

A RANDOMIZED CONTROL TRIAL INVESTIGATING THE
EFFECT OF A PLAY-INFORMED CAREGIVER-IMPLEMENTED
HOME-BASED INTERVENTION ON PLAYFULNESS FOR HIV
POSITIVE CHILDREN AGED 10 MONTHS TO 8 YEARS ON
HAART FROM A LOW SOCIO-ECONOMIC STATUS.

Faculty of Health and Rehabilitation Sciences

Department of Occupational Therapy

University of Cape Town

Student name: Anandé Uys (MSc Occupational Therapy candidate)

Student number: UYSANA001

Date: 12 March 2016

Supervisors: Associate/Professor Elelwani Ramugondo
Department of Health and Rehabilitation Sciences,
University of Cape Town

Associate/Professor Reinie Cordier
Department of Occupational Therapy
Curtin University

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ABSTRACT

Introduction: Play is foundational to learning and well-being, and prepares children for functional participation later in life. Playfulness forms a critical aspect to play, and describes a general disposition to play. There is currently no reported research study on playfulness levels for children with HIV/AIDS. The play needs of this population are therefore not adequately understood. The play-informed caregiver implemented home-based intervention (PICIHBI) was developed by pediatric occupational therapists as part of occupation-centred occupational therapy practice. PICIHBI appears to have potential for promoting play and development in children with HIV/AIDS who have been on Highly Active Anti-Retroviral Treatment (HAART) since early childhood. The current study forms part of a larger project investigating the effects of a play-informed caregiver implemented home-based intervention on participation outcomes for HIV positive children on HAART and living in families with low socio-economic status (SES).

Objectives: This study aimed to establish a playfulness profile for HIV positive children on HAART as well as compare differences in playfulness between children with HIV on HAART since early childhood attending traditional one-on-one occupational therapy, and those attending PICIHBI.

Description: The study followed a pragmatic single-blinded randomized control design. 66 participants (ages 10 months to 8 years old) were recruited and randomly assigned into the experimental (PICIHBI) or control group. 11 participants withdrew or were lost to follow up and 5 had incomplete data sets. Resulting in 12 participants per research group after the inclusion criteria of attendance was applied to the sample.

Participants received 10, monthly intervention sessions in their respective groups. The Test of Playfulness (ToP) was used to measure baseline, mid and post intervention playfulness scores.

Results: The overall playfulness level of HIV positive children on HAART aged 10 months to 8 years in the total research sample at baseline was -0.77, which is significantly below the normative score for typically developing children of 0.4 as well as that for atypical children of -0.38. The average score for the PICIHBI group at baseline was -0.7025, whilst that of the one-on-one intervention group was -0.81. Although not statistically significant, the scores at post assessment improved marginally within the PICIHBI group at -0.63 and -0.425 for the one-on-one intervention group. These post assessment scores are still below the average normative scores. There was no statistically significant difference between post assessment scores for PICIHBI and one-on-one interventions. The small sample size and loss of participants reduced power which can negatively impact on detecting between group differences and should therefore be regarded with caution.

Practical implications: These results suggest that children with HIV/AIDS who live within families with low SES are likely to experience poor quality of play, even if these children were on HAART since early childhood. Considering potential implications for learning and functional participation later in life, greater effort to promote play as part of health care for this population is warranted. Furthermore, results indicated that the differences in post assessment scores between the two intervention groups was not statistically significant, indicating that PICHBI achieved similar results as the one-on-one intervention. Group intervention allows more children and caregivers the opportunity to access and receive essential rehabilitative services, such as occupational therapy. This study demonstrated that group intervention can achieve similar goals to one-on-one individualised therapy, whilst catering for a larger percentage of the population. With an over-burdened health system, group interventions are critical to ensure that all children and caregivers are able to access the services they need. The study gave further insight as to areas of the PICHBI programme that can be adapted to improve effectiveness, specifically for improving children’s playfulness levels.

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DEFINITION OF TERMS

Framing: The ability to appropriately give and read play cues from the environment and other play mates (Skard & Bundy, 2008).

Freedom to suspend reality: A child decides the level and intensity of their pretend play and whether it is closely related to reality (Skard & Bundy, 2008). In some instances, they may use an object as it was intended or they may disregard the properties and characteristics and pretend that it serves a different purpose.

Internal control: This refers to a child's independent decision making regarding: play activities, play environment, play materials and play space. This is observed when children are able to change the process of play by changing the rules and requirements of a particular play activity (Skard & Bundy, 2008).

Intrinsic motivation: Child's willingness to engage in play as observed through the process and enjoyment of engaging in play itself, not to achieve a particular outcome or product (Skard & Bundy, 2008).

Occupation: This is described as both the ordinary and extraordinary things that people choose to do every day (Christiansen, Clark, Kielhofner, & Rogers, 1995). Through engagement in occupations people derive meaning and purpose contributing to life satisfaction and meaning.

Occupational injustice: There are four forms of occupational injustice: occupational imbalance, occupational deprivation, occupational alienation and occupational marginalisation. This can occur when individuals, groups or communities are unable to engage in meaningful and health promoting occupations due to external barriers or lack of resources (Wilcock & Townsend, 2004).

Occupational therapy: Occupational therapy is a client-centred health profession enabling engagement in occupations of self-care, play, leisure and work in order for individuals, groups or communities to achieve health and well-being (WFOT, 2010).

Play: Play is deemed as the main occupation of childhood and influences a child's life in many ways. Through play, children learn and develop gross-motor, fine-motor and sensori-motor skills required for schooling and skills for later adulthood. Play provides a platform through which they can express themselves, engage socially with others as well as experience relaxation and enjoyment. Play can be described as the transaction between a child and their environment (Parham, 2008).

Player: The primary occupational role of a child through which they learn, grow and gain enjoyment through playful engagement (Parham, 2008).

Playfulness: This refers to a child's disposition to engage in play and comprises of four characteristics namely: intrinsic motivation, internal control, ability to suspend reality and framing. By observing a child's approach and responses during play opportunities one is able to gain a sense of their level of playfulness (Skard & Bundy, 2008).

Play-informed caregiver-implemented home-based intervention (PICIHBI): An early childhood intervention programme where caregivers are trained by an occupational therapist to utilise a stimulation box and play activities to enhance the playfulness and development of their children within the home context. The therapist assumes a playful approach during the intervention so that the training is not merely didactic. It is hoped that this approach will be emulated by the caregiver in engaging with their child. The training occurs on a monthly basis.

LIST OF ACRONYMS

AIDS: Acquired immune deficiency syndrome

ANOVA: Analysis of variance

ART: Antiretroviral therapy

ARV: Antiretroviral

GSH: Groote Schuur Hospital

HAART: Highly active antiretroviral treatment

HIV: Human immunodeficiency virus

MnSq: Mean square

PHE: Progressive HIV encephalopathy

PICIHBI: Play-informed caregiver-implemented home-based intervention

SD: Standard deviation

Std: Standard score

ToP: Test of Playfulness

SES: Socio-economic status

CHAPTER 1: INTRODUCTION

The high unemployment rate and HIV pandemic in South Africa greatly impacts on occupational choices and access to opportunities, including play. The important role of play in a child's life is well described and it is critical to enable caregivers and children with opportunities to play within their context (Case-Smith & O'Brien, 2010; O'Brien et al., 2000; Parham, 2008; Skard & Bundy, 2008). Through equipping caregivers with knowledge on play, development and learning through a play-based intervention programme it is hoped to minimise the negative impact of play deprivation on health and well-being.

Play is an integral part of childhood, contributing to physical, cognitive, emotional and social development (Case-Smith & O'Brien, 2010; Parham, 2008; Skard & Bundy, 2008). Play is viewed as important for development, learning and adaptation to challenges in the surrounding environment (Case-Smith & Kuhaneck, 2008; Case-Smith & O'Brien, 2010; Parham, 2008; Skard & Bundy, 2008). It is seen by some as rehearsing for occupations or life roles through providing a non-threatening opportunity and atmosphere to strengthen skills needed for self-care, school or work. The process of engaging in play provides children with enjoyment and satisfaction. Highlighting play as a means to achieve growth and learning as well as play as an end, providing enjoyment and well-being are both important considerations to playful engagement (Parham, 2008).

Sutton-Smith (1997) delineated seven different views about play and why many see it as important. It can be summarised as follows: The first view regards play as being critical to child development and that play, similar to child development, is also viewed to progress through stages. This view focused on the importance of play contributing to physical, emotional, social and cognitive development rather than children engaging in play for fun or enjoyment. In addition, play is further described as a demonstration of power, where individuals may compete in sports or competitions in order to demonstrate strength and victory over an opponent. A different understanding of play is focused on identity. Play as an expression of identity, bonding, culture and traditions, through engaging in rituals and play activities that have been passed down from generation to generation, that demonstrate belonging to particular group or community. Another perspective describes the relationship between play and imagination through creative exploration of the self and their surrounding environment. It provides the player with autonomy and a sense of control over their created world. Play has been explained as a player's engagement in self-chosen activities for the purpose of leisure, relaxation or fun. The purpose of play within this viewpoint is the satisfaction gained through the engagement and building an inner identity, the self. The final understanding described play in itself as frivolous and without a purpose or goal (Sutton-Smith, 1997).

The United Nations included play as an indicator for health and well-being for children, within their Declaration of the Rights of the Child (1959). This is consistent with what Parham (2008) observed about the value placed on play in relation to health by occupational therapists. Play as the main occupation of children contributes to their quality of life, health and happiness. Play can be restricted through environmental barriers, social stigma, economical disadvantages with or without an impairment or disability (Parham, 2008). Occupational therapists aim to minimise, and when possible remove restrictions to play engagement in order for quality of life and engagement in the main occupation of childhood to be realised.

Children from low socio-economic status are most at risk of play deprivation due to obstacles within their environment, limiting their play opportunities, which in turn can have a negative impact on their physical, cognitive and socio-emotional development (Bartie et al., 2015; Visser et al., 2012; Whitehead, Potterton, & Coovadia, 2013). Poverty inhibits access to play as economic hardships, violence and unsafe play environments do not allow children from lower socio-economic areas the same access and milieu to play (Ginsburg, 2007). Parents from low socio-economic contexts may not view play as a priority, not necessarily because of a lack of understanding the perceived benefits, but due to concerns of basic survival, having less resources in the form of time, physical spaces and materials to engage in play (Kuo & Operario, 2010; Visser et al., 2012). This may lead to an increase in sedentary activities for the children, such as watching television indoors, and ultimately a decrease in play engagement (Ginsburg, 2007). The cycle of poverty therefore restricts the opportunity to play, therefore limiting and in some cases preventing play engagement, and therefore children do not access the benefits associated with play. Without the opportunity to play, learn and develop the cycle of poverty cannot be easily broken.

1.1 PURPOSE OF THE STUDY

The study hopes to demonstrate the value of evidence-led practice in promoting not only play, but also playfulness, an important element of play, as a necessary aspect of pediatric occupational therapy intervention. Occupational therapists working with children across various settings, should not only emphasise and more readily include play assessments in their initial and progress assessments of children, but also explore various ways of broadening access to interventions to promote play. This study will play a role in determining the effectiveness of a play focused, early childhood intervention programme (PICHIBI) in improving children's playfulness; particularly for children with HIV on highly active anti-retroviral therapy (HAART) living within low socio-economic contexts. HAART is prescribed to support immune function through suppressing virus replication, and through this improve the prognosis of individuals with AIDS-related illnesses and reduce mortality (Chiriboga, Fleishman, Champion, Gaye-Robinson, & Abrams, 2005).

The levels of playfulness for children with HIV/AIDS have not as yet been studied and through this study a playfulness profile for children with HIV/AIDS attending a clinic in South Africa and living within low socio-economic circumstances will be determined.

This research study informs a larger research project (Figure 1) HREC REF 560/2013 *Title: The effects of play-informed caregiver implemented home-based intervention on participation outcomes for HIV positive children on HAART and living in families with low socio-economic status.* The participation outcomes in this larger study are play, learning, development and self-care. This study focuses only on the play aspect of these outcomes.

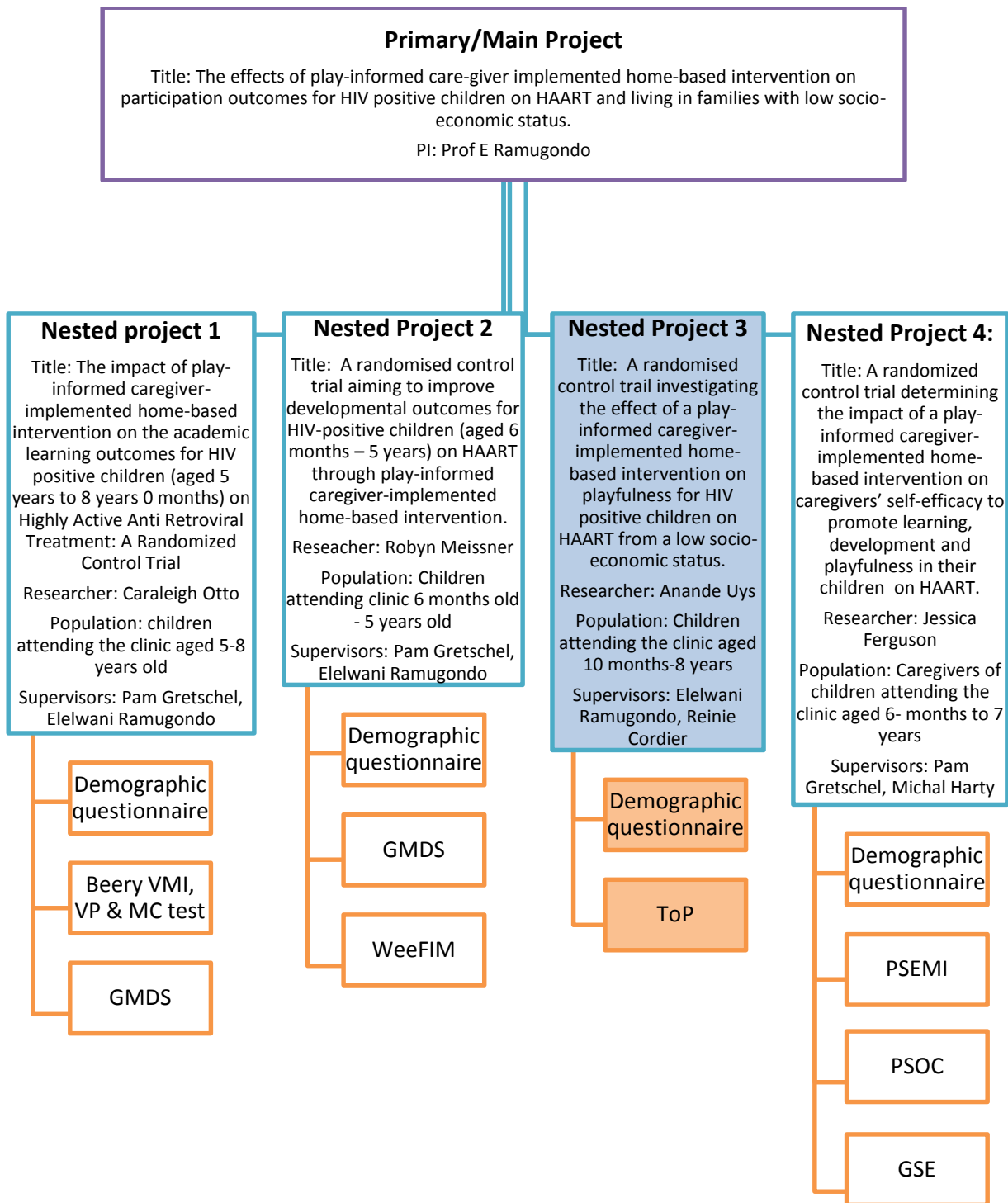


FIGURE 1 Larger Research Project with Playfulness Project as Nested Project 3

1.2 RESEARCH QUESTION

Are there differences in playfulness scores between children with HIV on HAART aged 10 months to 8 years receiving conventional one-on-one occupational therapy intervention and a comparable group on the PICIHBI programme?

1.3 RESEARCH AIM

This research study aims to describe a playfulness profile for children with HIV attending a clinic in South Africa and living within low socio-economic circumstances. The playfulness scores (overall measure scores) of these children as they receive either a conventional one-on-one occupational therapy intervention or the PICIHBI will be determined over baseline, 5 month and 10 month intervals. Differences on the individual item scores on Test of Playfulness between the two groups will be compared.

1.4 OBJECTIVES

The primary objective is to determine the difference and compare the Test of Playfulness (ToP) overall measure scores between children in the PICIHBI intervention programme and the control group (one-on-one conventional occupational therapy).

The secondary objectives include:

- To establish a playfulness norm for children with HIV attending a clinic in South Africa and living within low socio-economic circumstances on HAART compared to the typical playfulness norm (from the ToP sample) as assessed by the ToP at baseline.
- To determine the difference and compare levels of playfulness between children in the intervention and control group across the item scores of the ToP and detect effect sizes of ToP items.

1.5 HYPOTHESIS

Playfulness scores of children with HIV attending a clinic in South Africa and living within low socio-economic circumstances on HAART, between the ages of 10 months to 8 years, completing the PICIHBI programme will be the same or higher than the control group from baseline to post assessment.

1.6 NULL HYPOTHESIS

Playfulness scores of children with HIV attending a clinic in South Africa and living within low socio-economic circumstances on HAART, between the ages of 10 months to 8 years, completing the PICIHBI programme will be lower than the control group from baseline to post assessment.

1.7 SIGNIFICANCE

This research is the first of its kind to study the playfulness of children with HIV on HAART and will therefore be able to establish a playfulness profile of this particular group. It is hoped that this study will demonstrate the importance of play, and especially playfulness, as part of evidence based pediatric occupational therapy practice.

HIV via vertical transmission causes a neuronal injury often leading to encephalopathy, contributing to developmental delay, such as delays in motor and cognitive development (Whitehead et al., 2013). It was found that 66% of children with HIV attending two community clinics in Cape Town had significant motor delay (Ferguson & Jelsma, 2009). It was further recommended that children with HIV/AIDS living in low socio-economic contexts overall development required long term monitoring and that appropriate stimulation programmes are needed (Ferguson & Jelsma, 2008). Furthermore, a study by Potterton, Stewart, Cooper & Becker (2009) found that both cognitive and motor development of children with HIV improved through a basic home stimulation programme carried out by their caregivers. This study only included very young children under the age of 2 years and 6 months.

With the benefits associated with play engagement on development, learning, overall health and well-being it is critical that occupational therapists utilise play-based interventions with caregivers as partners. Increasing caregivers' knowledge of play, learning and child development is an important first step in overcoming barriers inhibiting play.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review begins by discussing the definitions of play and playfulness and the purpose and importance of play in relation to health, well-being, development and learning. Preferences and differing perspectives of categories of play between parents and experts were reviewed. Play choices of children from a low socio-economic context is discussed in relation to parental views. The use of play assessments and play within occupational therapy practices was explored. Studies that have identified differences in playfulness levels of children with varying developmental disabilities and diagnoses were discussed as there is no literature available on playfulness levels or play patterns of children with HIV. The developmental outcomes of children with HIV as identified by other intervention studies is discussed as well as the need for early childhood programmes that address the associated developmental concerns. This forms the theoretical basis of the research question, highlighting the need for effective early childhood programmes focusing on play, learning and developmental needs for children with HIV.

2.2 PLAY, DEVELOPMENT AND LEARNING

Play encompasses all aspects of a child's early years, but it is not easily defined (Rodger & Ziviani, 2008; Sutton-Smith, 2008). However, even within the different definitions, perspectives do overlap contributing to a widely accepted definition of play as: a transaction between the individual and the environment that is internally controlled, intrinsically motivated, free from external constraints of reality and the ability to frame the play transaction (Parham, 2008; Skard & Bundy, 2008; Sutton-Smith, 1997). Play and playfulness are occasionally used interchangeably, however within this study, play is the transaction between the individual and the environment (the occupation) whereas playfulness refers to the tendency or disposition to engage in play. Play does not involve the same set of play things, play mates or play spaces in every experience and is therefore a unique experience as a child brings their own interests, playfulness and developmental skills to the play transaction. The play environment, as an important part of the transaction, can either facilitate or inhibit play, such as the inhibitory impact of structural barriers like poverty on free play engagement (Bartie et al., 2015; Ginsburg, 2007). As a result, occupational therapists will often attempt to improve the play skills and playfulness of the individual or endeavour to adapt or remove barriers within the environment that may be inhibiting the play transaction from occurring.

Parham (2008) emphasised that it is not the end product of play that fascinates children, but rather the process and active engagement during play that is seen as more significant. Every child's

experience and process of play is different. Children may have individual preferences as to what constitutes 'play' as fun or work (Chapparo & Hooper, 2002). Play has been theorised by many as having an impact on learning. Piaget (1952) theorised about the influence of play on cognitive development. Mead (1934) described the link between play and learning social rules and while Freud (1960) and Erikson (1963) explained the role of play in emotional development. Ayres (1972) emphasised that children seek to learn, modulate, engage and organise their behaviours and skills through the sensory experiences they gain during play as part of her sensory integration theory. Although these theorists focused on specific aspects of human development, they all agreed that in some way play influenced human development and learning. Furthermore, that play deprivation can put some children at risk for developmental delay or impairment in functioning (Case-Smith & O'Brien, 2010; Fisher, Hirsh-Pasek, Golinkoff, & Gryfe, 2008; Parham, 2008).

