICCOS)

Population = caregiver-child dyads (child age between 0-6)

Intervention = Literacy or language targeted intervention

Comparator = Control group

Outcomes = Developmental outcomes relating to language and literacy

Setting = Low resource

Study design = RCT's only

Reviewer name:	Date:	
Author name/Study ID:	Year:	
Title:	Journal:	
Country:	Measurement tool used:	
Intervention summary:	Notes:	
	Include	Exclude
Patient Population	Children between 0-6 (at time of intervention).	Children above 6 (at time of intervention).
Intervention	Includes a form of caregiver training.	Combined interventions e.g nutrition and stimulation intervention.
Interventions focus	Targeted to caregivers or caregiver-child interaction.	Interventions not directed at caregiver.
Context	Southern or East African Country.	Any country not a part of Southern or East Africa.

Low resource setting.

Outcomes	Pre-literacy, literacy or language outcomes.	Absence of pre-literacy, literacy or language outcomes
Study design	RCT study design	Any other study design
Overall decision	Include	Exclude
		Reason for exclusion:

Appendix C

Example of a Completed Critical Appraisal Skills Checklist



CASP Randomised Controlled Trial Standard Checklist:

11 questions to help you make sense of a randomised controlled trial (RCT)

Main issues for consideration: Several aspects need to be considered when appraising a randomised controlled trial:

- Is the basic study design valid for a randomised controlled trial? (Section A)
- Was the study methodologically sound? (Section B)
- What are the results? (Section C)
- Will the results help locally? (Section D)

The 11 questions in the checklist are designed to help you think about these aspects systematically.

How to use this appraisal tool: The first three questions (Section A) are screening questions about the validity of the basic study design and can be answered quickly. If, in light of your responses to Section A, you think the study design is valid, continue to Section B to assess whether the study was methodologically sound and if it is worth continuing with the appraisal by answering the remaining questions in Sections C and D.

Record 'Yes', 'No' or 'Can't tell' in response to the questions. Prompts below all but one of the questions highlight the issues it is important to consider. Record the reasons for your answers in the space provided. As CASP checklists were designed to be used as educational/teaching tools in a workshop setting, we do not recommend using a scoring system.

About CASP Checklists: The CASP RCT checklist was originally based on JAMA Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL and Cook DJ), and piloted with healthcare practitioners. This version has been updated taking into account the CONSORT 2010 guideline (<http://www.consort-statement.org/consort-2010>, accessed 16 September 2020).

Citation: CASP recommends using the Harvard style, i.e. *Critical Appraisal Skills Programme (2020). CASP (insert name of checklist i.e. Randomised Controlled Trial) Checklist. [online] Available at: insert URL. Accessed: insert date accessed.*

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Critical Appraisal Skills Programme (CASP) part of Oxford Centre for Triple Value Healthcare Ltd www.casp-uk.net

Study and citation: Abessa et al. 2019

Section A: Is the basic study design valid for a randomised controlled trial?			
1. Did the study address a clearly focused research question? <i>CONSIDER:</i> - Was the study designed to assess the outcomes of an intervention? - Is the research question 'focused' in terms of: - Population studied - Intervention given - Comparator chosen - Outcomes measured?	Yes ☒	No ☐	Can't tell ☐
2. Was the assignment of participants to interventions randomised? <i>CONSIDER:</i> - How was randomisation carried out? Was the method appropriate? - Was randomisation sufficient to eliminate systematic bias? - Was the allocation sequence concealed from investigators and participants?	Yes ☒	No ☐	Can't tell ☐
3. Were all participants who entered the study accounted for at its conclusion? <i>CONSIDER:</i> - Were losses to follow-up and exclusions after randomisation accounted for? - Were participants analysed in the study groups to which they were randomised (intention-to-treat analysis)? - Was the study stopped early? If so, what was the reason?	Yes ☒	No ☐	Can't tell ☐

Section B: Was the study methodologically sound?			
4. - Were the participants 'blind' to intervention they were given? - Were the investigators 'blind' to the intervention they were giving to participants? - Were the people assessing/analysing outcome/s 'blinded'?	Yes ☒ ☐	No ☐ ☒	Can't tell ☐ ☐
5. Were the study groups similar at the start of the randomised controlled trial? <i>CONSIDER:</i> - Were the baseline characteristics of each study group (e.g. age, sex, socio-economic group) clearly set out? - Were there any differences between the study groups that could affect the outcome/s?	Yes ☐	No ☒	Can't tell ☐

6. Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)? <i>CONSIDER:</i> • Was there a clearly defined study protocol? • If any additional interventions were given (e.g. tests or treatments), were they similar between the study groups? • Were the follow-up intervals the same for each study group?	Yes ☒	No ☐	Can't tell ☐
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Section C: What are the results?