Sutton-Smith (1997) described seven diverse views and beliefs about play. The rhetoric of *play as progress*, describes the primary focus of play as relating to development (Sutton-Smith, 1997). Play thus serves to alter and develop a child's skills into increasingly more complex skills and behaviours to prepare them for school and later adulthood. Sutton-Smith (1997) further emphasised that it is not merely the process of play that is significant, but also the playfulness of the caregiver involved. A more playful caregiver is believed to influence a positive transformation in the child's overall competencies, leading to more success at a school level. On the other hand, Sutton-Smith (1997) describes the *tutorial stimulation effect*, where it is not play itself that may be responsible for the child's improved competencies, but rather the improved relationship between the caregiver and child through the platform of play. In both these beliefs about play, the child's competencies improve, making the child more equipped to play, learn and engage. Sutton-Smith (1997) further indicates that if a caregiver believes that play is responsible for development and learning, the caregiver is more likely to play with the child. Sutton-Smith (1997) emphasizes the importance of flexibility within the play transaction. The more flexibility and opportunity a child is afforded to be playful, to choose their play activities, play space, play mates and play materials, the more likely it is that engaging in play will develop everyday skills and behaviours (Sutton-Smith, 1997).

Play as the main occupation of childhood encompasses meaning and purpose, through which children explore, learn new skills, whilst strengthening previously acquired skills (Parham, 2008; Rodger & Ziviani, 2008). Within the occupational therapy field, the views of 'play as progress' and 'play as self' are most central to the use of play as both a medium and end goal of therapy (Parham, 2008).

2.3 EXPERT VIEWS, PARENTAL PERSPECTIVES AND CHILD PREFERENCES IN PLAY

Play is partly dependent on achievement of certain developmental skills in order for children to engage actively and successfully in play opportunities. At the same time, deprivation of play opportunities can have a negative impact on a child's development (Rodger & Ziviani, 2008). In order to play successfully, a child will need their own playfulness and their developmental skill set to match the play task and environmental demands. A constant mismatch between a child's developmental skills, playfulness and their surrounding environment may eventually lead to a child's withdrawal from play opportunities. Play skills refer both to characteristics of playfulness (internal control, intrinsic motivation, ability to suspend reality and framing) as well as developmental skills, such as gross motor skills, that a child will utilise to play (Rodger & Ziviani, 2008). Therefore, to assist children to be successful players, occupational therapists may focus on either play as a means (using play to enhance developmental skills), play as an end (playfulness characteristics) or both.

The value of free play by adults appears to be declining, as it is often being replaced with more structured activities (Fisher et al., 2008). Reduction in children's free play opportunities contradicts many theorists' views that in order to develop and learn, children need free play. Parental views appear to lean towards structured learning, rather than unstructured play opportunities, as part of their desire or pressure from contextual factors for children to develop pre-academic and academic skills as soon as possible (Fisher et al., 2008). Similarly, teachers view indoor play as more beneficial to learning, possibly due to the structured nature of indoor games, such as puzzles and construction, relating more to pre-academic and academic skills than outdoor play (McClintic & Petty, 2015). The risk in these views is that children may be more motivated by teachers to engage in structured learning activities indoors, such as puzzles, rather than unstructured free imaginary play. The nature of fixed school grounds and if applicable, jungle gyms, further limit children's creativity during outdoor play as they most regularly engage in sports activities during break times (Bundy, Nelson, Metzger, & Bingaman, 2001). Children who have stronger gross motor skills therefore appear to thrive more during outdoor play when there is a focus on engagement in sports related games. The playfulness levels of a group of school children in Sydney, Australia improved significantly with the introduction of alternative materials on the school ground, as this allowed more creativity and playful engagement (Bundy et al., 2008). Teachers noted that the group of school children in Sydney became more internally motivated, engaged and creative during play due to the change in the immediate school environment (Bundy et al., 2008). Adapting the play environment through introducing new materials, such as recyclable resources, improved their playfulness, which provided teachers with a greater understanding of the value of outdoor play when there is an optimal transaction between the play environment and the child.

Occupational therapists' view of play being a child's main occupation is therefore challenged by perspectives from parents and teachers who feel that free play time may be less critical for development than structured activities with an educational focus. In a study by Fisher et al. (2008) it was found that mothers' opinion of whether or not play plays a role in development and learning, influenced the amount of time their child would play. Mothers who believed in the contribution of play to learning were observed to allow the most time for their children to engage in both structured and unstructured play. Overall, the mothers assigned slightly more value to structured play as contributing more to development and learning, than unstructured play (Fisher et al., 2008). The very nature of what constitutes playful play engagement appears to be very different within this study (Fisher et al., 2008). Experts believe that unstructured play is more playful, whereas structured play is viewed as having very low or no levels of playfulness. The mothers on the other hand deemed both unstructured and structured play as playful. Structured play, within the mothers' understanding, referred to play that has a specific goal or outcome and included: toys, television and other electronics as well as school field trips. This may partly explain the further decline in unstructured play as parents deem structured play to allow children playful learning opportunities.

A study conducted with parents from low to high income SES in Australia indicated that concerns around safety and children's apparent preference for indoor activities contribute to limited outdoor unstructured free play (Veitch, Bagley, Ball, & Salmon, 2006). This was echoed in a study by Singer et al. (2009) which was carried out in 16 countries across Africa, North America, South America, Asia and Europe where safety and time constraints were raised as limiting free outdoor play. Safety was raised as a major concern for South African participants. Concerns around safety may therefore impact further on the increase in indoor play, where toys and electronics are therefore made more available (David, 2015; McClintic & Petty, 2015). Developing countries reported a higher preference of watching television over outdoor than developed countries (Singer et al., 2009). The impact of Xenophobia, which is also relevant within the South African context, was found to further contribute to safety concerns and the shift from outdoor to more regular indoor play within the Caribbean context (David, 2015). However, an observational study completed in a small town in the Western Cape, by Bartie et al. (2015) found that even though some, but not all adults had concerns regarding safety, it did not negatively impact or limit children's outdoor play. As less opportunity and allowances are made for outdoor play by some parents due to space limitations and safety concerns, children are spending more time behind screens (McClintic & Petty, 2015; Singer, et al., 2009). Furthermore, the increase in television and screen time, will see less children engaging in traditional and cultural specific play games as children across the world engage in the more similar activity of watching television that playful engagement (David, 2015; Ramugondo, 2012).

Imaginative play engagement was reported as occurring least often, when compared to watching television and playing outside. Out of the 16 nations, South Africa, Vietnam and India reported highest levels of enjoyment in watching television. Furthermore, South Africa was included as part of the countries who reported a belief that watching television and outdoor play were equally valuable for their child's development (Singer et al., 2009). Non-working mothers reported watching television as a bonding experience with their children, with 57% of South African mothers reporting watching television as bonding time. Mothers from all 16 nations reported that the experience of childhood play has dramatically changed compared to their own (Singer, et al., 2009). The majority of play perspectives are reported from mothers, which is relevant for the current study as the PICHIBI involves female caregivers in the majority, with the playfulness study component comprising solely of female caregivers as participants.

A study by Bartie et al. (2015) investigated the play choices of children aged five to six years from a low socio-economic area in a small community within the Western Cape, South Africa. The study found that children from low socio-economic status will find ways of playful engagement with objects, tools and spaces within their environment with gross motor play being popular, possibly as physical games do not require various equipment or materials and the use of self is the focus. These physical games often had a social focus, with playmates and children observed to engage in cultural games passed down from parents and grandparents. Children who were less skilful, were at times not included in the play activity resulting in them sitting on the side-lines watching playmates, rather than joining in, as in onlooker play which can have a negative impact on their playfulness. Children engaged in symbolic play acting out roles as well as playing pretend with dolls. Toys were deemed precious by children within this community and shared between them, however they also made toys from resources available within their environment. The study by Bartie et al. (2015) described that children enjoyed engaging in chores and although television was mentioned within the study, it did not appear to be as much of a focus or overshadowed play as in the study by Singer et al (2009) and Ramugondo (2012).

Parents from low-income families may not deem play as a priority within their household, due to concerns about daily needs in order to survive (Ginsburg, 2007). These parental descriptions of play is often related to playing with physical toys and materials, which they may not be able to afford, rather than using themselves as an active participant in play (Ginsburg, 2007). The latter is often negatively influenced by the parent or caregiver's working hours and not necessarily being able to spend time with their child engaged in play.

Sutton-Smith (1997) & Youell (2008) discussed the manner in which adults may use play as a reward system, as an activity to do after they have completed the other, more 'important' activities. Adults are aware that children are intrinsically motivated to play and may use this knowledge to determine when and often for how long children are able to play. They may therefore not deem play in itself as important, but rather how play can be used to achieve other goals (Sutton-Smith, 1997).

2.4 PLAYFULNESS AND PLAY

Playfulness has been described as a disposition to play, an attitude, as something that cannot be taught, but that is rather dependant on our own individual experiences and time spent in playful engagement with others during early years (Youell, 2008). Individuals have different levels of playfulness and therefore what one player may deem as fun and exciting may not be the same for the next (Rodger & Ziviani, 2008; Skard & Bundy, 2008; Sutton-Smith, 1997; Youell, 2008). Skard & Bundy (2008) described four elements that encompass playfulness: intrinsic motivation, internal control, ability to suspend reality and framing. A child who is internally motivated to engage in an active process of play transaction without expecting a reward or external cues, chooses their play activity and is able to suspend reality is deemed more playful than a child who engages in play for an extrinsic reward and often does not choose the play activity. Play encompasses playfulness, developmental ability, play skills, play space, play materials and play mates (Rodger & Ziviani, 2008).

Playfulness has been found to remain stable over time and across age, with playful children becoming extraverted playful adults, however diminished levels of playfulness can improve through experience and engagement in playful transactions (Gordon, 2014; Skaines, Rodger, & Bundy, 2006). Removing or adapting barriers in a child's environment and a playful model, such as a playful teacher, have been found to improve playfulness levels of typically developing children and children with disabilities (Bundy et al., 2008; Okimoto, Bundy, & Hanzlik, 2000). Playfulness has been linked to higher levels of creativity, coping mechanisms, positive affect and an overall link to well-being (Gordon, 2014.) Due to neural plasticity of the brain, playfulness can be altered and improved, allowing the individual more personal capacities to achieve well-being (Gordon, 2014). Although such an intervention would be thought of as play as an end, with playfulness being the end goal, it was found that through improved playfulness a child's other developmental skills can improve as well. This occurs because as the child engages more regularly in various types of play and their disposition to play is altered with time, other skills such as a the child's gross or fine motor skills also improve (O'Brien et al., 2000). Occupational therapy practices that focus solely on play as a means, using play and play activities during therapy intervention to improve developmental skills may therefore fail to recognise more impactful ways to effect change in development through improving playfulness and the potential carry over of such

improvement to the playground. By concentrating on making children better players, through play as end goal, instead of an over focus on developmental skills may alter children's play engagement, allowing them further opportunities to practice the skills or areas of need actively during play.

2.5 PLAY ASSESSMENTS

As described earlier play can be defined and understood in different ways, making it difficult for one play assessment to encompass and include all aspects of play and/or playfulness (Stagnitti, 2004). The most readily used and described play assessments within occupational therapy practice are: Revised Knox Preschool Play Scale (Knox, 2008), Play History (Takata, 1974), Test of Playfulness (ToP) and Test of Environmental Supportiveness (TOES) (Skard & Bundy, 2008) with each assessment focusing on a different aspect of play (Parham, 2008; Stagnitti, 2004). The Revised Knox Preschool Play Scale (RKPPS) focuses on what is done during play by comparing a developmental description of play to two 30 minute play observations of a child's play engagement (Knox, 2008). The play observations are done indoors and outdoors within an environment familiar to the child. The RKPPS assesses the play of children aged 0-6 years and divides the assessment into four broad dimensions of play: space management, material management, pretence/symbolic and participation. The developmental descriptions are divided into six month increments up to three years of age and is then further described in one year increments up to six years of age. The RKPPS assesses the following categories of play: gross motor, interest, attention, purpose, manipulation, construction, imitation, dramatization, co-operation, humour and language (Knox, 2008; Stagnitti, 2004). This assessment provides information regarding a child's play age which can be compared to their chronological age.

The Play History (Takata, 1974) follows a semi-structured interview format with a child's parent or caregiver. The assessment is used for children aged 0-16 years and aims to explore the child's past and current play experiences by discussing the different play epochs. The play epochs are based on Piaget and Erikson's developmental play stages and the semi-structured questions explore the following elements: materials, actions, people and setting (Stagnitti, 2004; Takata, 1974).

The ToP was designed to assess a child's disposition to play by rating a fifteen or thirty minute observation of indoor and/or outdoor play (Skard & Bundy, 2008). The assessment can be used between the ages of six months to eighteen years and consists of 29 items that are rated 0-3 on a scale. These items reflect the elements of play (see table 1) namely: intrinsic motivation, internal control, ability to suspend reality and framing in order to determine an overall level of playfulness which can be compared to typical and atypical norms within the ToP dataset. Through considering the play elements as a tipping scale, further insight regarding whether the play transaction can be viewed as play or non-play is reached (Skard & Bundy, 2008). The TOES can be administered in conjunction

with the ToP in order to determine a child's source of motivation during play (Skard & Bundy, 2008). The TOES assesses the amount of environmental support from the environment from playmates, caregivers, materials, play space and the child's own play motivation.

The ToP is the only play assessment that focuses solely on playfulness and provides vital information regarding a child's level of playfulness during a play transaction (Skard & Bundy, 2008; Stagnitti, Unsworth, & Rodger, 2000).

2.6 PLAYFULNESS AND DEVELOPMENTAL DELAY

A study on differences in playfulness between children with and without Prenatal Alcohol Exposure (PAE) in the Western Cape of South Africa, found that children with PAE had lower overall mean scores on the TOP, demonstrating lower levels and quality of playfulness compared to their peers without PAE (Pearson, Ramugondo, Cloete, & Cordier, 2014). This study therefore highlighted deficiencies regarding playfulness, as a result of neurological differences between the two groups of children (Pearson et al., 2014). Children with traumatic brain injury (TBI) have displayed lower levels of playfulness on the ToP when compared to their peers (Mortenson & Harris, 2006). With further implications of lower levels of playfulness and differences in play performances negatively impacting on future skill development and developmental milestones as children do not engage in play activities with ease as compared to their peers (Mortenson & Harris, 2006). The importance of considering both play as an end and play as a means during therapy intervention is again highlighted in this study.

Joint attention during play and prompting (play cues) have been found to be lower in children with developmental disabilities (Cress, Arens, & Zajicek, 2007). It appears that children with developmental disabilities struggle to initiate and engage with others during free play, and that although through a supportive structured environment and adapting play activities they become more involved, the importance of developing their playfulness through free play is imperative.

Case-Smith & Kuhaneck (2008) completed a cross sectional survey with parents of typically developing children and children with developmental delay regarding their play patterns and preferences. The study found that there were considerable differences in the two groups' play behaviours and playfulness. The group of children described as part of the developmental delay group consisted of the following diagnoses: attention deficit hyperactivity disorder (ADHD), autism, pervasive developmental disorder, sensory integrative dysfunction and global developmental delay. Play preferences for these groups were consistent with the performance component limitations associated with their diagnosis. Children diagnosed with ADHD who experienced motor planning difficulties often prefer to engage in rough and tumble activities, rather than activities requiring refined fine motor

tasks. Reasons may include that rough and tumble activities assist with their sensory needs and may be more in line with their skill set, requiring less organisation of self, materials and space, following of instructions or a particular sequence to achieve a specified motor output. Similarly, a child with autism will engage in more solitary activities due to limited social skills (Case-Smith & Kuhaneck, 2008). This study demonstrated that playfulness and play patterns of children with developmental delays are different.

In addition to play activity differences for children with ADHD as mentioned above, these children also struggle with social play skills, which can further limit their play engagement. When compared to their peers, children with ADHD demonstrated lower levels of social play and interpersonal empathy at pre-assessment on the ToP (Wilkes, Cordier, Bundy, Docking, & Munro, 2011). An intervention focused on improving play and social skills as well as interpersonal empathy through seven free play sessions incorporating therapist and peer modelling as well as video self-modelling improved the social play of both ADHD and the control group (Wilkes et al., 2011). The interpersonal empathy in children with ADHD demonstrated improvement as four out of seven items of the ToP assessing interpersonal empathy displayed significant improvement (Wilkes et al., 2011). Furthermore, an 18-month follow up of this study found maintained improvement in social play skills as assessed with the ToP (Cantrill, Wilkes-Gillan, Bundy, Cordier, & Wilson, 2015).

O'Brien & Shirley (2001) found that playfulness can remain stable over a four-year period, with no intervention, indicating that child development does not alter or improve a child's level of playfulness. The youngest participant within their study was aged two years and the oldest nine years at the start four-year study time frame, therefore six years and thirteen years respectively, four years later. There are various developmental milestones that are achieved within a four-year timeframe and this did not alter the children's natural disposition towards play. However, O'Brien & Shirley (2001) found that playfulness levels have the potential to change and improve, if children are exposed to a particular intervention or programme that is focused on play and playfulness itself. Therefore a play-based intervention which considers the elements of playfulness, environmental barriers to play and utilise a playful model is required in order to improve and alter playfulness levels of both typically developing children and children with impairments or disabilities (Bundy et al., 2008; O'Brien & Shirley, 2001; O'Brien et al., 2000; Okimoto et al., 2000; Skaines et al., 2006).

To date there are no published results regarding playfulness levels or play patterns of HIV positive children.

2.7 DEVELOPMENTAL OUTCOMES, EARLY CHILDHOOD INTERVENTION AND HIV

The HIV virus commonly invades the central nervous system (CNS) in children who are infected by means of vertical transmission. The virus replicates within the CNS causing injury within the developing brain, which leads to progressive HIV encephalopathy (PHE) (Chiriboga et al., 2005; Whitehead et al., 2013). There are various symptoms associated with PHE, including developmental delay (Skeen et al., 2014). An updated systematic review by Sherr et al. in 2014 on developmental challenges of HIV positive children found that they have a delay in various domains of development, including cognitive and motor development, executive functioning as well as behavioural challenges (although this was not consistent across all studies) (Sherr et al., 2014). This indicates that children with HIV may have additional learning challenges due to developmental delays that should be taken into consideration for stimulation programmes, early childhood intervention programmes as well as schooling (Sherr et al., 2014; Van Rie, Dow, Mupuala, & Stewart, 2009).

Prevalence of HIV for children aged between 2-14 years in South Africa has decreased from 5.6% in 2002 to 2.4% in 2012 (Shisana et al., 2014). As the sample size in this study was 8428 children, a small percentage when compared to the overall population of children in that age bracket in South Africa, prevalence should be interpreted with caution. Shisana et al (2014) described that mother to child transmissions according to the Medical Research Council and the Department of Health of South Africa was determined to be 3.5% in 2010 and has reduced to 2.7% in 2011. Many children with PHE have been placed on HAART which has significantly reduced mortality (Chiriboga et al., 2005). Antiretroviral treatment (ART) limits the amount of hospital admissions through decreasing infections as well as decreasing viral load, allowing more time to be spent in learning contexts or play activities (Sherr et al., 2014). However functioning and overall development of children within the South African context, is further influenced by the co-occurrence of other illnesses, frequency of hospital admissions as well as low SES, with children from low income families facing further obstacles to daily survival (Ferguson & Jelsma, 2009; Skeen et al., 2014; Whitehead et al., 2013). These additional stressors impact on learning and schooling in various ways.

This review of Sherr et al. (2014) as presented above included studies from the United States as well as Sub Saharan Africa and demonstrated that score differences and developmental delay severity was not the same across all countries, indicating that additional environmental and societal challenges that children face in impoverished areas of Sub Saharan Africa may further impact on stimulation and development (Sherr et al., 2014). Most studies within the systematic review by Sherr et al (2014) had cross sectional designs, with longitudinal studies possibly providing additional information regarding

the progression or changes in developmental delays with or without intervention across age groups (Sherr et al., 2014).

2.8 CONCLUSION

Play as the main occupation of childhood facilitates health, well-being, growth, development and learning. Play is also important in and of itself. Environmental and societal barriers, stigma, impairments and disabilities can restrict play and ultimately lead to play deprivation. Occupational therapists, realising the important contribution play can make in a child's life, need to focus not only on play as a means, but also play as an end goal of occupational therapy interventions. Play-based occupational therapy interventions need to consider the barriers to play participation in context, the playfulness elements as well as the manner in which this is transferred to caregivers by a playful practitioner/therapist in order to alter playfulness levels. Group based interventions provide access to services to a larger proportion of individuals, enabling more caregivers and children with knowledge and tools to alter play engagement within their homes and context. It is necessary to establish the effectiveness of group based interventions on the playfulness levels of children who are HIV positive from a low socio-economic status who experience various restrictions to play opportunities. Studies by Ferguson & Jelsma (2009) and Whitehead et al. (2013) highlighted the need for early childhood intervention programmes to address developmental concerns related to children with HIV from a low socio-economic status. The PICIHBI encompasses both play as a means and play as an end goal to address concerns related to developmental skills through careful consideration of playfulness elements, allowing children to become better players in the process.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

The literature review demonstrated the lack of studies focusing on play and playfulness for children with HIV. The benefits of play are well described and the need for early childhood interventions for this population was identified. The Consort (2010) statement was followed to report all aspects of the methodology. The chapter begins by describing the chosen research design to investigate a play based intervention's effect on playfulness of children with HIV. Ethical principles are discussed. The location of the study, population, recruitment procedure, inclusion and exclusion criteria, sample and randomisation process are discussed in depth. The PICIHBI and one-on-one conventional occupational therapy interventions are described. The chosen measurement instrument, data collection process and data management is discussed in detail. The chapter concludes with a description of statistical analysis to determine the playfulness level of children with HIV and the between group differences from baseline to post assessments in order to establish if the PICIHBI is effective in improving playfulness levels for children with HIV.

3.2 SUMMARY OF RESEARCH DESIGN

This study was a single-blinded, randomized, parallel group, pre-test post-test control-group design study. A pragmatic randomised control trial was used as an experimental method within this research study. Alford (2007) described that pragmatic randomised control trials are more focused on an intervention's effectiveness to contribute to a particular change within a clinical setting, rather than efficacy as in explanatory trials. Pragmatic designs have higher external validity and careful considerations are taken to balance this high external validity with internal validity. This design further allowed to establish whether PICIHBI intervention was equivalent or superior to conventional one-on-one occupational therapy intervention with regards to efficacy in improving levels of playfulness. The researcher was not involved in either the PICIHBI or one-on-one conventional therapy interventions and was also blinded to group allocation. The researcher was not blinded to the phase of the research study intervention and was aware of whether the videos were from baseline, mid or post assessments prior to scoring. In line with pragmatic randomised control trials, there were two arms of this research study, where each group received a type of intervention, namely PICIHBI or one-on-one conventional occupational therapy intervention. Placebo or 'no intervention' groups are often excluded from pragmatic designs, as was in this study, as effectiveness between two types of interventions, typically new and standard interventions, are the focus (Alford, 2007). The independent variable within this study was the type of treatment, with PICIHBI (See Section 3.5.1 as well as Annexure G) as the experimental group and conventional one-on-one occupational therapy (See Section 3.5.2) as the

control group. The dependant variable in this study was the child's level of playfulness (measure score).

3.3 ETHICAL CONSIDERATIONS

Ethical approval was obtained from the University of Cape Town Human Research Committee for both the larger study HREC/REF: 560/2013 (Annexure B) as well as this nested research project HREC/REF:771/2014 (Annexure C) after submission of research protocols. Permission was granted from the Western Cape Department of Health and the Groote Schuur Hospital (GSH) clinical site manager (Annexure A). The larger study is registered with the South African National Clinical Trial Registry (SANCTR) through the National Health Research Ethics Council (NHREC) with trial number: DOH-27-0115-4892. Children and caregivers who met inclusion criteria were invited to participate. Researchers explained the purpose and process of the study including the three assessment blocks, assessments used and that there were two types of interventions with ten therapy intervention sessions each. The possible health benefits were discussed and participants were made aware that there were no known risks to participation. The box of toys (Go-box: Annexure L) was mentioned to caregivers and it was explained that some (PICIHBI participants) children and caregivers would receive this at the start of the ten sessions and others (conventional one-on-one participants) would receive this at the end of the ten sessions. In addition to the Go-Boxes a material shopping bag was provided to place the Go-Box in. The shopping bag was provided as to not disclose the child's HIV status by association with the Go-Box while they were walking in the hospital or moving between their home and the hospital. Caregivers signed consent forms and children provided assent prior to data collection before commencement of baseline assessments.

The study adhered to the World Medical Association Declaration of Helsinki (2013) ethical principles throughout the research process.

3.3.1 AUTONOMY

Participants had the right to voluntarily participate and could withdraw at any time during the study. Participants did not experience any negative consequences when they chose to withdraw from the larger study or the nested playfulness study. The consent form had a separate space for caregivers to consent to video recording their child playing. Withdrawal from the study did not impact negatively on their access to healthcare at GSH. Participants who chose to withdraw from the playfulness study, due to feeling uncomfortable with having their child video recorded, did not receive any penalties and were able to continue to engage in the other nested studies and the intervention sessions. Participants were not financially rewarded to participate in the study, however R20 was provided to assist with transport money to and from the hospital to reduce monetary burden.

3.3.2 CONFIDENTIALITY

Participant codes were used on assessment sheets and demographic forms to ensure confidentiality. The video recordings produced from this study were stored in a secure locked safe and will be destroyed upon completion of the Master's degree. As children could be identified by watching the videos only the researcher had access to and watched all the videos. This was done to ensure that participants' identities were not revealed to the public and that they remained anonymous. Participants were reassured at every assessment block that the video recordings would not be made public. Safe keeping of the videos was the main concern raised by some caregivers during the research process. The option to withdraw and delete their child's videos as well as the safe keeping process of the videos were discussed with caregivers when they raised concerns.

3.3.3 RECRUITMENT PROCEDURE AND INFORMED CONSENT

Permission was granted from the University of Cape Town Human Research Committee, the Western Cape Department of Health, the GSH clinical site manager, caregivers (consent forms) and children (assent forms or verbal assent for the younger children) as participants within this study were all under 18. The researcher ensured that the caregiver was a legal guardian, if not informed consent from the legal guardian was obtained prior to engagement in baseline assessments. Some caregivers and children attended the clinic every two to three months, they were contacted by telephone, with translators being required for Xhosa speaking participants. Interested participants who gave verbal consent, were given a date and time for baseline assessments. On arrival of their baseline assessment, written consent was gained. The consent forms were translated and available in caregivers' home languages. Translators assisted during recruitment, explanation of the study and informed consent when researchers were unable to engage with caregivers in their home language. Care was taken with the use of terms such as: HIV/AIDS and HAART in engagement with and obtaining permission from the children and during intervention sessions as they may not have been aware of their diagnosis.

3.3.4 POSSIBLE RISKS, BURDENS AND BENEFITS

No risks were identified to participation in the nested study or the larger research study. The burden of additional clinic visits was minimised whenever possible by scheduling children's assessments as well as intervention sessions on the same day as their doctor or other healthcare appointments or when they came to the hospital to collect medicine. Transport money was provided to assist with transport to and from the hospital in order to reduce the financial burden of the monthly commitment of intervention sessions. Text message reminders were sent out prior to participants' monthly intervention sessions and assessments to ensure they knew the date of their next appointment to avoid arriving at the clinic on the wrong date.

The population who attended the G26 clinic at GSH were unable to receive individual occupational therapy services as one occupational therapist did not have the personal capacity to see all the children who attended the G26 clinic at GSH on a monthly basis. The benefits associated with participation in this research study afforded a larger portion of the clinic population access to an occupational therapist in either the PICIHBI or one-on-one interventions. The PICIHBI gave caregivers the opportunity to learn more about play, along with development and learning across different developmental age bands. It was hoped that the activities and Go-Boxes would stimulate their child's playfulness, developmental and learning skills. The Go-Boxes and caregiver files with monthly activities was made available to participants of the one-on-one conventional group upon completion of the larger study. An occupational therapist appointed by Kidzpositive Family Fund explained and demonstrated the Go-Box content and activities to each caregiver.

3.3.5 BENEFICENCE

The PICIHBI and one-on-one conventional interventions aimed to promote well-being and improve the play, development and learning outcomes of both groups. The PICIHBI entailed various planning meetings, discussions and revisions of sessions by a group of seven occupational therapists to ensure that the content was aimed at improving playfulness as well as development and learning skills. The one-on-one conventional intervention was based on the occupational therapist's own assessment results in combination with the assessments done during baseline to formulate appropriate goals for each child's occupational therapy sessions.

3.3.6 NON-MALEFICENCE

Participants did not experience risks, injuries or harm during their participation in this study. As previously mentioned, participants were concerned about confidentiality and privacy with regards to videos being made public and their child's HIV status being exposed in the process. All necessary steps and precautions were taken to ensure that this did not happen and caregivers were contacted to discuss their concerns.

3.3.7 JUSTICE

Participants were randomly assigned to either the PICIHBI or one-on-one conventional groups, allowing each participant equal opportunity to be in either group. Participants within this study were from a low socio-economic status and all participants did not necessarily own items such as those in the Go-Boxes including toys, self-care equipment and school related tools, such as books and pencils. It was therefore decided to provide all participants with a Go-Box upon completion of the research study regardless of their group allocation.

If the researcher was made aware of a child's additional needs or developmental difficulties during the assessment process that could not be treated through their involvement in the research interventions, caregiver consent was obtained to refer the child to the appropriate multi-disciplinary team member or to assist with school placement. The referral procedure was followed without disclosing the child's HIV status.

3.4 SAMPLING

3.4.1 LOCATION

The study was conducted at G26 out-patient pediatric ARV clinic in Groote Schuur Hospital for mid and post assessments, whilst pre-assessments were completed at G4 due to construction of G26, within GSH Groote Schuur Hospital (GSH). GSH is a government-funded, tertiary academic hospital located in the city of Cape Town in the Western Cape, South Africa. The hospital serves as a teaching hospital for the University of Cape Town. GSH opened in 1938 and is well known as Dr Christiaan Barnard performed the first successful heart transplant at this hospital. GSH provides specialised medical care to the uninsured population of the greater Cape Town area including lower socio-economic areas such as Khayelitsha, Crossroads, Nyanga and Athlone. Individuals are referred out to GSH when they cannot be treated at their community clinic and require specialised care and as a result may have to travel a far distance to GSH from their homes.

Kidzpositive Family Fund is a non-profit organisation which helps to generate funds and support services to improve holistic healthcare to children, adolescents and families affected by HIV/AIDS and other chronic illnesses. It was founded in 2001 by a group of healthcare professionals working at GSH to address the gap in achieving holistic care. Kidzpositive funds projects within nine clinic settings and facilities across greater Cape Town, including GSH. Kidzpositive provides access to antiretroviral treatment, beadwork projects for income generation, counsellors, psychologists and early childhood programmes. The early childhood programmes are designed and run by occupational therapists appointed by Kidzpositive within the different clinic settings.

3.4.2 POPULATION

Eligible participants for the larger research study were all children with HIV on HAART between the ages of 6 months – 8 years, who attended the G26 out-patient pediatric ARV clinic at GSH, supported by the Kidzpositive Family Fund, with their caregiver on a monthly basis. Participants are all from lower socio-economic areas. The history of their home contexts are greatly influenced by the Group Areas Act (1950) under the apartheid regime where individuals were forcibly removed and relocated to areas according to their assigned racial groups. Participants are still required to commute far

distances from their homes to Cape Town for specialised healthcare services and employment opportunities and continue to face challenges and barriers to access associated with poverty.

The GSH database had 142 children listed between the ages of 6 months and 8 years who attended the GSH clinic. This database included children who appeared to have transferred to other clinics, children who were moving between different foster care homes, children who had not followed up with the clinic within 3-6 months, children who were hospitalised for additional illnesses and burns at other hospitals, children who were due to start HAART and caregivers who had been unreachable by the GSH clinic. It is therefore unclear what the true population number was as the database had not recently been updated to indicate children between ages of 6 months to 8 years on HAART who were actively attending clinic services at the time of commencement of recruitment for the study. Attempts were made to contact all participants from the database who were eligible for the study.

3.4.3 RECRUITMENT

As there were four Masters students, including this researcher, who focused their research on the same population as part of one larger research project, each student was equally responsible for recruiting 25% of the population in order to reduce recruitment burden on participants. This reduced the amount of recruitment sessions caregivers would need to undergo from potentially being four hours to one hour. Researchers invited children and caregivers who met the inclusion criteria to participate in the larger research project. Recruitment was mainly done on Wednesday and Thursday clinic days when caregivers brought children for their regular appointments and children provided verbal assent. The researcher provided an information letter (either in English, isiXhosa or Afrikaans as these languages were indicated as main languages in participant files see Annexures D, E and F) and explained the study to interested caregivers. If needed, a translator assisted with explanation of the research study and questions about the research. Written informed consent was obtained from interested caregivers and the child's legal guardian, in cases where the caregiver was not the legal guardian. A total of 66 participants were recruited as part of the larger research study and formed part of the playfulness nested study.

3.4.4 INCLUSION CRITERIA

- Children must be HIV positive due to vertical transmission.
- Children must be on HAART.
- Children must be between the ages of 6 months to 8 years.
- Caregiver should spend a minimum of 7 hours a week with the child.
- Caregiver and child to attend minimum of 5 out of 10 intervention sessions.

The minimum attendance criteria was agreed upon for the larger research project as it was thought that participants would have engaged in a variety of session topics as part of the PICIHBI intervention (see Annexure K) and all four nested projects applied this same attendance criteria.

3.4.5 EXCLUSION CRITERIA

- Children with incomplete datasets (missing either mid or post assessments) were excluded upon completion of the three assessment blocks.

Pragmatic research trials are not strict with regards to inclusion and exclusion criteria as the main focus is the effectiveness of therapy (Alford, 2007). Therefore, various restrictions were not placed on criteria to become a participant. The effect of treatment needed to be established by considering and applying interventions to various characteristics and extraneous variables of the clinic population within a South African context.

3.4.6 SAMPLE SIZE

The ToP is the main outcome measurement tool used within this study. Therefore the effect sizes of a pre-test post-test study by Wilkes et al. (2011), determining the different playfulness levels between children with ADHD and their peers as well as the effectiveness of a play intervention on the social play skills of children with ADHD was used to calculate the sample size for the current study. The sample size was calculated with GPower 3.1. A total sample size of 32 participants, with 16 participants per group, was required to detect the difference between the means of the experimental group (PICIHBI) and conventional group (one-on-one occupational therapy) at a power level of 80% with significance level set at 0.05. To allow for loss of follow up over the three assessment periods and poor attendance of intervention sessions, the total recruited participants of 66 participants was included as part of the initial sample.

3.4.7 RANDOMISATION

Due to the involvement of four Masters students with the same population, the initial total of 66 recruited participants were stratified to account for two of the four Masters students age ranges specified for their individual research projects. Participants were stratified according to their year of birth as follows:

- group one: January 2009 and January 2014 (aged 6 months to 6 years 11 months), and
- group two: January 2007- December 2008 (aged 7 years 0 months to 8 years 11 months).

This resulted in 40 children in group one and 26 children in group two.

Allocation of randomisation codes were done by an online programme, “*Research Randomizer*” (Urbanaiik & Plous, 2013) , as clinic allocation was not possible due to participants only coming to the clinic when they had specified appointments. Due to participants’ resource restrictions, such as transport money, it could not be expected of participants to attend the clinic solely for randomisation number allocation. Two separate batches of numbers were generated for the separate stratified age groups. Additional numbers were initially included, however this lead to an unequal group distribution between the two groups with one group receiving more participants. The ranges were therefore changed so that the control and experimental groups could have an equal number of participants. An individual who had no involvement with Groote Schuur Hospital or the research project reflected the random number, as in the order of the programme, in the column next to each participant code within an excel document (two separate sheets for the two stratified age groups).

An online randomization tool, “*Random Sequence Generator*” (Haahr, 1998) , was used to create two groups per number batch (in other words the number batch 1-34 was randomly separated in two equal groups), resulting in four overall groups due to stratification. In order for the researcher to remain blinded the same impartial individual assisted in reflecting the four batches of numbers in an excel document (with two sheets for each age group reflecting the two experimental groups in two separate columns), which was provided to the occupational therapists who ran the intervention programmes. These two occupational therapists received both excel documents, one with participant codes and their randomized identification numbers and the second with the randomized identification numbers divided into experimental and control groups in order to match the number to group allocation.

Upon completion of randomization, nine additional participants had to be randomized as they were either newly recruited or were missed during the initial round of randomization. The same process of group stratification according to age, random number allocation and the random sequence generator was used to allocate participants to either experimental PICIHBI group or conventional one-on-one occupational therapy intervention. A total of 66 participants were recruited and randomized into these four groups.

This playfulness research study collapsed the two intervention PICIHBI groups (which were stratified into age groups) into one group and collapsed the two control groups (which were stratified into age groups) into one control group as stratification was not required for participants.

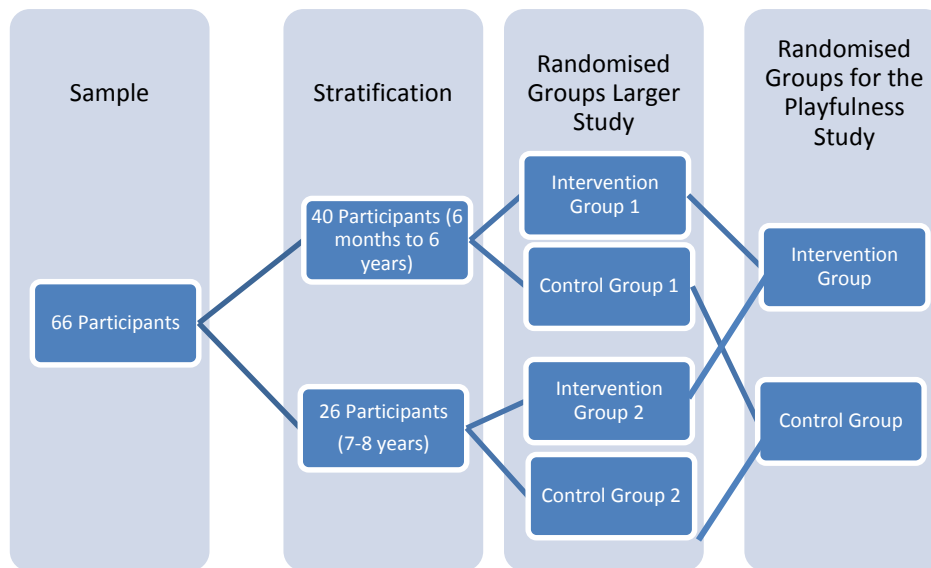


FIGURE 2 Randomisation Process

The two occupational therapists running the interventions as well as participants were unblinded to group allocation. The researcher was blinded to group allocation from baseline to post assessment as group allocation documents were only received after post assessments was scored. The researcher was not blinded to the purpose of the research study and scored videos after each assessment block therefore being unblinded to the phase of the study (baseline, mid or post assessments).

3.4.8 PLAYFULNESS SAMPLE

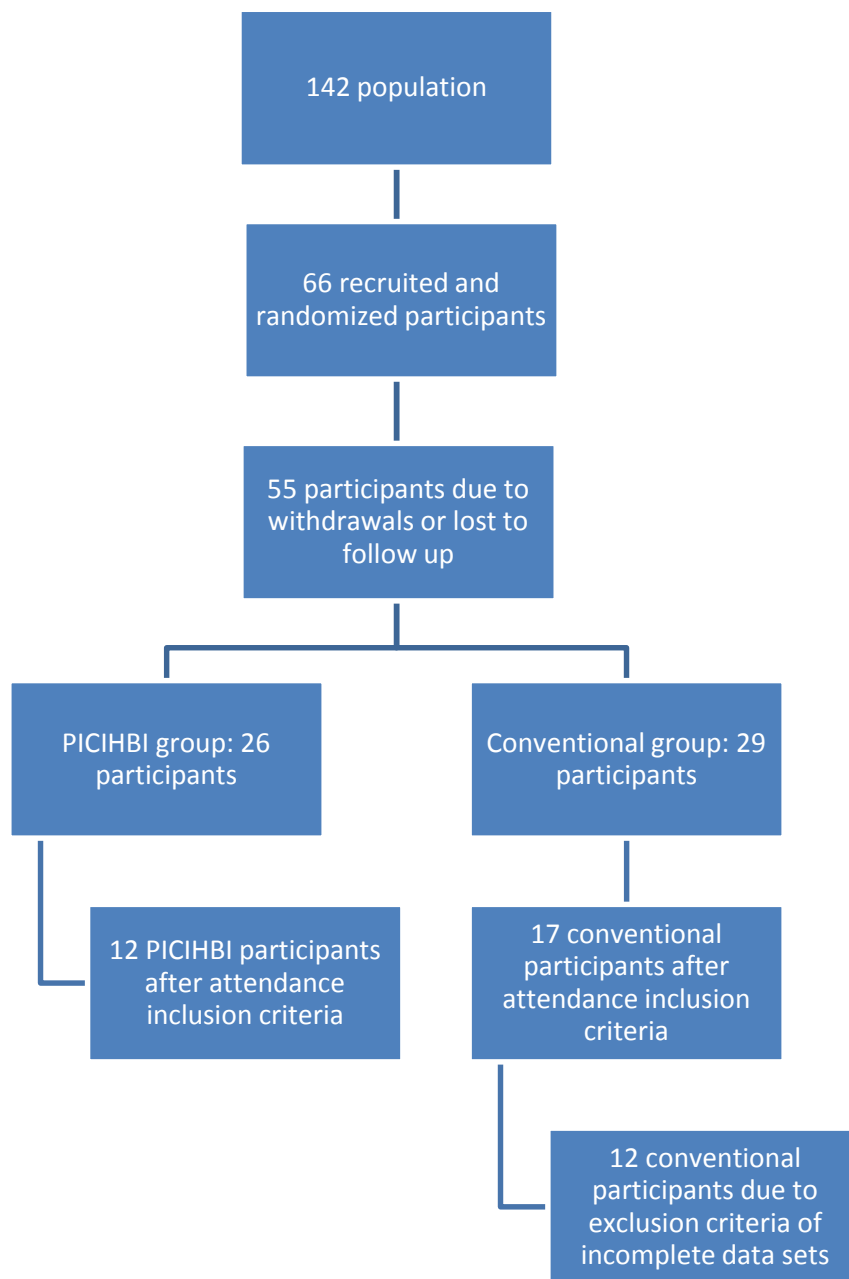


Figure 3 Playfulness Sample

From the 142 population, 66 participants were recruited and randomised into either PICIHBI or conventional one-on-one occupational therapy intervention groups. 5 Participants withdrew and 6 participants were lost to follow up as they could not be reached by telephone and did not attend clinic or assessment appointments. Prior to data analysis there were 55 participants, with 26 in the PICIHBI group and 29 participants in the conventional group. The attendance inclusion criteria (minimum attendance of 5 out of 10 therapy sessions) was applied once the researcher was unblinded to group allocation following post assessments. Within the PICIHBI group 14 participants did not attend the

minimum 5 sessions and were excluded from the study with 12 participants remaining in the PICIHBI group. The conventional group dropped from 29 to 17 participants as 12 participants did not attend the minimum 5 sessions. However, within the conventional group there were 5 participants with incomplete data sets with 1 participant missing mid assessment and 4 participants missing post assessments. The exclusion criteria was applied to the conventional group which dropped further to 12 participants. This resulted in 12 participants per group.