7. Were the effects of intervention reported comprehensively? <i>CONSIDER:</i> • Was a power calculation undertaken? • What outcomes were measured, and were they clearly specified? • How were the results expressed? For binary outcomes, were relative and absolute effects reported? • Were the results reported for each outcome in each study group at each follow-up interval? • Was there any missing or incomplete data? • Was there differential drop-out between the study groups that could affect the results? • Were potential sources of bias identified? • Which statistical tests were used? • Were p values reported?	Yes ☒	No ☐	Can't tell ☐
8. Was the precision of the estimate of the intervention or treatment effect reported? <i>CONSIDER:</i> • Were confidence intervals (CIs) reported?	Yes ☒	No ☐	Can't tell ☐
9. Do the benefits of the experimental intervention outweigh the harms and costs? <i>CONSIDER:</i> • What was the size of the intervention or treatment effect? • Were harms or unintended effects reported for each study group? • Was a cost-effectiveness analysis undertaken? (Cost-effectiveness analysis allows a comparison to be made between different interventions used in the care of the same condition or problem.)	Yes ☒	No ☐	Can't tell ☐

Section D: Will the results help locally?

10. Can the results be applied to your local population/in your context? <i>CONSIDER:</i> • Are the study participants similar to the people in your care? • Would any differences between your population and the study participants alter the outcomes reported in the study? • Are the outcomes important to your population? • Are there any outcomes you would have wanted information on that have not been studied or reported? • Are there any limitations of the study that would affect your decision?	Yes ☒	No ☐	Can't tell ☐
11. Would the experimental intervention provide greater value to the people in your care than any of the existing interventions? <i>CONSIDER:</i> • What resources are needed to introduce this intervention taking into account time, finances, and skills development or training needs? • Are you able to disinvest resources in one or more existing interventions in order to be able to re-invest in the new intervention?	Yes ☒	No ☐	Can't tell ☐

APPRAISAL SUMMARY: Record key points from your critical appraisal in this box. What is your conclusion about the paper? Would you use it to change your practice or to recommend changes to care/interventions used by your organisation? Could you judiciously implement this intervention without delay?

The quality of the study was generally appropriate. A concern impacting the quality is that the majority of the participants didn't receive the minimal number of individual sessions planned. Another concern are the differences present at baseline. There were The results are presented in Table 1. The two groups differ significantly in terms of living area, maternal occupation, child's baseline WAZ and MUACZ scores. More children from urban or semi-urban areas were assigned to the intervention (30.8% versus 15.9%, $p = 0.001$). Significantly more mothers in the control group were housewives (90.4% versus 78.2%, $p = 0.002$). In terms of the MUACZ and WAZ scores, the intervention children had better baseline scores than the control children. Another issue was that less than 80% of children were lost in final analysis.

The results in the post-test were non-significant for language.

Appendix D

Table 9.2

Table showing the initial data extraction form used to extract data from eligible studies

Study information	Data Extracted
Title	
Year	
Authors	
Child and caregiver characteristics	
Sample selection	
Region of study	
Relation to other studies	
Study aim	
Intended outcomes	
Theory of change	
Intervention curriculum	
Dosage and intensity	
Contextual factors mentioned in study	
Inferences drawn about cultural sensitivity	
Outcome measures	
RCT and control design	
Data collection	
Data analysis	
Results	
Effect size	
Limitations and recommendations	
Delivery of intervention	
Implementing organisation	
Implementors and training	
Associate organisations	
Notes	

Appendix E

Database Results

The total number of studies identified in the databases was 900 studies. The search tool place on the 23rd of June 2021.

Table 9.3

Table showing the number of studies found in each database in the initial search

Database	Number of studies identified
ProQuest Social Sciences Premium Collection	183
British Education Index	14
Psych info	363
ProQuest dissertations	64
Africa-wide	456

Appendix F

Table showing the characteristics of the implementors, the training they received and the community organisation collaborations

Study ID	Implementors	Training of implementors	Associate or community organisations
Abessa et al. 2019	Hospital nurses	Implementors received a one week of training in the theory of child development, and one month of intensive practice (4 hr. daily) in implementing developmental stimulations.	The hospital built a new play room.
Abimpaye et al. 2020	Community volunteers with a minimum of grade 9 education.	Duration of training is not reported. All volunteers were trained by a local organisation. In the full treatment arm, a cell-based salaried supervisor, the Community Family Facilitator (CFF) provided coaching and supported three volunteers.	First Steps program was implemented in partnership with a local organization, Umuhuza, who have significant experience in community mobilization and working with local volunteers.
Boivin et al. 2013a	Field trainers for both interventions were bachelor degree graduates from Makerere University either in Psychology or Social Work	Implementors received a three week-long workshops on how to train caregivers in the MISC program.	The research team collaborated with the Uganda Community Based Organization for Child Welfare who delivered the control intervention

Boivin et al. 2013b	Ugandan Field Team	Implementors received a three week-long workshops on how to train caregivers in the MISC program.	The research team collaborated with the Uganda Community Based Organization for Child Welfare, who delivered the control intervention
Bass et al., 2017	Ugandan Psychology or Social Work graduates	Implementors received a two-week training in their respective intervention and participated in weekly supervision and a week-long refresher training.	The research team collaborated with the Uganda Community Based Organization for Child Welfare, who delivered the control intervention
Boivin et al. 2017	Ugandan Psychology or Social Work graduates	All intervention providers received an initial two-week training in their respective intervention, followed by a weeklong refresher training held mid-way through the study.	The research team collaborated with the Uganda Community Based Organization for Child Welfare, who delivered the control intervention