The youngest participant within the playfulness sample was 10 months old and the oldest 8 years. Although participants below the age of 10 months were recruited and randomised, their caregivers either left early on the day of their assessment or did not arrive on the scheduled day. An allowance of three assessment bookings for the ToP assessment was done throughout baseline, mid- and post assessments. It may have been possible that some caregivers were uncomfortable having their child video recorded and did not feel comfortable enough to say that they wanted to withdraw their child from the playfulness study whilst being enrolled in the other studies where they were not required to be video recorded and rather avoided the video recording by leaving early. These caregivers did not voice concerns related to feeling uncomfortable when the researcher engaged with them regarding voluntary participation and withdrawal from the playfulness study without any negative consequences during rebooking on a clinic day, but it may have been an underlying concern.

3.5 INTERVENTIONS

3.5.1 EXPERIMENTAL GROUP: PLAY-INFORMED CAREGIVER IMPLEMENTED HOME-BASED INTERVENTION

The PICIHBI was developed by seven occupational therapists as part of an occupation-centred occupational therapy practice focusing on play as a medium for development and learning skills as well as play as an end goal. Five occupational therapists were appointed by Kidzpositive, this researcher and one other occupational therapist who developed the intervention were not appointed by Kidzpositive. It is not a published or standardized intervention. Kidzpositive is the custodian of the intervention. Children with HIV have been identified by doctors and other health professionals within the clinics, supported by the Kidzpositive Family Fund, to require further occupational therapy input due to developmental delays. This was associated with the clinic population rather than a few individuals within the clinic and as a result an early childhood development group programme was necessary. The occupational therapists who created the intervention all come from a pediatric background and have drawn from their knowledge base of development and play to inform the intervention. Occupational therapists with experience working with children who are HIV positive from a low socio-economic status within the Western Cape guided the feasibility of the PICIHBI. Manuals were created for each age group, including detailed outlines and activities for all sessions.

The PICIHBI aimed to equip caregivers of children with HIV to playfully engage with their children, improving their playfulness and facilitating fine and gross motor development, visual perceptual development, pre-numeracy and pre-literacy skills as well as self-care.

The PICIHBI consisted of group discussions with caregivers working through concepts and skills associated with play, self-care, learning and development. Playfulness goals of the PICIHBI intervention were not based solely upon pre-assessment ToP measure scores, but also playfulness principles which were incorporated as the intervention sessions were designed and adapted during the process. Sessions were continually critiqued and altered by the group of occupational therapists. The ten sessions across each age band did not focus equally on playfulness, with some sessions being more playful than others. ToP items that children scored low on during baseline assessment, such as pretend skills, play cues and sharing were incorporated during experiential activities so that caregivers could observe the occupational therapist model these skills. The occupational therapist who ran the PICIHBI modelled playful behaviour to parents relying on an internal reflection process to occur in order for parents to become more playful themselves and to create a play milieu where the children themselves would be playful.

PICIHBI was divided into three age groups namely: 6 months to 2 years 11 months; 3years to 5 years 11 months and 6 years to 8 years to make skills relevant to each developmental age group. There were 10 sessions per age group (see Annexure K) and grading options for activities was provided within each session to allow for the age gaps and skill differences between children. The sessions ran on a monthly basis. Each session ran for approximately 1.5 hours and would include two parts of 45 minutes each. The first 45 minute was the introduction of the skill or concept to the caregivers and the second part was experiential, giving caregivers the opportunity to try out play activities with their child to improve the earlier introduced skill. They also received a take-home kit namely: 'Go Box' (Annexure G) and received items relevant to play, self-care, learning and development each session, as well as a handout of activities to try at home and incorporate as part of their daily routine. The occupational therapist facilitated the session and had a translator to assist. The occupational therapist therefore focused more on caregivers within this intervention.

At the start of each monthly session, feedback of the previous month was sought including: which activities they engaged in and how frequently over the last month, the ease of engaging in activities, whether activities were adapted (how and why) and if it was an enjoyable process for both caregiver and child.

3.5.2 CONTROL GROUP: CONVENTIONAL ONE-ON-ONE OCCUPATIONAL THERAPY INTERVENTION

The occupational therapist focused mainly on the child within this intervention. The child was seen on an individual basis, once a month for 45 minutes, and worked on occupational performance components identified through the assessments. The results of baseline assessments of the overall research study (including Test of Playfulness, Griffiths Mental Development Scales, WeeFim and Beery Visual Motor Integration) were made available to the occupational therapist. They were also allowed to complete any additional assessments they deemed necessary to create relevant treatment goals for the child. The occupational therapist planned and carried out treatment sessions according to the identified needs and assets. Caregivers were not the focus for conventional one-on-one intervention, however caregivers who wanted more information on activities to do at home or wanted to be active in their child's therapy was given the information as deemed necessary by the occupational therapist.

3.6 MEASUREMENT INSTRUMENTATION

3.6.1 BACKGROUND INFORMATION QUESTIONNAIRE

The four Masters students, including this researcher, utilising the same population group for their different studies designed a combined demographics and background information form to reduce burden on the population who would have been required to complete four different sets of questionnaires (Annexure F). The questionnaire covered demographic information of the caregiver and child, birth and medical history, schooling history, information regarding play engagement (play patterns, favourite toys and play space) as well as television habits. As this is a pragmatic study, this information was utilised to gain a sense of the characteristics of the sample as well as gaining an understanding of play engagement that may influence use of and implementation of playfulness principles from the PICIHBI within the home context.

3.6.2 TEST OF PLAYFULNESS

The ToP was the primary measurement tool to assess children's playfulness within this study. The ToP is based on four elements of playfulness that many play theorists have agreed upon, namely that play is: intrinsically motivated, utilises internal control by the child, freedom to suspend reality as well as framing (Skard & Bundy, 2008). Intrinsic motivation refers to a child's willingness to engage in play activities or with playmates. These play activities or play mates being self-chosen by the child refers to the internal control characteristic through which the child gains mastery and enjoyment of their world. The child is more concerned with play as engagement, the process thereof rather than the end goal. Freedom to suspend reality refers to imaginary play. The type of pretend world they choose to enter and how close it is to reality, the dramatics and extent of make-believe gives play a boundless world of possibilities. Framing refers to the ability to appropriately give and read play cues from the environment and other playmates.

Playfulness element	ToP Item/s	
Intrinsic Motivation	<ul style="list-style-type: none"> • Is actively engaged (extent and intensity) • Tries to overcome barriers or obstacles to persist with an activity (intensity) • Engages in activity for sheer pleasure of it rather than primarily for the end product (extent) • Demonstrates positive affect during play (intensity) 	
Internal Control	Self	<ul style="list-style-type: none"> • Decides what to do (extent) • Maintains level of safety sufficient to play (extent) • Modifies activity to maintain challenge or make it more fun (skill) • Interacts with objects (intensity and skill) • Transitions from one play activity to another with ease (skill)
	Shared (Playmates)	<ul style="list-style-type: none"> • Negotiates with others to have needs/desires met (skill) • Engages in social play (extent, intensity & skill) • Supports the play of others (skill) • Enters a group already engaged in play (skill) • Initiates play with others (skill) • Shares (toys, equipment, friends, ideas) (skill)
Freedom to Suspend Reality	<ul style="list-style-type: none"> • Engages in playful mischief or teasing (extent and skill) • Pretends (to be someone else; to do something else; that an object is something else) (extent and skill) • Incorporates objects or people into play in unconventional or creative ways (extent and skill) • Clowns or jokes (extent and intensity) 	
Framing	<ul style="list-style-type: none"> • Is actively engaged (skill) • Gives readily understandable cues (extent) • Responds to others' cues (skill) 	

TABLE 1 ToP Items Assessing Playfulness Elements (Skard & Bundy, 2008)

The ToP was designed to assess the play behaviours of children as well as adolescents between the ages of 6 months to 18 years using 29 items (ToP Version 4), ranked 0-3 on a four point scale (Skard &

Bundy, 2008). The 29 items are rated in the empty blocks on the ToP protocol sheet (Annexure E) based on the extent (amount of time), intensity (degree of participation) and skill (ease of performance) during direct observation or video-recording of a child's free play. These items are rated upon completion of a fifteen-minute observation of a child's free play within familiar indoor and/or outdoor play environment. The protocol sheet provides the assessor with space to write comments related to each item. The ToP keyform is used to determine the measure score by circling the item scores and drawing a line through the middle. This measure score can then be plotted against the average playfulness measure score within the ToP dataset to determine if the child is on par, more playful or less playful than the average child within the ToP dataset. The ToP was designed to be used by occupational therapists to assess play as part of the holistic picture of the child (Skard & Bundy, 2008). The ToP has a manual that can be read prior to using the assessment tool and does not require post graduate training.

The ToP has been found clinically valid for both typically developing and children with developmental delay, across genders and cultural backgrounds (Cameron et al., 2001; Skard & Bundy, 2008). The ToP yielded accurate and positive construct validity (98% of respondents and 93% of test items conformed to Rasch model) as well as inter-rater reliability (96% of raters conformed to Rasch model) for typically developing and disabled children with a variety of diagnosis (Bundy et al., 2001; Skard & Bundy, 2008). The ToP has a moderate test-retest reliability (0.67 at $p < 0.01$) (Skard and Bundy, 2008).

The researcher has been trained to utilise the ToP by the developer of the tool, Anita Bundy to ensure inter-rater reliability. Through this process it was established that the researcher's goodness-of-fit statistics fell within the required range for the ToP.

3.7 PILOT STUDY

Pilot studies are conducted with a smaller number of participants for various reasons including: to determine if the research protocol and the study will be feasible, to test the appropriateness of the assessment tool for the research question, to check if participants understand instructions appropriately and to identify any confusion related to participant expectations, to establish inter-rater reliability, to identify possible logistical problems and to determine the resources required to complete assessments (Cozby, 2005; van Teijlingen & Hundley, 2002). A pilot study can provide a researcher with an overall sense of the experimental environment including recruitment, randomisation, observations and/or assessments as well as data analysis.

A pilot study was not conducted for this research study. The ToP is a standardised assessment and has been found to be clinically valid and reliable to assess playfulness of children with and without

developmental delays and disabilities (Bundy et al., 2001; Skard & Bundy, 2008). The assessment tool was therefore appropriate to assess playfulness within this research study. The observation period for the ToP of fifteen minutes which was believed to be feasible prior to commencement of the study as participants were not required to be assessed for a lengthy period. The ToP is an observational tool and therefore it was not expected that participants would become confused during the assessment process. The literature review highlighted the need to consider room size, toys and materials prior to commencement of the study to ensure that there were toys appropriate for different ages and genders and that children would be able to engage in various play categories such as construction or pretend play. Due to the involvement of four Masters students it was necessary to carefully plan the process and procedures of assessment days and therefore avoiding logistical problems. The researcher was successfully trained by the developer of the tool, Anita Bundy, and therefore it was not necessary to establish inter-rater reliability for this study. As a result, a pilot study utilising the ToP was not completed. In retrospect it may have been useful to ask a small number of participants to have completed the demographics questionnaire and clarified questions that appeared to be misunderstood as there were a few questions that were blank and others that were incorrectly answered by caregivers. This would have provided an opportunity to alter and adapt some of the questions on the questionnaire to ensure that it was clear and that all questions were answered in full and to explore and add other questions related to play patterns at home.

3.8 DATA COLLECTION

It was planned that assessment periods would be approximately two months in length with the two five-month intervention periods between assessments. All three assessment periods were lengthened due to participants being rebooked for assessments due to missing appointments for various reasons including: not having transport money to get to the clinic (they were given transport money for the two-way trip once they got to the hospital, but this required participants to have money for transport to arrive at the hospital in the first place), work commitments and forgetting appointments. Three rebookings were allowed per participant per assessment block. The first assessment period was lengthened by two months due to missed appointments. The second assessment block fell over the December and January school holidays where the majority of caregivers went to the Eastern Cape Province and very few appointments were booked and attended over this period with caregivers confirming bookings in February and March as a result. The post-assessments started after participants had their final and 10th sessions in August and extended to a third month until the end of October, again due to missed scheduled appointments. It was a total of 19 months between the start of baseline assessments and post assessments.



FIGURE 4 Data Collection Periods

The ToP was used to assess children from PICIHBI and one-on-one conventional groups at baseline (prior to intervention) and 5 and 10 month intervals.

Assessments most often occurred on the participant’s clinic day to avoid multiple clinic visits. Caregivers were contacted by the researcher and dates suggested, caregivers then chose the option that best suited their schedules. As there were other assessors as part of the larger study, with different age bands, participants of different ages were assessed on the same day. Playmates ages ranged from 6 months to 8 years depending on the day’s clinic bookings. These children were all familiar to each other as they played in the play area on their clinic days.

Children were given a few minutes (approximately five minutes) to play prior to video recording to give them a few minutes to adjust to the environment, other playmates in the room (if applicable) and to the research assistant. Some children were distracted by the camera, due to the novelty of such a technological device, but they returned to their chosen play activity a few minutes after the camera started recording (in such cases the research assistant recorded for a few additional minutes so that the child’s free play could be observed for fifteen minutes). This was observed during baseline assessments and less so during mid and post assessments.

The participants were allowed to choose other children (who were also enrolled in the study) or adults, namely their caregivers, as playmates during the 15 min video recording or could play alone. Caregivers and research assistants who recorded the videos were coached prior to video recording to follow the child’s play instead of making suggestions or leading play. This was done to ensure that the children had adequate opportunity to display the elements of playfulness as per the items on the ToP rather than having an adult direct their play. It was decided not to use a static camera so that the children’s play can be followed for example when they climb under desks or chairs. A research assistant followed the children’s play and stood a few steps back in order for it not to feel intrusive as the zoom function could be utilised.

The playroom that formed part of the clinic was utilised as the recording area during pre-assessments at the G4 site. This was due to limited space within the assessments room at G4 while G26 was under construction. The back portion of the playroom (5m x 3m) was utilised on clinic days as to avoid recording of non-participants. At the G26 site, the video recordings took place in the assessment room (4m x 3m) utilised by evaluators who formed part of the larger study. The children were all familiar with the rooms at both sites (with the clinic being temporarily moved to the G4 site prior to research starting). The exact same toys, play materials and other objects were available for all the children to play and engage with during video recordings across all three assessments. The toys catered to gender differences as well as age ranges of the children. For example, puzzles were provided in different sizes and number of pieces to account for age ranges from 10 months to 8 years. The room is a large enough space for children to be able to engage in various types of play (solitary, parallel or games with rules to name a few), to initiate or join play. The children are familiar to each other as they attend monthly clinics together and would therefore allow for ease of play. These were important considerations as to create a play environment that provided children opportunity to be playful through unstructured play engagement. It was however still a clinic environment which is different to their natural home and school play environments, as there were no stipulated rules or restrictions discussed with children prior to recording and some toys may have been unfamiliar to some of the children due to limited exposure. Attempts were made to ensure that toys were similar to toys in the playroom that they would naturally engage with when they attended clinic appointments in order to reduce limited exposure which could have impacted on their play behaviour. As part of the ToP items (*Negotiates with others to have their needs met*) children could ask their caregiver or other children if they were unsure about the use of a toy, which was observed at times across the assessments.

Types of Play	Play Objects
Construction and manipulative play	<ul style="list-style-type: none"> • Wooden and plastic blocks • Duplo blocks • Ring-o Stack • Puzzles • Shape matching activities • Threading beads and lace • Threading beads and wooden stand
Symbolic and socio-dramatic play	<ul style="list-style-type: none"> • Plastic animals • Stuffed animal (teddy bear) • Train track • Musical trains • Pull Car • Cars • Dolls • Miniature plastic tea set • Miniature plastic sink and oven set with pots and pans • Miniature plastic plates and fruit • Firemen figurines and fire trucks • Push duck
Physical play (gross and fine motor inclusive)	<ul style="list-style-type: none"> • Balls (tennis ball and soft plastic soccer ball) • Bean bag • Rattles • Symbols • Colouring books • Blank books • Pencils and crayons • Reading books • Doodle magnetic drawing board
Other objects in the assessment room	<ul style="list-style-type: none"> • Plastic containers • Small plastic chairs • Small plastic tables • Large adult chairs • Cupboards • Occupational Therapy roller equipment

TABLE 2 Toys, Materials and Play Equipment

Children were either video recorded alone or with playmates, dependant on their pre-assessment, to ensure consistency over the three assessments. 51 participants were recorded with playmates, whilst 6 were recorded playing alone as other playmates left early or did not arrive for their booked appointments during baseline assessments.

Demographics forms were provided on initial (baseline) assessment day. Socio-demographic information, medical and surgical history, developmental history, HAART treatment regimen and history as well as prior OT or physiotherapy and other rehabilitative services were obtained. Play engagement and television habits (to establish the amount of hours per day children are engaging in sedentary screen time instead of playing) was also established on the form. This information will not be used for exclusion or inclusion criteria, but rather as descriptive characteristics of the population as part of a pragmatic research design.

The videos were solely watched and scored by this researcher upon completion of each assessment block (therefore during the period of intervention). Children's levels of playfulness were determined by completion of the ToP protocol sheet and entered onto excel spreadsheets with participant codes to ensure anonymity.

3.9 DATA MANAGEMENT

The video cameras were placed in a research box with a lock on site. Only this researcher, fellow researchers as part of the larger research project and the research assistant knew the lock code. The memory cards of the video cameras were collected twice weekly by the researcher and replaced with empty memory cards. Videos were saved in a password protected folder on a password protected hard drive. Only the researcher of the playfulness research project had access to and watched the videos. Videos will be deleted upon successful completion of the study.

Data was first captured on hard copies (ToP protocol sheet with participant codes) and then each child's (reflected by participant codes to ensure anonymity) ToP scores were entered on an excel spreadsheet with columns reflecting each ToP item across and three spread sheets representing base line, mid and post assessments. The hard copies of each child's ToP scores were kept in a file in a research box with a lock code on the researcher's property in order to ensure that data was correctly captured from the hard copy to the electronic copy.

3.10 STATISTICAL ANALYSIS

The raw scores for participants for baseline, mid and post assessments were entered on an excel spreadsheet with separate sheets for each assessment round. Data analysis commenced after all post assessments had been completed in order to remain blinded to group allocation.

The ToP score items of each participant was imported into the Rasch analysis Winsteps program (version 3.70.1) which required person indicators and a dictionary to be created to add value labels to the data. The data was verified with frequency analysis to identify erroneous data. Erroneous data was identified and corrected. No validation was required on the data set as the ToP is a standardised and calibrated assessment tool. Rasch analysis was completed to convert ordinal data into interval level scores. To obtain the interval level scores, the ToP raw scores of each participant was entered and compared against the existing database of ToP scores.

Prior to further data analysis, goodness of fit statistics was performed to determine infit and outfit statistics of each participant's ToP scores compared to the Rasch measurement model. This determined the goodness of fit between the ToP item scores, rater and participants through t-test and mean square (MnSq) statistics (Okimoto, et al., 2000). T-value should not be greater than 2 and MnSq value should not be greater than 1.4 (Okimoto et al., 2000). All data conformed to the Rasch measurement model.

ANCOVA (f) is found to be appropriate to measure change between two variables within pre-test post-test research designs and was utilised within this research study (Dimitrov & Rumrill, 2003). As participants are randomly assigned, systematic bias is reduced, ANCOVA will diminish the error variance that may occur within pre-test and post-test data (Dimitrov & Rumrill, 2003). Descriptive statistics were completed between the PICIHBI (n=12) and one-on-one conventional (n=12) groups at each assessment point by using participant measure scores. This was done by entering data into SPSS version 19 programme. T-Tests were performed on continuous variables, while chi-squared tests were performed on categorical variables. Parametric statistics were used with a combination of Friedman repeated measures and Wilcoxon Signed Rank Test to compare within and between group differences on ToP items.

The participant measure scores were entered into SPSS (version 19) to compare the ToP item scores over time. The differences between ToP item scores at pre-assessment, post-assessment and follow up were determined by *t*-tests for dependent samples. Significance was set at $p < .05$.

Non-parametric tests including Friedman's two-way ANOVA, post hoc pairwise comparison tests and Dunn-Bonferroni tests were used in combination with Wilcoxon Signed-Rank Tests was performed. P-values of less than 0.05 indicated significant differences at 95% level of confidence. R-effect size was used to calculate the effect sizes for non-parametric data. Cohen's guidelines were utilised to interpret effect sizes as: small effect $\geq .1$; medium effect $\geq .3$ or large effect $\geq .5$. Wilcoxon Signed-Rank Tests compared measure scores from pre to post; post to follow up and pre to follow up.

3.11 CONCLUSION

The chapter highlighted that a pragmatic randomised control trial research design was chosen to be best suited to address the research question. Power calculations determined that a sample size of 32, with 16 participants per group was needed to establish differences between groups. All 66 participants were recruited and randomized into either PICIHBI or one-on-one conventional occupational therapy interventions to account for loss of follow up over the longer term research project. The ToP was found to be an appropriate tool to investigate the overall playfulness level of children with HIV, as well as to assess any differences between groups with appropriate statistical tests and analysis.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

This chapter presents the research study's findings. The demographics and population characteristics are described and different responses between the two groups are demonstrated. Intervention attendance of both groups are reflected. The playfulness profile of children with HIV is discussed and compared to norms available for typical and atypical children in the ToP dataset. Between group differences of playfulness measure scores between baseline and post assessments as well as the impact of power on the results is described. A comparison of ToP items between the groups and across baseline and post assessments is discussed.

4.2 DEMOGRAPHICS AND POPULATION CHARACTERISTICS

	PICIHBI Group (n=12)	Conventional Group (n=12)
Caregiver Particulars		
Age of caregiver (years), mean	39.7	33.25
Sex M/F	0/12	0/12
Home language: Xhosa (%)	66.7%	83.3%
Primary caregiver: mother (%)	58.3%	83.3%
Education level of caregiver: matriculation n (%)	25%	33.3%
Number of adults in the household, mean (SD)	2.83 (1.585)	3.58 (1.749)
Number of children in the household, mean (SD)	3.25 (1.712)	2.17 (1.030)
Unemployment (%)	83.3%	75%
Child Particulars		
Age, mean	4.0	4.7
Sex M/F	4/8	7/5
Gestation >37 weeks (%)	66.7%	58.3%
Birth weight in kg, mean (SD)	1.83 (1.029)	2.45 (1.036)
Years on HAART, mean (SD)	5.33 (2.386)	4.50 (3.030)
First line of treatment (%)	100%	100%
Tuberculosis history (%)	83.3%	50%

TABLE 3 Demographic Information for Experimental and Control Groups

4.2.1 CAREGIVER PARTICULARS

Xhosa was predominantly spoken in both groups with 66,7% in the PICIHBI group and 83,3% in the conventional group.

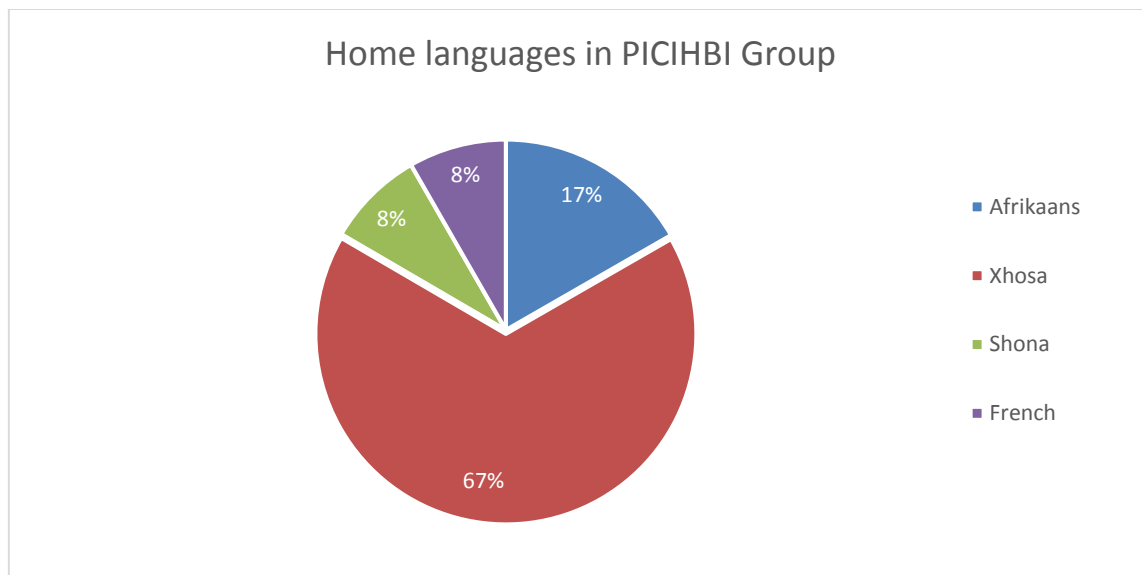


FIGURE 5 Home Languages PICIHBI Group

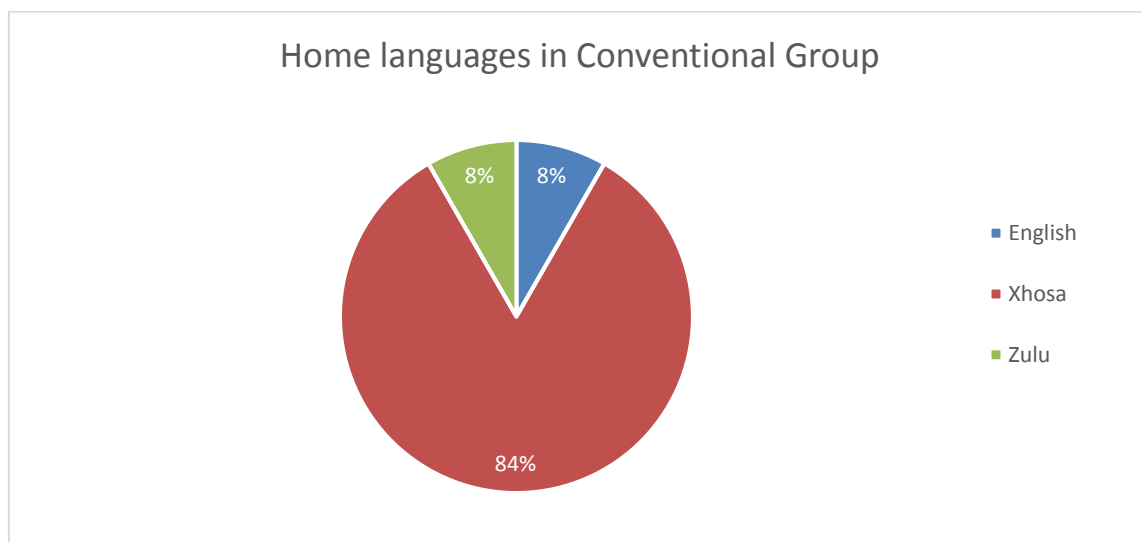


FIGURE 6 Home Languages Conventional Group

AGE AND RELATIONSHIP TO THE CHILD

The average caregiver age within the PICIHBI group was 39.7 years while the conventional group was 33.25 years. The oldest caregiver was aged 77 years and the youngest caregiver 23 years old. All caregivers within the sample were female. 58.3% of caregivers in the PICIHBI group was a biological parent with 83.3% biological caregivers in the conventional group.

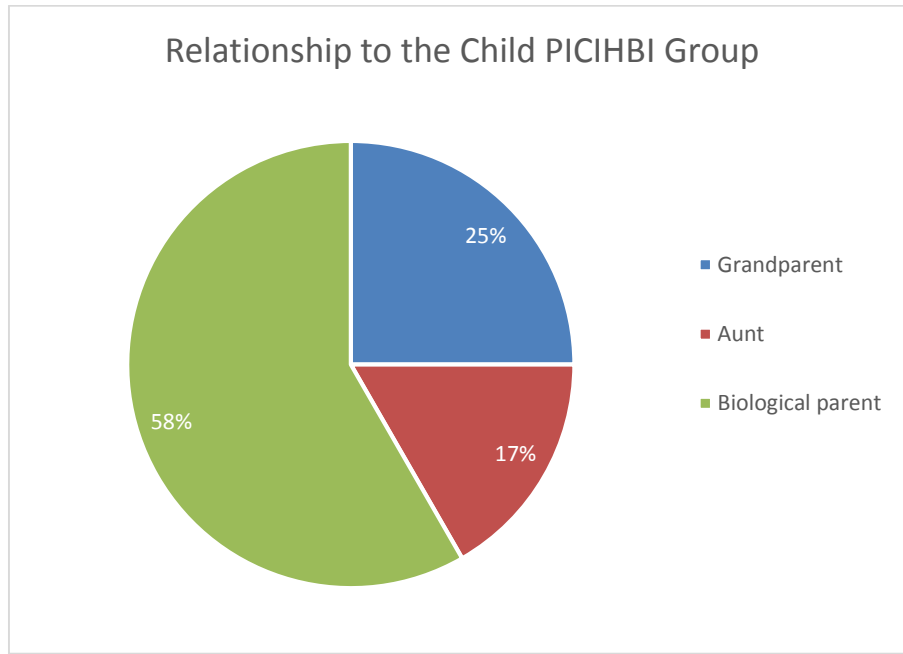


FIGURE 7 Relationship to Child PICIHBI Group

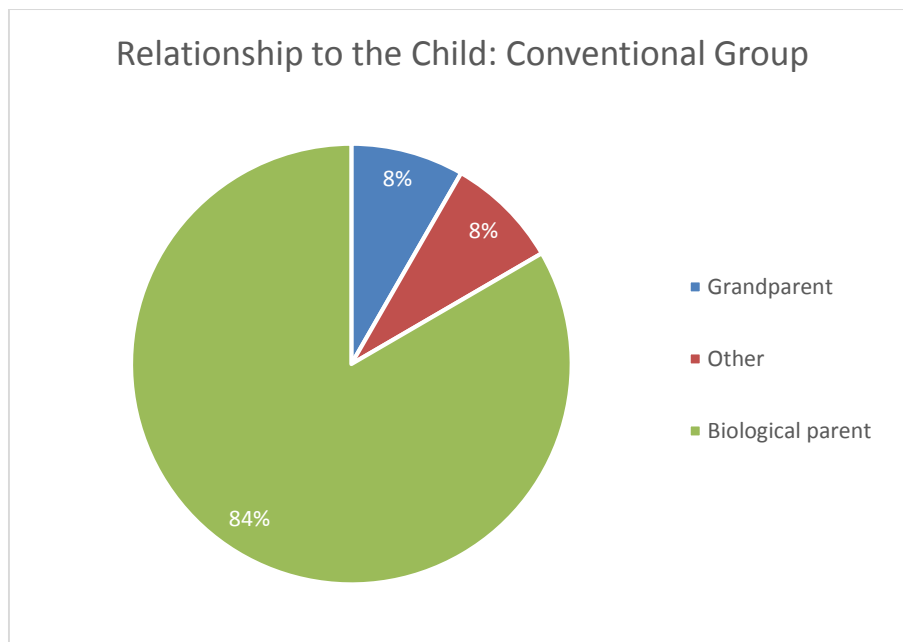


FIGURE 8 Relationship to Child Conventional Group

LEVEL OF EDUCATION

The highest level of education across all caregivers was 2-year post school and the lowest a Grade 5. 25% of caregivers within the PICIHBI group had a Grade 12 education with 33.3% in the conventional group.

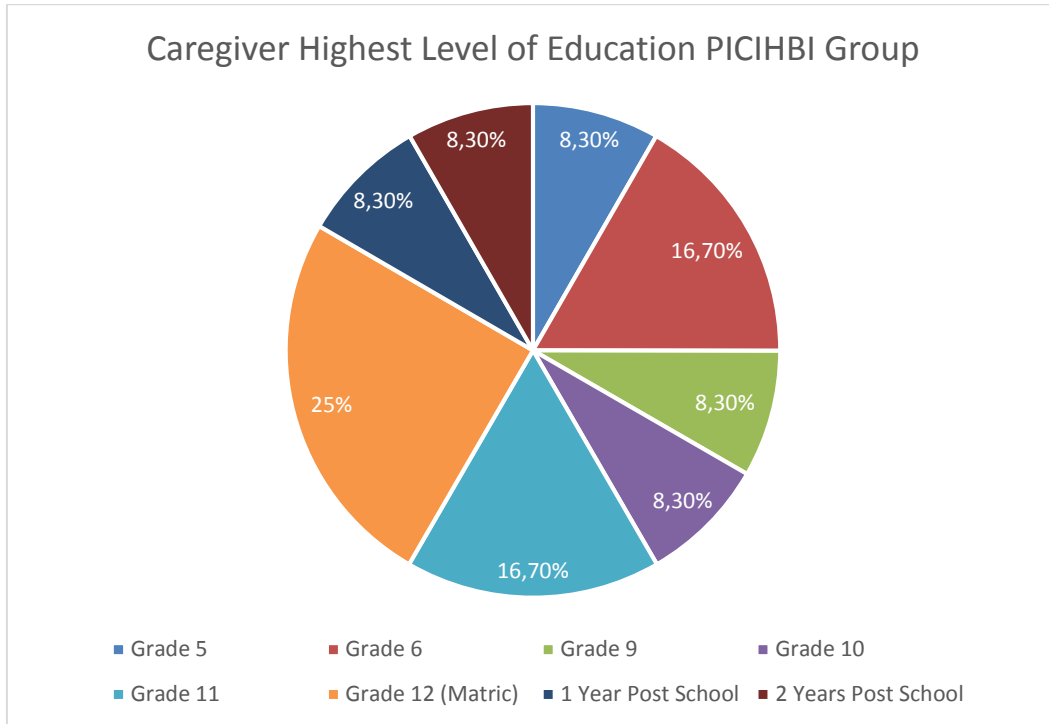


FIGURE 9 Caregiver Highest Level of Education PICIHBI Group

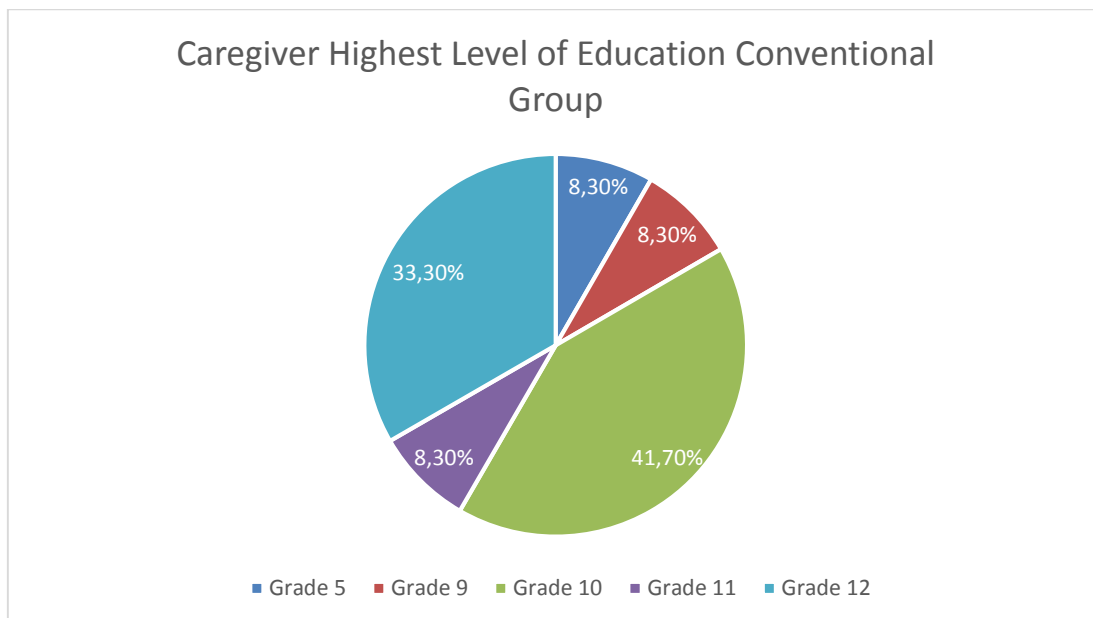


FIGURE 10 Caregiver Highest Level of Education Conventional Group

LEVEL OF EMPLOYMENT

On average caregivers took care of 3 children under the age of 18 and 3 adults within one household. The study reported high levels of unemployment of caregivers across both groups.

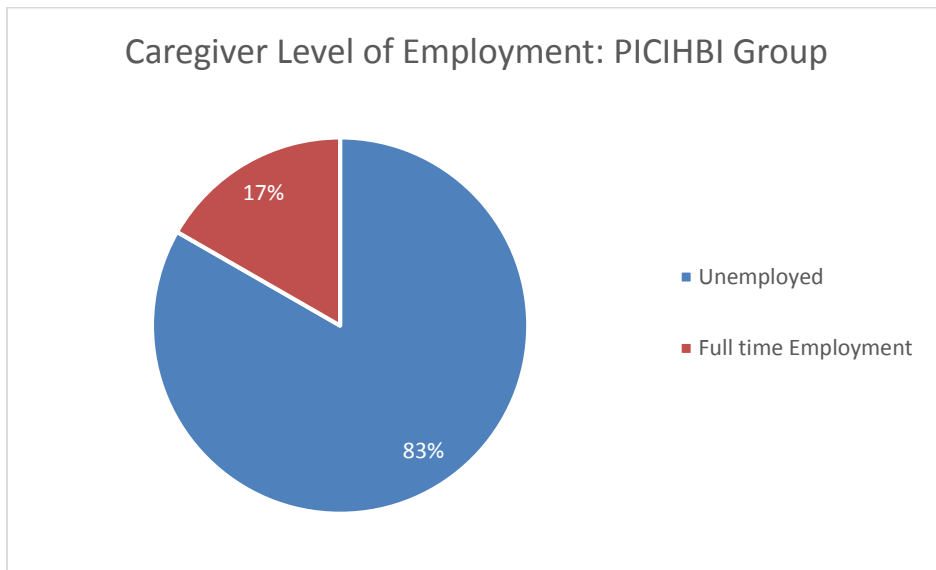


FIGURE 11 Caregiver Highest Level of Employment PICIHBI Group

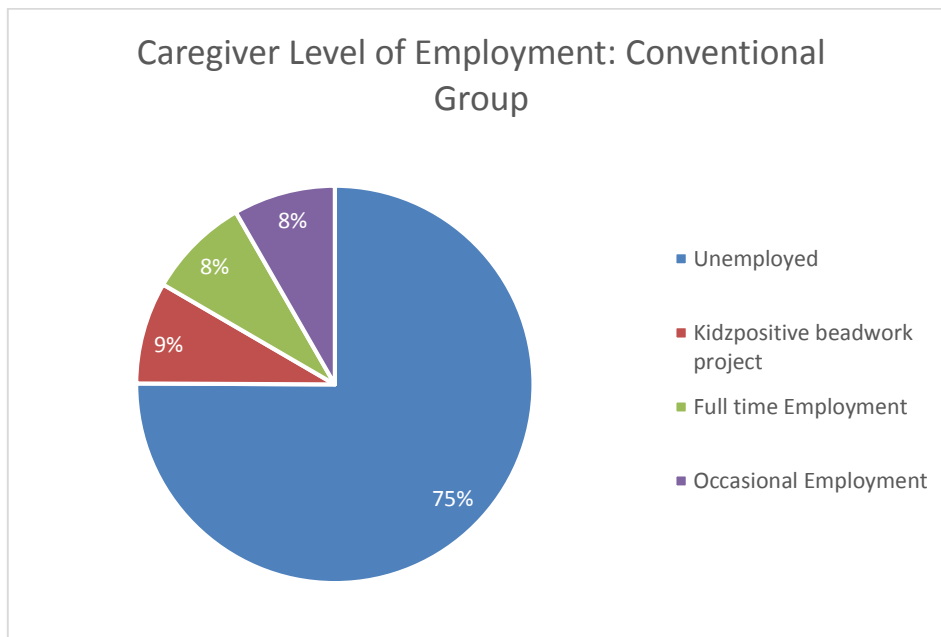


FIGURE 12 Caregiver Highest Level of Employment Conventional Group

MONTHLY INCOME AND TELEVISION USAGE

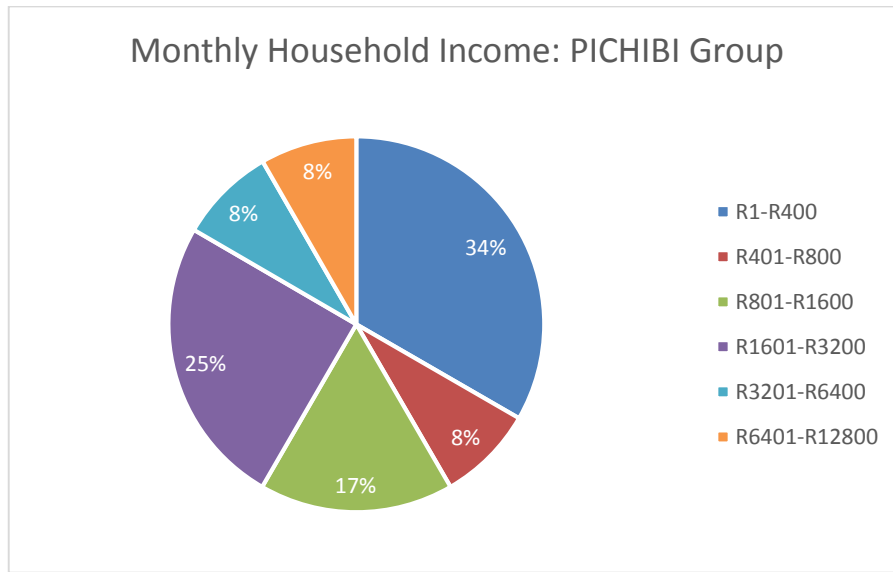


FIGURE 13 Monthly Household Income PICHIBI Group

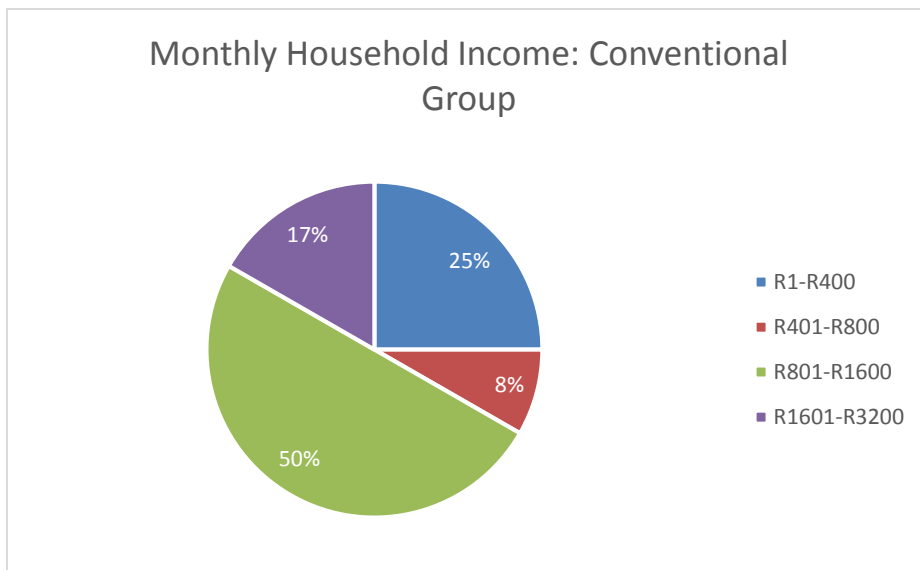


FIGURE 14 Monthly Household Income Conventional Group

All 24 participants owned a TV and 23 participants reported that the television was on every day.

4.2.2 CAREGIVER PERCEPTION RELATED TO CHILD DEVELOPMENT

Caregivers were asked about their viewpoint on their child’s development, learning and play skills in relation to their peers with the majority of caregivers reporting that they felt their child’s development, learning and play skills were on par with their peers.

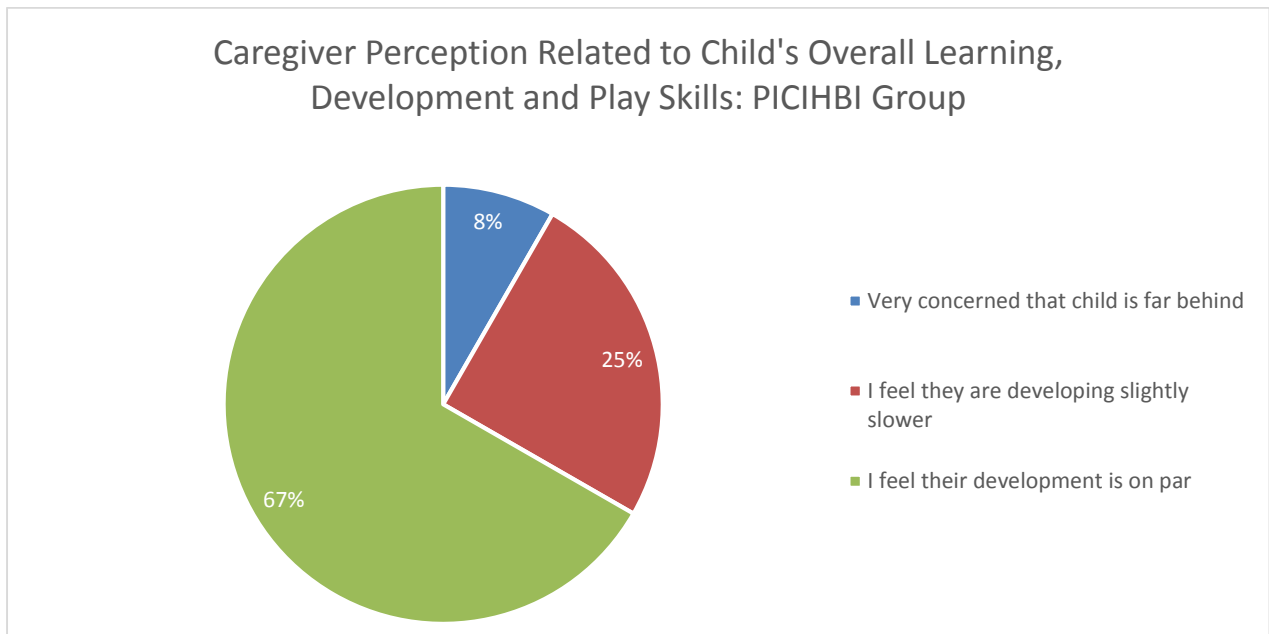


FIGURE 15 Caregiver Perception PICIHBI Group

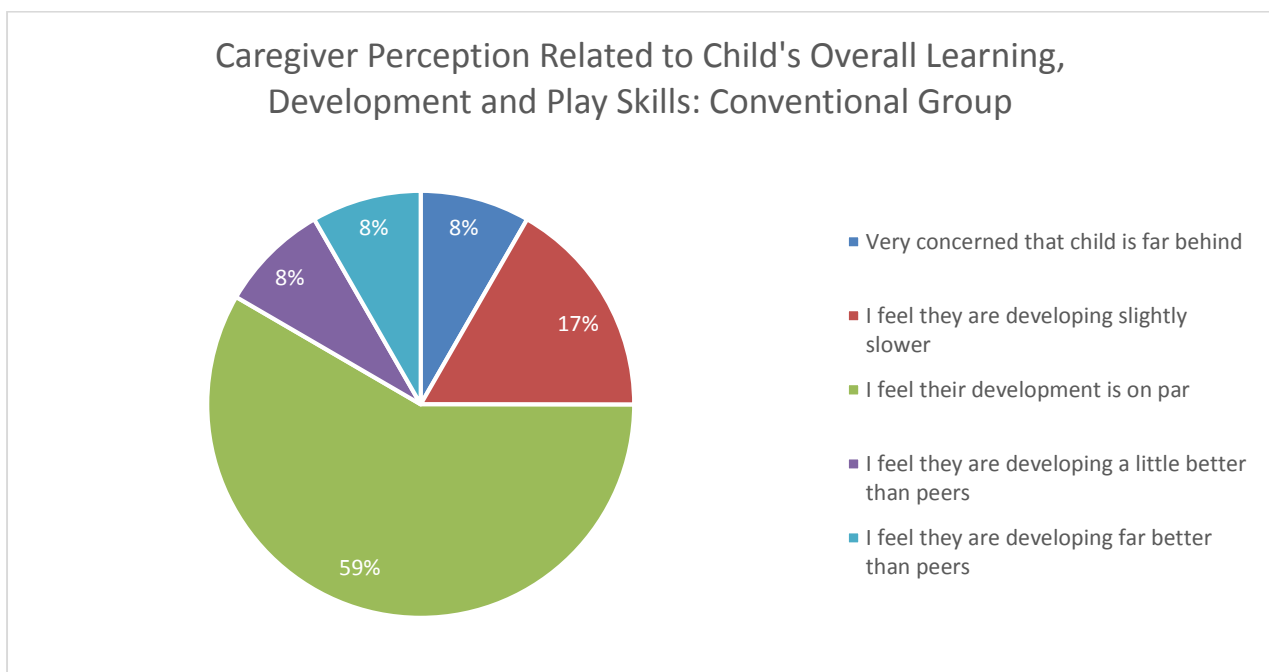


FIGURE 16 Caregiver Perception Conventional Group

4.2.3 CHILD PARTICULARS

There were 24 participants with 11 males and 13 females as part of the playfulness sample. Within the PICIHBI group there were 4 males and 8 females, while the one-on-one conventional group had 7 males and 5 females. 15 out of 24 children were born after 37 weeks' gestation with 5 children born between 29-36 weeks and one below 29 weeks. One caregiver could not recall the gestation period. 19 caregivers reported that there were no problems at birth, with 3 reporting birth difficulties. APGAR scores were not known by the caregivers. Within the PICIHBI group 10 children were born via natural birth and 2 via caesarean section. The conventional group reported 9 natural births, 2 caesarean sections and one caregiver could not recall the information. The mean age for children in the PICIHBI group was 4.0 years and 4.7 years for the conventional group. The youngest participant aged 10 months at baseline assessments was part of the conventional group.

All 24 participants were on first line of ARV treatment. 3 participants of the overall sample had been on HAART for less than 2 months with the longest period of 6 years being reported for 4 of the children.

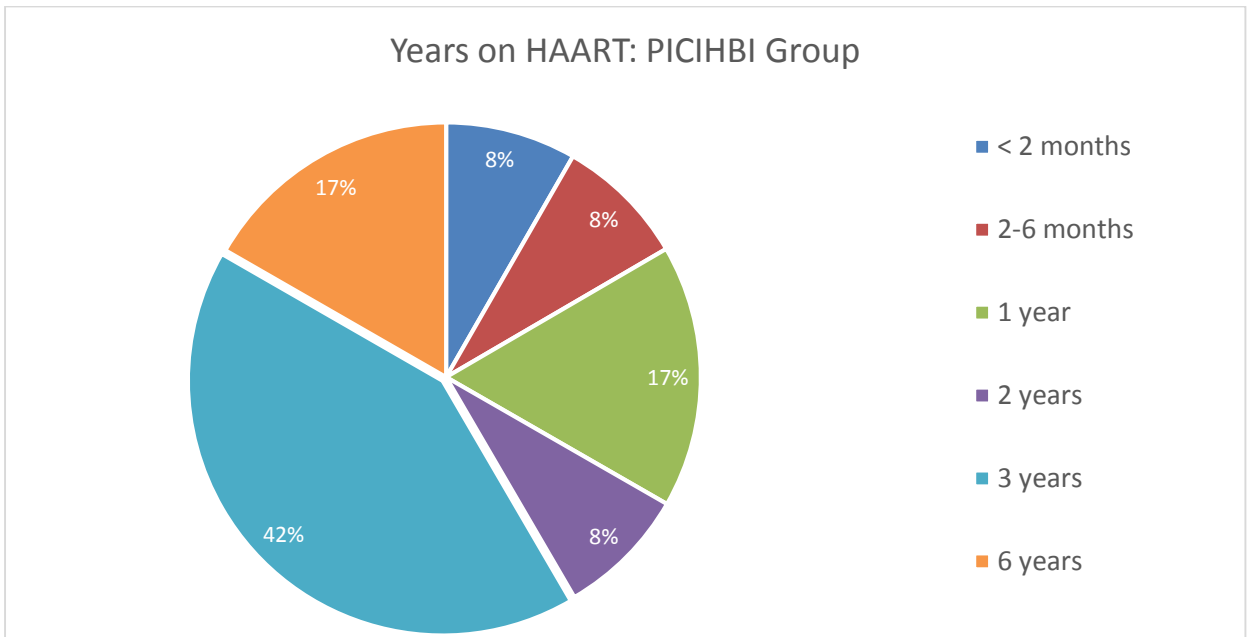


FIGURE 17 Years On HAART PICIHBI Group

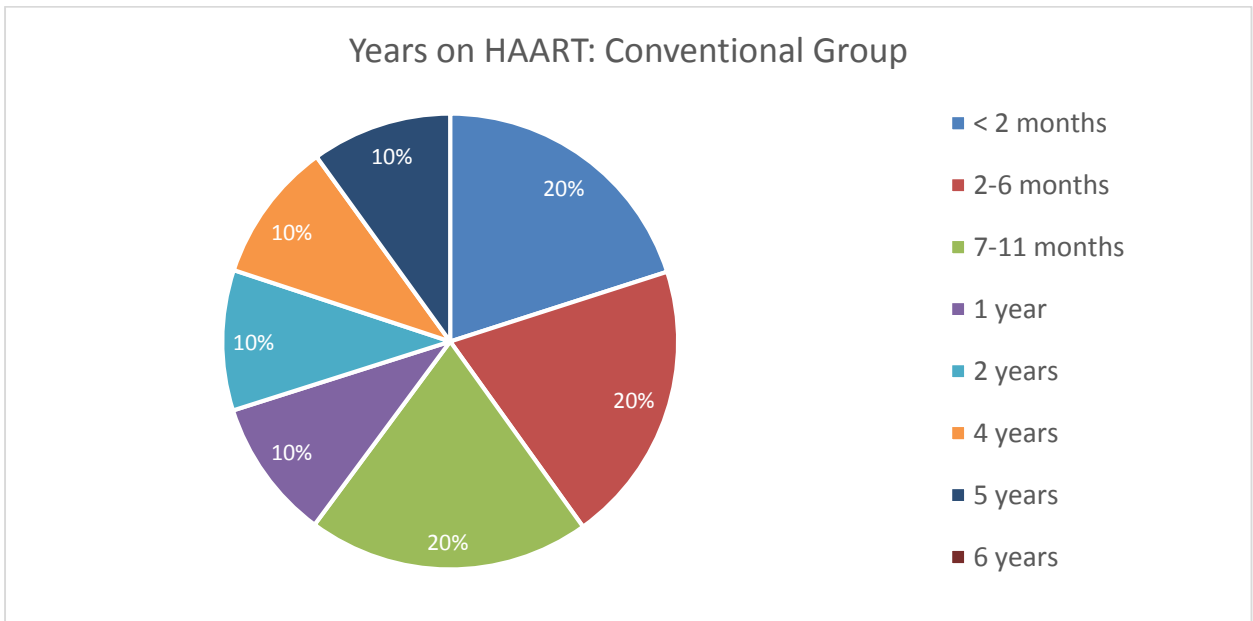


FIGURE 18 Years On HAART Conventional Group

HEALTH SERVICES AND ADDITIONAL DIAGNOSES

3 children were currently attending physiotherapy, 1 speech therapy, 1 occupational therapy, 1 attended dietician services while others did not attend any specialised services besides the research groups. 5 children had had formal hearing and vision tests. 10 children within the PICIHBI group had a history of TB and 6 children from the conventional group.

2 out of 24 children were reported by caregivers to have an additional known diagnosis. However, according to the children's files the graphs below indicate additional diagnoses. Other diagnoses included anaemia, eczema, dermatitis and otitis media infections.

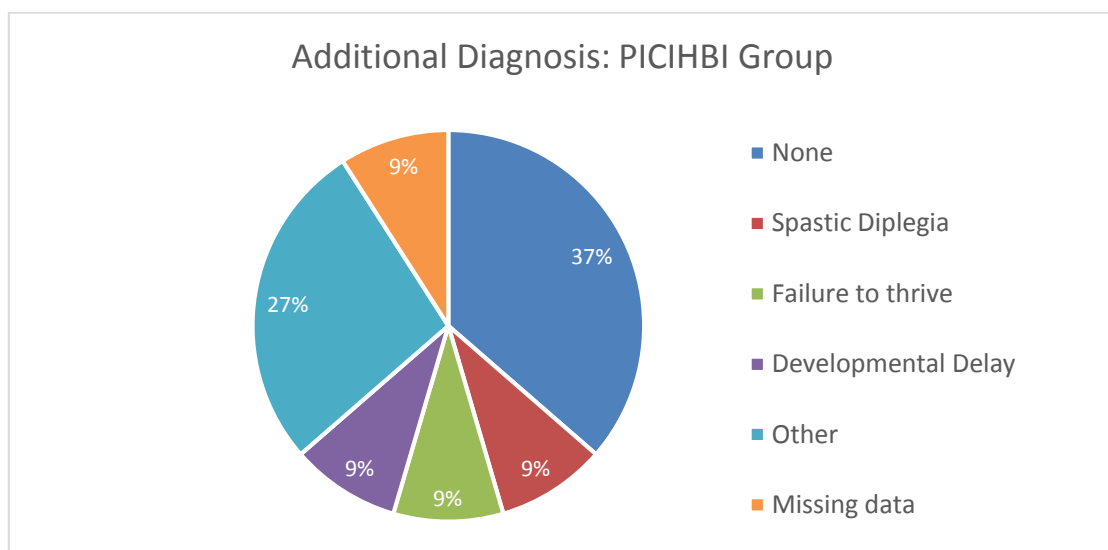


FIGURE 19 Additional Diagnosis PICIHBI Group

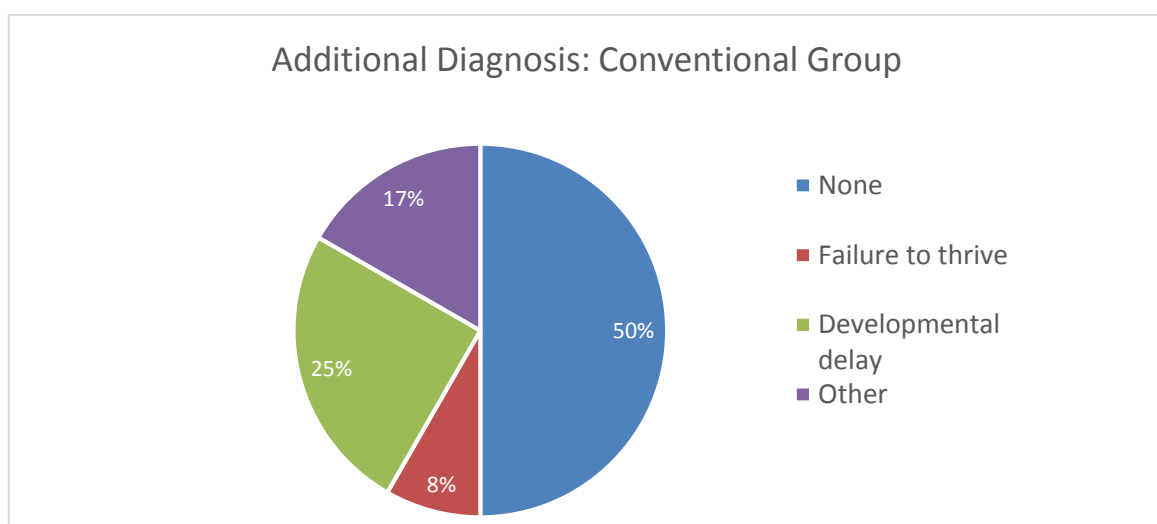


FIGURE 20 Additional Diagnosis Conventional Group

SCHOOL AND GRADE PARTICULARS

9 out of 24 participants stayed at home or with a family member or friend during the day, while other participants attended crèche or school. With 1 out of the 24 participants attending a special school. This child formed part of the conventional group. There were no reported failed grades across both groups. 13 children's school medium were Xhosa, 2 English and other children were not attending school.

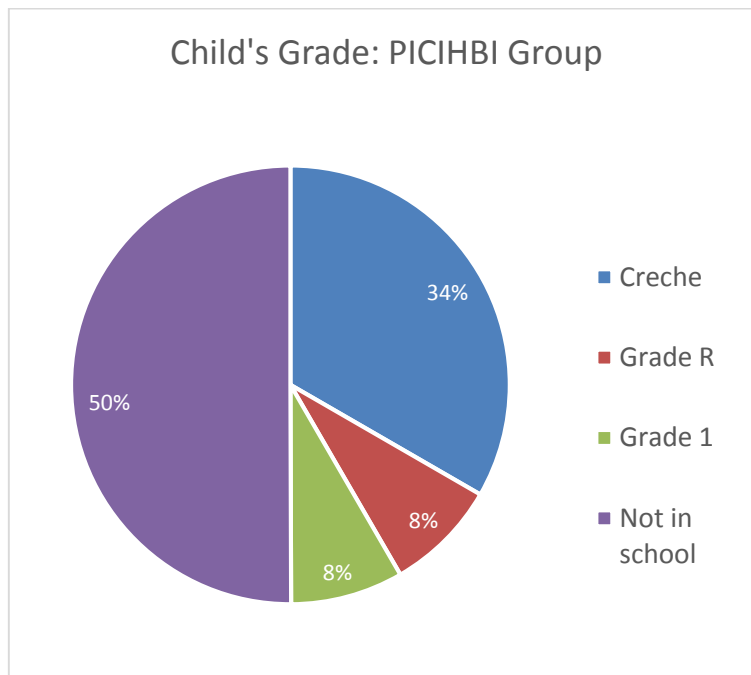


FIGURE 21 Child's Grade PICIHBI Group

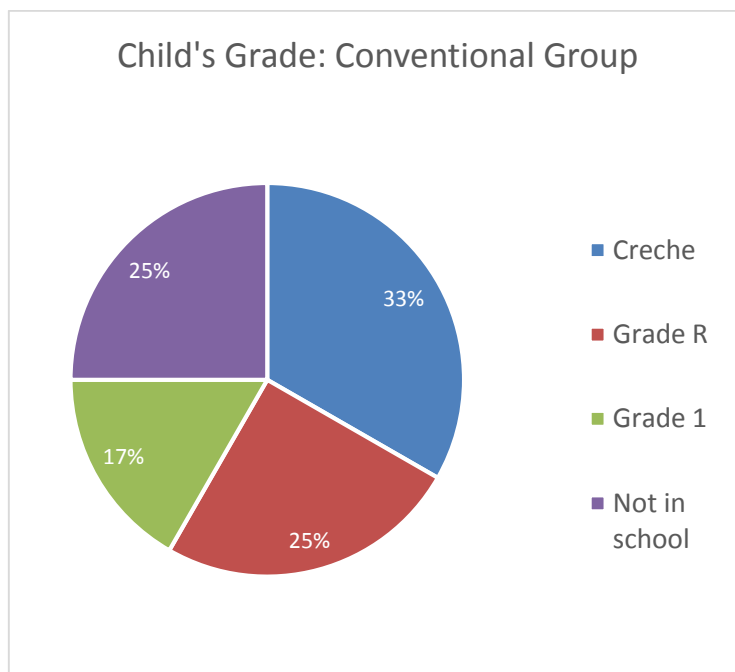


FIGURE 22 Child's Grade Conventional Group

PLAYMATE AND PLAY PREFERENCES

100% of caregivers of children in the PICIHBI group reported that their child played with playmates (referring to both children and adults), while 25% of the conventional group played alone and 75% with playmates. The favourite reported toys included: dolls, balls and toy push cars. Other reported toys: skipping rope, puzzles, blocks, crayons, books, drums, bicycle, push scooter, lego, teddy bears and toy guns. Interestingly the caregivers within the PICIHBI group were mainly playmates at 41.7% prior to group allocation, which means that responder bias regarding known group membership could not have skewed this result. Conventional group reported that 50% of the time the child played with another child outside the house as their main playmate.

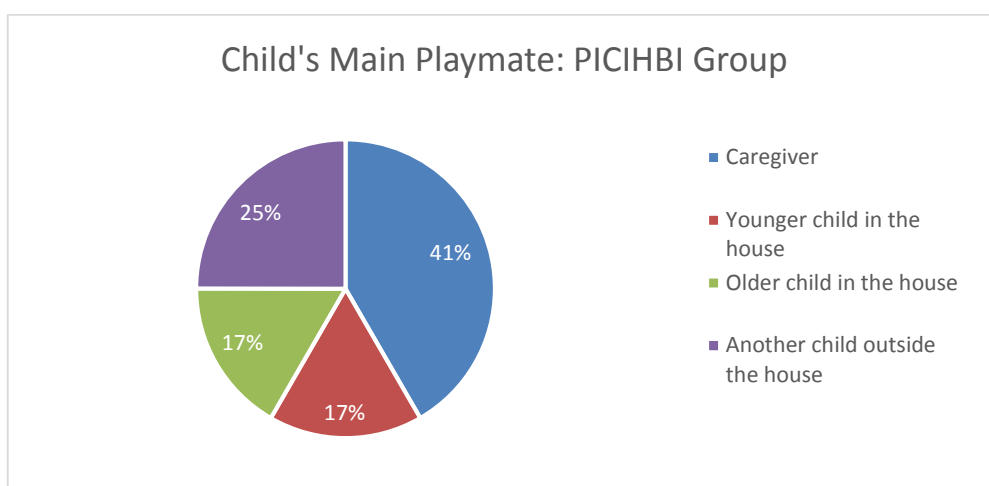


FIGURE 23 Child's Playmate PICIHBI Group

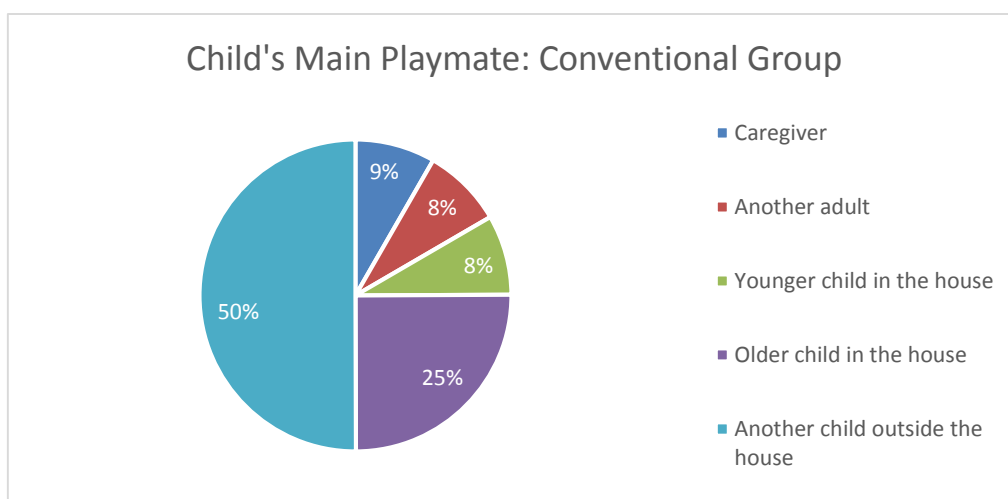


FIGURE 24 Child's Playmate Conventional Group

DAILY AMOUNT OF TELEVISION

22 children watched television every day, with all 12 children in the conventional group watching daily and 10 children in the PICIHBI group watching daily. 6 children watched more than 5 hours of television daily.

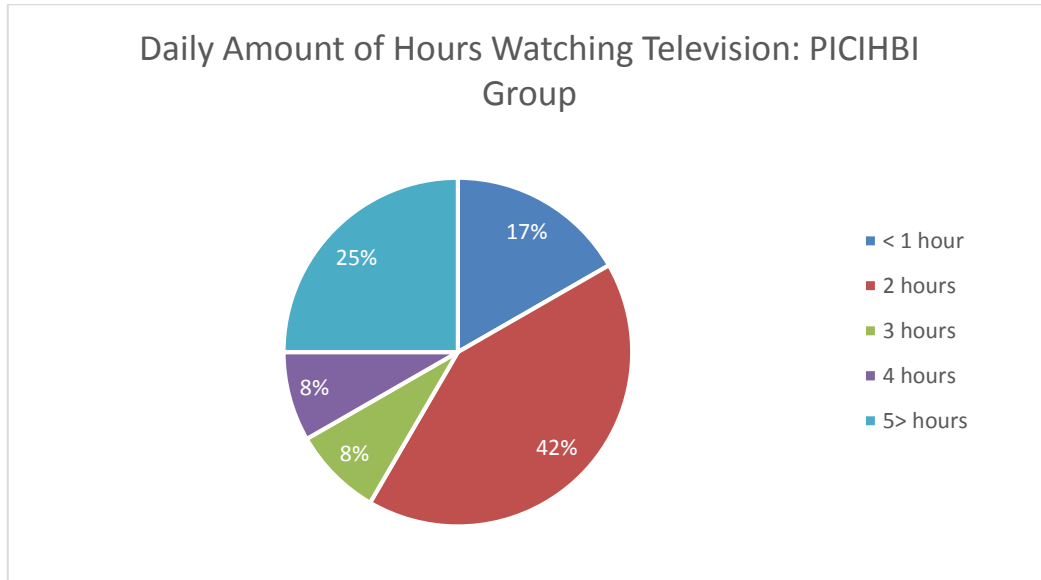


FIGURE 25 Daily Television Habits PICIHBI Group

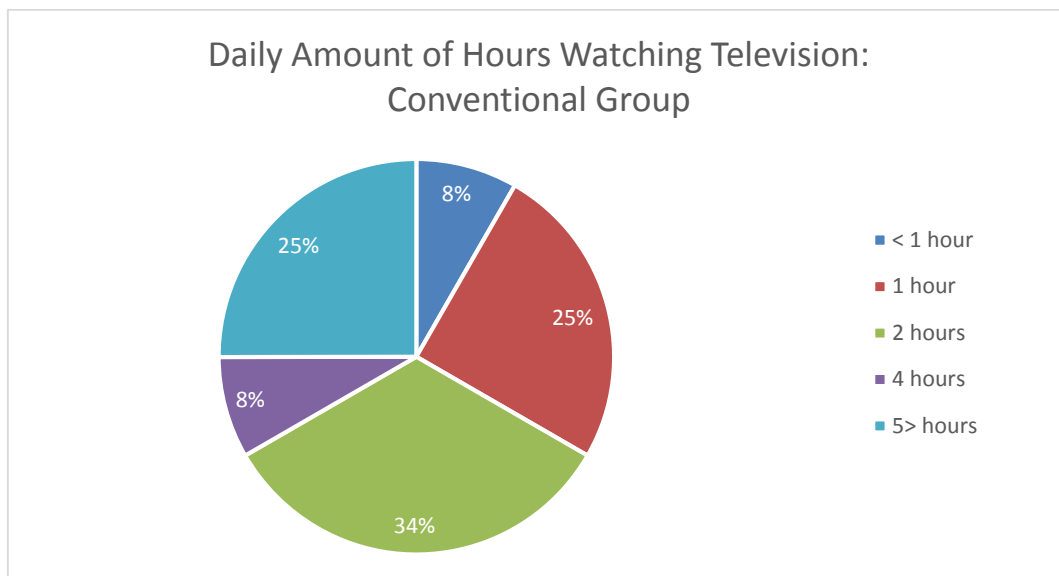


FIGURE 26 Daily Television Habits Conventional Group

4.3 INTERVENTION ATTENDANCE

On average the PICIHBI group attended 7.16 out of 10 assessments while conventional group participants attended 6.75 out of 10 sessions.

4.4 PLAYFULNESS PROFILE OF HIV POSITIVE CHILDREN

The playfulness levels of children within this sample was significantly below the ToP sample norm of 0.4 and the average of atypical children in the ToP sample at -0.38 (Bundy, Shia, Qi & Miller, 2007). At baseline assessment the average for the PICHIBI group was -0.7025 and the conventional group was -0.81. At post assessments PICHIBI group scored -0.63 and the conventional group scored -0.425. Although the scores improved marginally for both groups, with the conventional group demonstrating more improvement, scores at post assessments are still far below the average norm of the ToP sample at 0.4.

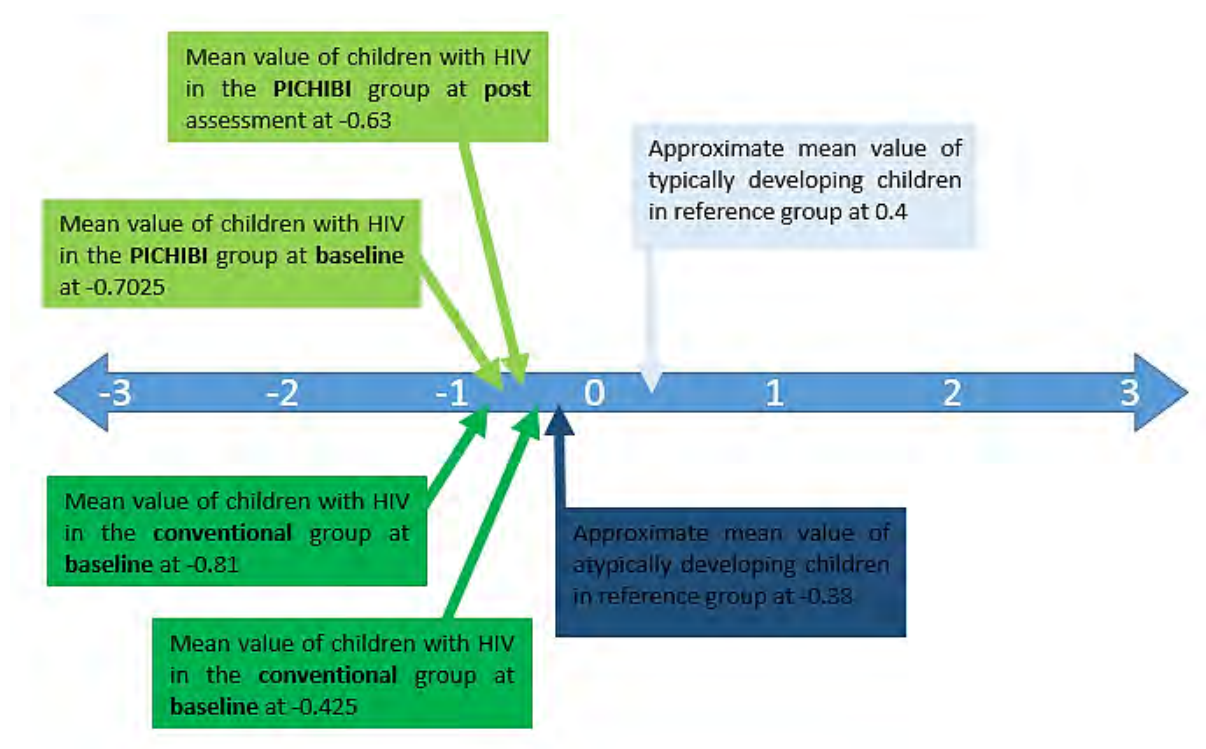


FIGURE 27 Group Norms at Baseline and Post Assessment Compared to Typical and Atypical ToP Norms

During play observation it was noted that children had difficulty focusing on a particular play activity resulting in fleeting play engagement. Wandering was observed with some children never becoming fully involved in play activities. Onlooker play and solitary play was regularly observed across all age groups and genders. Collaborative play, such as ball games and pretend games, were noted on occasion for brief periods. Children were observed to engage in object exploration at times, this may have been influenced by the novelty of an item to a particular child. Children were not observed to vary games in creative ways. At times children had to be motivated to play by the research assistant during recordings and presented reduced intrinsic motivation to engage in play. Simple pretend actions were noted by primary school children making car or train noises whilst playing with the

objects. However, more elaborate and dramatic pretend play was expected at that age. Younger children were not often observed engaging in pretend play and more often engaged in simple constructive play such as stacking blocks. Overall older primary school and 6-year-old children often played with toys intended for younger participants such as push toys, ringo-stack or 4-12 piece puzzles. This caused conflict as younger participants wanted to play with the same toys, here it was observed that older children did not readily share toys opting to rather play alone than playing with the younger participants.

Children displayed difficulty manipulating and correctly orientating puzzle pieces. Children enjoyed the musical instruments, possibly because of the ease of use as well as cultural enjoyment of music and dancing. These toys appeared to be more popular and reiterated Sutton-Smith’s theory around influence of culture on play actions (Sutton-Smith, 1997).

Children appeared to have difficulties with framing as children would miss play cues from playmates (including balls being rolled or kicked to them) or would choose not to respond to the invitation and continue with their solitary engagement. Although some children would attempt to initiate play, they appeared to lack effective strategies and would give up quickly if the other child did not respond immediately. The children did not often display happy emotions, such as smiling or laughing during the observed play engagement. The joy that normally associated with play was the exception rather than the rule.

ToP Item	Summarised Researcher Comments
Is actively engaged	<ul style="list-style-type: none"> • Non-focused activity at times • No clear play theme • Wandering • Watching others- not getting involved • Fleeting
Decides what to do	<ul style="list-style-type: none"> • Mostly • Caregiver suggested activity
Maintains level of safety sufficient to play	<ul style="list-style-type: none"> • Yes
Tries to overcome barriers or obstacles to persist with an activity	<ul style="list-style-type: none"> • Not often observed
Modifies activity to maintain challenge or make it more fun	<ul style="list-style-type: none"> • Not often observed
Engages in playful mischief or teasing	<ul style="list-style-type: none"> • Not often observed
Engages in activity for sheer pleasure of it rather than primarily for the end product	<ul style="list-style-type: none"> • The research assistant and/or caregiver motivate child to continue to play for the full fifteen minutes

ToP Item	Summarised Researcher Comments
Pretends (to be someone else; to do something else; that an object is something else)	<ul style="list-style-type: none"> • Lining up toys • Hopping/jumping animals-very simple actions- expect more elaborate play at ages six and up • Very brief simple pretend action • Simple pretend action-makes sounds as car moves • Role play-tea party
Incorporates objects or people into play in unconventional or creative ways	<ul style="list-style-type: none"> • Not often observed
Negotiates with others to have needs/desires met	<ul style="list-style-type: none"> • Gestures to caregiver • Asked caregiver about toy • Takes objects to adult when unsure • Did not ask other children or adults in room when they struggled to understand game/toy
Engages in social play	<ul style="list-style-type: none"> • Onlooker play • Solitary play • Parallel play • Cooperative play (brief period)
Supports play of others	<ul style="list-style-type: none"> • Tries to give other child ideas • Gives child similar objects to add to their play
Enters a group already engaged in play	<ul style="list-style-type: none"> • Not often observed
Initiates play with others	<ul style="list-style-type: none"> • Places toy in front of other child • Gives toys to other children • Attempts, but unsuccessful • Kicks ball in direction of other child
Clowns or jokes	<ul style="list-style-type: none"> • Not often observed
Shares (toys, equipment, friends, ideas)	<ul style="list-style-type: none"> • Sharing equipment and space • Take toys from other children or 'hoarding' of various toys they are not necessarily using
Gives readily understandable cues	<ul style="list-style-type: none"> • Turns back to other children
Responds to others' cues	<ul style="list-style-type: none"> • Did not respond to toy being placed by other child • Only responds to caregiver play cues • More focused on own play rather than play of others • Moved away from other children
Demonstrates positive affect during play	<ul style="list-style-type: none"> • Blunted • Brief smile
Interacts with objects	<ul style="list-style-type: none"> • Exploring parts of object rather than using as intended or as whole • Unskilled puzzle pieces-wrong orientation • Toy choices not developmentally appropriate: 'baby' toys • Seem unsure of object

ToP Item	Summarised Researcher Comments
Transitions from one play activity to another with ease	<ul style="list-style-type: none"> • Wandering between activities • Playing same activity for fifteen-minute observation

TABLE 4 Summarised Comments from ToP Protocol Sheets

4.5 PLAYFULNESS SCORES

The PICIHBI group mean measure score was higher on baseline assessment than the control group. During mid assessment the PICIHBI group scores dropped which was an unexpected finding. After completion of data analysis, the videos of mid assessment and comments on ToP protocol sheets for the PICIHBI group were reviewed to determine if there were errors in transferring scores from hard copies to electronic version and if there were any environmental conditions that may have negatively influenced the outcome of scores. No errors were noted during this process. As children attended their other clinic appointments on the same day as assessments, but in a different sequence it may be that some children had blood drawn or other medical procedures (a process that had been noted to be upsetting to children) prior the ToP assessment. Unfortunately, this was not checked and reflected on the ToP recording sheets and further assumptions cannot be drawn. The PICIHBI group measure score improved from 33.6150 at baseline assessment to 35.0242 at post assessment and the conventional group from 31.4692 at baseline assessment to 38.6967 at post assessment, a significant improvement.

Small sample sizes increase the risk of type II errors, namely not rejecting the null hypothesis when it is false, and can impact on detecting the true effect of an intervention and between group scores. Due to loss to follow up and withdrawal of 11 participants and poor compliance of sessions with low attendance excluding 26 participants from the final sample, power dropped from 80% to 68% in this study. Results indicated that the between group differences were not statistically significant, supporting the hypothesis that PICIHBI and one-on-one had equivalent performance, however due to the loss of power this should be considered with caution and generalisability to other populations of children with HIV done with care.

Descriptive Statistics				
	Experimental or Control Group	Mean	Std. Deviation	N
Measure 1	1 Experimental	33.6150	17.27105	12
	2 Control	31.4692	23.23081	12
	Total	32.5421	20.04905	24
Measure 2	1 Experimental	28.0300	24.19684	12
	2 Control	33.4142	23.84665	12
	Total	30.7221	23.65475	24
Measure 3	1 Experimental	35.0242	16.96199	12
	2 Control	38.6967	9.52734	12
	Total	36.8604	13.58419	24

TABLE 5 Group Measure Scores at Baseline, Mid and Post Assessments

4.6 COMPARISON OF ITEMS ON THE TEST OF PLAYFULNESS

As some ToP items were scored “Not Applicable” when the child did not have the opportunity to display the playfulness element or play behaviour due to playing alone or if the particular play behaviour was not observed during the fifteen-minute observation, some ToP items did not have enough data to analyse.

This included:

- Entering a Group (Skill)
- Tries to overcome barriers or obstacles to persist with an activity (intensity)
- Engages in playful mischief or teasing (skill)
- Pretends (skill)
- Incorporates objects or other people into play in unconventional or variable and creative ways (skill)
- Negotiates with others to have needs/desires met (skill)
- Clowns or jokes (skill)

Three PICIHBI group ToP item scores demonstrated significant differences. Pre-post-follow up demonstrated significant difference for decides (extent). Indicating that children more readily made their own choices regarding play activities and play engagement during the observation. Engaged (intensity) and transition (skill) improved significantly from pre-to post assessments. Less fleeting play, wandering and non-focused activity was observed as children engaged in their chosen play activities for longer periods at a time. Their ability to transition from one activity to the next, when their own play activity was not evolving or when a more interesting or attractive play activity became available improved.

ToP Item	Descriptive Statistics						Friedman's		Post Hoc Pairwise Comparison					
	Pre		Post		Follow up		Pre-post-follow up		Pre to post (p)		Pre to follow up		Post to follow up	
	Med	IQR ^b	Med	IQR	Med	IQR	χ^2	<i>p</i>	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>p</i>
Engaged (E)	2.5	1.0	1.00	1.8	2.0	1.0	9.053	.011	9.000	.003*	1.286	.257	2.273	.132
Decides (E)	3.00	1.0	1.50	2.0	3.00	1.0	12.071	.002*	7.000	.008	0.200	.655	8.000	.005
Safety (E)	3.00	0.0	3.00	0.0	3.00	0.0	2.000	.368	1.000	.317	-	-	1.000	.317
Mischief (E)	0.00	0.0	0.00	0.0	0.00	0.0	2.000	.368	1.000	.317	1.000	.317	-	-
Process (E)	2.00	1.0	1.00	2.5	2.50	2.0	3.800	.150	0.000	1.000	1.600	.206	3.600	.058
Pretends (E)	0.00	1.0	0.00	0.8	0.00	1.5	1.826	.401	1.286	.257	0.200	.655	1.000	.317
Unconventional(E)	0.00	0.0	0.00	0.8	0.00	0.0	0.333	.846	0.200	.655	0.000	1.000	0.333	.564
Social Play (E)	2.00	2.0	1.00	0.0	1.00	1.0	6.414	.040	2.778	.096	7.000	.008	0.000	1.000
Clowns (E)	0.00	0.0	0.00	0.0	0.00	0.0	1.000	.607	1.000	.317	1.000	.317	0.000	1.000
Cues (E)	1.00	2.0	0.50	1.0	1.00	0.8	1.600	.449	0.667	.414	0.000	1.000	1.600	.206
Engaged (I)	2.00	1.0	1.00	1.8	1.00	1.0	0.389	.823	0.200	.655	0.000	1.000	0.400	.527
Social Play (I)	1.00	1.0	1.00	1.0	1.00	2.0	0.609	.738	0.000	1.000	0.667	.414	0.143	.705
Affect (I)	1.00	1.0	0.00	0.8	0.00	1.0	4.207	.122	2.000	.157	5.000	.025	0.143	.705
Object (I)	2.00	1.0	1.00	1.0	2.00	1.0	2.242	.326	2.667	.102	0.000	1.000	1.000	.317
Engaged (S)	1.00	1.0	1.00	2.0	1.00	0.0	0.437	.804	0.143	.705	0.500	.480	0.143	.705
Modifies (S)	0.00	0.0	0.00	1.0	0.00	1.0	2.000	.368	2.000	.157	1.000	.317	0.333	.564
Social Play (S)	1.00	1.0	1.00	1.0	1.00	1.0	1.615	.446	0.200	.655	0.667	.414	1.286	.257
Supports (S)	0.00	1.5	0.00	1.0	0.00	1.0	0.125	.939	0.000	1.000	0.000	1.000	0.200	.655
Initiate (S)	0.00	0.3	0.50	1.0	1.00	1.0	2.240	.326	1.800	.180	1.800	.180	0.143	.705
Shares (S)	1.00	0.0	1.00	0.0	1.00	1.0	0.364	.834	0.200	.655	0.200	.655	0.200	.655
Cues (S)	0.50	1.8	0.50	1.0	1.00	0.0	1.429	.490	0.143	.705	0.143	.705	1.600	.206
Respond (S)	0.00	2.0	1.00	0.0	1.00	0.0	2.214	.331	0.500	.480	2.667	.102	0.200	.655
Objects (S)	1.00	1.0	1.00	1.0	1.00	0.8	3.500	.174	2.667	.102	0.143	.705	2.667	.102
Transition (S)	1.00	2.0	1.00	2.0	1.00	1.0	9.053	.011	9.000	.003*	0.500	.480	2.778	.096

TABLE 6 Changes in PICHBI Group ToP Items Scores Over Time

Notes: IQR = Interquartile range.

Friedman's two-way ANOVA.

Post hoc pairwise comparison tests *p* = adjusted *p*-value after post hoc Dunn-Bonferroni test.

- = Test did not run as the mean rank values were identical.

*= *p*<0.05

ToP Item	Descriptive Statistics						Friedman's		Post Hoc Pairwise Comparison					
	Pre		Post		Follow up		Pre-post-follow up		Pre to post (<i>p</i>)		Pre to follow up		Post to follow up	
	Med	IQR ^b	Med	IQR	Med	IQR	χ^2	<i>P</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>
Engaged (E)	2.50	1.8	2.00	1.0	2.50	1.0	.703	.704	.111	.739	.500	.480	.500	.480
Decides (E)	3.00	1.8	2.50	1.0	3.00	0.8	2.364	.307	.143	.705	1.286	.257	2.000	.157
Safety (E)	3.00	0.0	3.00	0.0	3.00	0.0	4.000	.135	2.000	.157	2.000	.157	-	-
Mischief (E)	0.00	0.0	0.00	0.0	0.00	0.0	2.000	.368	1.000	.317	1.000	.317	-	-
Process (E)	1.50	2.0	2.00	1.0	2.00	1.0	1.250	.535	.111	.739	1.333	.248	.143	.705
Pretends (E)	0.00	1.0	0.50	2.3	0.50	1.3	1.852	.396	1.286	.257	.667	.414	1.286	.257
Unconventional(E)	0.00	1.0	0.00	0.0	0.00	0.0	3.500	.174	1.800	.180	1.800	.180	1.000	.317
Social Play (E)	2.00	2.0	1.00	2.0	1.00	1.0	2.667	.264	2.667	.102	1.800	.180	.200	.655
Clowns (E)	0.00	0.0	0.00	0.0	0.00	0.0	1.000	.607	.000	1.000	1.000	.317	1.000	.317
Cues (E)	1.00	1.8	0.50	2.0	1.00	1.0	.162	.922	.111	.739	.000	1.000	.111	.739
Engaged (I)	2.00	1.8	2.00	2.0	2.00	1.5	.378	.828	.111	.739	.143	.705	.400	.527
Social Play (I)	1.00	1.0	1.00	2.0	1.00	1.0	.300	.861	.143	.705	.333	.564	.000	1.000
Affect (I)	0.00	1.8	0.00	1.0	1.00	1.0	.059	.971	.000	1.000	.000	1.000	.143	.705
Object (I)	2.00	1.0	2.00	2.0	2.00	0.0	.211	.900	.000	1.000	.667	.414	.000	1.000
Engaged (S)	1.00	1.0	1.00	1.0	1.00	0.0	1.267	.531	.000	1.000	.500	.480	1.286	.257
Modifies (S)	0.00	0.3	0.00	1.0	0.00	1.0	.300	.861	.000	1.000	.200	.655	.200	.655
Social Play (S)	0.00	1.0	0.00	2.0	1.00	1.0	.300	.861	.143	.705	.333	.564	.000	1.000
Supports (S)	0.00	0.0	0.00	0.3	0.50	1.3	3.500	.174	2.000	.157	3.000	.083	.200	.655
Initiate (S)	0.00	1.0	0.00	0.0	0.00	2.0	1.286	.526	.200	.655	.333	.564	.333	.564
Shares (S)	0.00	1.5	1.00	0.3	1.00	1.3	2.632	.268	1.000	.317	1.800	.180	1.800	.180
Cues (S)	0.00	1.0	1.00	2.0	1.00	2.0	.621	.733	.500	.480	.200	.655	.000	1.000
Respond (S)	0.50	1.0	0.00	2.0	1.00	1.8	3.000	.223	.667	.414	2.667	.102	1.286	.257
Objects (S)	1.50	1.0	1.00	1.0	1.00	0.0	3.161	.206	.500	.480	2.778	.096	1.000	.317
Transition (S)	1.50	2.0	1.50	1.3	1.50	1.0	.703	.704	.111	.739	.143	.705	.000	1.000

TABLE 7 Changes in Conventional Group ToP Items Scores Over Time

Notes: IQR = Interquartile range.

Friedman's two-way ANOVA.

Post hoc pairwise comparison tests *p* = adjusted *p*-value after post hoc Dunn-Bonferroni test.

- = Test did not run as the mean rank values were identical.

Effect sizes provides information regarding the strength and impact of an intervention or independent variable, in this case PICIHBI or one-on-one conventional occupational therapy, on a dependant variable, namely playfulness (Cohen, 1988). Effect sizes provide meaningful differences of the data, regardless of the sample size (Cohen, 1988). Cohen's guidelines for r within this study are: small effect $\geq .1$, medium effect $\geq .3$ and large effect $\geq .5$ (Cohen, 1988).

From pre to post intervention there was a small effect size for change in initiates (S) for the PICIHBI group. Pre to follow up demonstrated four small effect sizes for process (E), initiates (S), responds (S) and cues (S). Post to follow up revealed small effect size for cues (S), two medium effect sizes for engaged (E) and process (E) and a large effect size for decides (E).

The PICIHBI group made more decisions regarding play choices when compared to the baseline assessments with a decrease in wandering and aimless activity. They became more actively engaged in play and played for play sake, enjoying the process of play rather than playing due to an external motivation or reward. A change in play cues and framing is noted, with attempting to initiate play and games with playmates, responding more to playmates and giving more readily understandable play cues with their body language, gestures and engagement with playmates.

The conventional one-on-one occupational therapy group had small effect sizes for process (E) and cues (S) from pre to post intervention. Pre to follow up demonstrated six effect sizes. Three small effect sizes for pretends (E), shares (E) and cues (S) and three medium effect sizes for process (E), supports (S) and responds (S). Post to follow up revealed three effect sizes, with two small effect sizes for engaged (E) and supports (S) and a medium effect size for decides (E).

Similar to the PICIHBI group, the conventional one-on-one occupational therapy group made more play choices and engaged in more decision making regarding their play than during baseline assessments, resulting in increased play engagement during the play observations. The conventional group's process of play for play sake also demonstrated an improvement similar to the PICIHBI group. A small shift in the extent of pretend play, with pretend play actions being observed more often and for longer periods than baseline assessments was observed during play of children in the conventional group. An improvement in framing of play cues and responding to others' play cues was observed, similar to the PICIHBI group. The skill of supporting other playmates' play demonstrated development over the assessment period and did not occur in the PICIHBI group.

ToP Item	PICIHBI Group						Control group					
	Pre to Post		Pre to follow up		Post to follow up		Pre to Post		Pre to follow up		Post to follow up	
	Z	r.	Z	r.	Z	r.	Z	r.	Z	r.	Z	r.
Engaged (E)	-2.81	-.57	-1.27	-.26	1.71	0.35*	-0.12	-0.02	0.00	0.00	1.10	0.22*
Decides (E)	-2.43	-0.50	0.00	0.00	2.64	0.54*	-0.17	-0.04	0.00	0.00	1.61	0.33*
Safety (E)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mischief (E)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Process (E)	-0.59	-0.12	1.12	0.23*	2.00	0.41*	0.73	0.15*	1.57	0.32*	0.00	0.00
Pretends (E)	0.00	0.00	0.00	0.00	0.00	0.00	-1.72	-0.35	1.19	0.24*	0.00	0.00
Unconventional(E)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Social Play (E)	-2.13	-0.43	-2.46	-0.50	0.00	0.00	-1.73	-0.35	-1.66	-0.34	0.00	0.00
Clowns (E)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cues (E)	-0.54	-0.11	0.00	0.00	0.92	0.19*	-0.06	-0.01	0.00	0.00	0.31	0.06
Engaged (I)	-0.97	-0.20	-0.54	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Social Play (I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Affect (I)	-1.51	-0.31	-2.24	-0.46	0.00	0.00	0.00	0.00	0.30	0.06	0.26	0.05
Object (I)	-1.08	-0.22	0.00	0.00	0.75	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Engaged (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Modifies (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Social Play (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.06	0.11	0.02
Supports (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	0.33*	0.71	0.14*
Initiate (S)	0.96	0.20*	1.34	0.27*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shares (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.08	1.34	0.27*	0.00	0.00
Cues (S)	0.00	0.00	0.63	0.13*	0.83	0.17*	0.58	0.12*	0.71	0.14*	0.00	0.00
Respond (S)	0.51	-0.10	1.00	0.20*	0.00	0.00	-0.97	-0.20	1.63	0.33*	0.34	0.07
Objects (S)	0.00	0.00	0.00	0.00	0.00	0.00	-0.72	-0.15	-1.35	-0.28	0.00	0.00
Transition (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 8 Effect Sizes of ToP Item Scores

Notes. The r effect size was used to calculate the effect sizes for nonparametric data. In this calculation, the effect size (i.e., r), is obtained by dividing the Wilcoxon Z score by the square root of the sample size; $r = Z / \sqrt{N}$. Cohen's guidelines for r are: small effect $\geq .1$, medium effect $\geq .3$ or large effect $\geq .5$.

*=small, medium and large effect sizes

4.7 CONCLUSION

The PICIHBI and one-on-one conventional groups' playfulness norms were below the norm for typical as well as atypical children in the ToP sample indicating the urgent need for play-based interventions focusing on playfulness for children with HIV from a low socio-economic status attending clinics in a South African context.

The effect sizes demonstrated that there were meaningful differences in ToP items from baseline to post assessments across both groups. An improvement in the children's ability to choose play activities, engage more actively in the process of play, demonstrate and respond to play cues were established. Although both groups' mean values were below the atypical norm of the ToP sample at

post assessments this demonstrated a shift in the play quality of both groups from pre- to post assessments with occupational therapy intervention.

It should be noted that the small sample size reduced the power in this study which can negatively impact on statistical tests detecting differences, if differences exist, between the PICIHBI and one-on-one conventional groups. The between group results should therefore be considered with caution as this may have impacted on the outcome. There were no statistical significant differences between the PICIHBI and one-on-one conventional groups for improving playfulness levels of children with HIV within this study from pre-to post intervention and therefore the research hypothesis was accepted. The PICIHBI as a group intervention achieved a similar outcome as one-on-one conventional occupational therapy demonstrating appropriateness for group interventions to increase access to health services to a higher percentage of caregivers and children from low socio-economic status.

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

In this chapter, results from the study are compared with those from related studies. The sample demographic data is discussed and compared to other studies that investigated television preferences and play choices of children from low socio-economic contexts and children with developmental difficulties and other diagnoses. Intervention attendance is discussed in relation to other intervention studies. The playfulness levels of children with HIV and the implications on health, well-being, development and learning due to lower playfulness scores is described and compared to other studies that focused on playfulness levels of children with varying diagnoses. The between group differences is discussed and compared to other play and playfulness intervention studies. The chapter concludes with a discussion on factors that may have impacted on the PICIHBI and the limitations of the research study.

5.2 SAMPLE

The children of the two intervention groups were not matched for gender. There were more females in the PICIHBI group than in the conventional group. IsiXhosa was the predominant language in both groups and the mean ages within the groups were closely matched, with the average age of 4 years for the PICIHBI group and 4.7 for the conventional group. The study reported high levels of unemployment within both groups notwithstanding the PICIHBI group having 25% of caregivers with a Grade 12 and 33.3% of caregivers in the conventional group a Grade 12 as a highest level of education. Similar high levels of unemployment were found by Whitehead et al., (2013). Regardless of the low income and reliance on social security grants, all 24 caregivers reported owning a television and both groups reported that 25% of children watched five or more hours of television with an average of 2.7 hours of daily television for the 24 participants. This echoed findings from Singer et al., (2009) which only included mothers within their sample, in line with the all-female demographics within this research study, demonstrated that South African caregivers and children engaged in high levels of watching television. Although this research study did not explore reasons for preference of watching television over outdoor and indoor play in relation to the daily amount of hours spent engaging in this pastime, Singer et al., (2009) reported that South African participants had concerns related to safety due to violence and crime which may likely influence their inclination towards indoor activities, such as watching television. Singer et al. (2009) furthermore reported that South Africa had one of the highest ratings of enjoyment of watching television and a high percentage of mothers reported the past time as a bonding experience. The engagement and habit of television watching, which appears to have overshadowed and replaced more traditional bonding through play and story

telling between children and caregivers over generations as described by Ramugondo (2012), is an important consideration when an intervention aims to increase spontaneous and active play engagement between child and caregiver. Although caregivers were able to report that children played with adults and children as chosen playmates, the time allocation between play and watching television on a daily basis was not established within this study. Another consideration with regards to watching television as a sedentary activity, may be due to the child's energy level and overall health status, with 16 out of the 24 children having a history of Tuberculosis which could account for hospital admissions and additional clinic visits. Hospital admissions were not included in the demographic questionnaire, but as described in Ferguson & Jelsma (2009) periods of hospitalisation can result in increased inactivity and less active participation, such as play engagement with caregivers.

5.3 PARTICIPATION AND ATTENDANCE

The challenge of high unemployment, with some participants travelling far to GSH from their communities due to poor socio-economic circumstances was demonstrated within this study with participants reporting missing assessments and intervention sessions due to lack of transport money to travel to the hospital. Another study based in the South African context and also focused on children with HIV from a low socio-economic status by Whitehead et al. (2013) reported a high loss to follow up, although attempts were made with reimbursement of transport money, text message reminders and scheduling appointments on clinic days, similar as what was done similar to the current study.

A total of 42 participants were lost from the initial 66 playfulness sample. This was due to 11 withdrawals and loss to follow, 5 incomplete datasets and 26 participants being excluded from the final sample based on the inclusion criterion of attending a minimum 5 of 10 sessions. The high unemployment rate reported within this study may very well contribute to this due to lack of transport money. Caregivers' perceptions regarding their child's development being on par or better than their peers, may have contributed to poor attendance, as they may not have deemed it necessary to attend intervention sessions. Within the PICIHBI sample 66.7% of caregivers felt that their child's development was on par with their peers, while within the conventional group 58.3% reported that their child's development was on par and 16.6% felt that their child developed better than their peers. Although the 26 participants who did not meet the minimum required 5 out of 10 sessions were not included in the statistical analysis of demographic data, an overview of the demographic forms revealed a similar perception that most caregivers viewed their child's play, development and learning to be on par with their peers. Therefore, buy-in regarding attending intervention sessions based on a perception of their child's needs and support for their overall development, may not have occurred as caregivers may not have deemed it necessary. Maternal play-beliefs have been found to influence

the types of play activities and frequency of their child's play engagement (Fisher, Hirsh-Pasek, et al., 2008). Caregiver's own perceptions, when they deem their child to be playing at an age-appropriate level, could therefore have influenced their attendance and the possible loss of follow up, in addition to poor social circumstances.

5.4 IMPACT OF INTERVENTION

5.4.1 PLAYFULNESS PROFILE OF CHILDREN WITH HIV FROM A LOW SOCIO-ECONOMIC STATUS

The playfulness levels of both research groups was below the average norm for typical and atypical children within the ToP sample at baseline and post assessments. The scores at post assessment indicated that both PICIHBI and conventional one-on-one occupational therapy groups demonstrated improvement. Consideration and attention to the specific items that children scored poorly in the ToP could further guide interventions on play as an end goal, but this will be discussed in more detail in the next section. As no studies have been published yet on the playfulness or play patterns of children with HIV from a low socio-economic status, a comparison between this sample's low level of playfulness and other research findings cannot be drawn. Other research studies focusing on play preferences and play behaviours of children with developmental disabilities, ADHD/ADD, autism spectrum disorder and sensory integrative dysfunction have demonstrated that children may choose and engage in play activities that are in line with their own skill set and as a result will often avoid play activities they deem as difficult (Case-Smith & Kuhaneck, 2008; Okimoto et al., 2000; Parham, 2008; Rodger & Ziviani, 2008; Skaines et al., 2006). 33.3% of the total playfulness sample in the current study had an additional diagnosis of developmental delay indicating that their play preferences and engagement patterns, similar to other studies, will be different than compared to normally developing peers. However, it is not clear on what basis and through which assessments the diagnosis of developmental delay was made within the GSH clinic setting. A recent small sample study by Potterton, Hilburn, & Strehlau (2016) who utilised the Griffiths Scales of Mental Development (GMDS), described that the preschool aged children within their sample, which are closely matched to the mean age within the playfulness sample in the current study, had 55.88% of children with severe overall development delay with significant developmental delay in areas of speech, cognition and perception. Therefore, the associated developmental delay of the playfulness sample in the current study could possibly be higher with greater impact on overall functioning, especially regarding play engagement, frequency and play choices resulting in an increase of sedentary activities, such as watching television.

A comparison of low playfulness levels of children with HIV from low socio-economic status attending a clinic in Cape Town to low playfulness levels of other groups of children with developmental delays,

autism spectrum disorder, traumatic brain injury, ADHD, cerebral palsy and prenatal alcohol exposure (Mortenson & Harris, 2006; O'Brien et al., 2000; Okimoto et al., 2000; Pearton et al., 2014; Skaines et al., 2006; Wilkes-Gillan, Bundy, Cordier, & Lincoln, 2014) indicate the need to create more awareness regarding the challenges that children with HIV face regarding playfulness and play engagement as a determinant for health and well-being as well as contributing to development and learning and ultimately equipping these children to be successful school learners.

Children with HIV from a low socio-economic status present with lower levels of playfulness which can further have a negative impact on their overall development as they do not engage in play activities and play contexts with ease. Although a causality between HIV and playfulness cannot be determined, especially as these children are also faced with difficulties associated with poverty, there appears to be a relationship between HIV and low playfulness. This is a new finding as playfulness of children with HIV from a low socio-economic status has not previously been explored and there are currently no published studies on this topic.

The need for long term early childhood intervention programmes for children with HIV within low socio-economic circumstances attending clinics in South Africa has also been established and recommended by studies focusing on developmental outcomes for this vulnerable group (Ferguson & Jelsma, 2009; Potterton et al., 2016; Potterton et al., 2010; Whitehead et al., 2013). Preparing children for schooling through an early childhood intervention programme with play as an end goal in mind, such as playfulness, will provide children with more opportunity to practice, learn and develop through play engagement (Bundy et al., 2001; O'Brien et al., 2000; Parham, 2008). As play is deemed the main occupation of childhood and described as a determinant of health and well-being as part of occupational therapy profession's own rhetoric on play (Parham, 2008), the play needs of children with HIV should be brought to the forefront as an area of research that has up to now not received much focus.

5.4.2 PLAYFULNESS SCORES

Playfulness scores did not improve significantly between assessments. There was no significant difference between PICIHBI and conventional group at post assessment. As previously discussed, the loss of power within this study may have contributed to differences between the two groups not being detected, if there were in fact any differences between the playfulness scores of the two intervention groups. This study however demonstrated that group intervention, such as the PICIHBI, can achieve similar results to one-on-one conventional therapy.

Small to moderate effect sizes in change of playfulness levels was found in a study by Bundy et al. (2011) of children receiving either one-on-one occupational therapy using play as a medium or an

intervention aimed at educating and promoting play with children's parents. It was found that parents' reluctance to engage in the programme may have influenced the outcome of the playfulness scores. As discussed earlier, caregivers' perceptions regarding their child's development as being on par with their age group within this research study, may similarly to the study by Bundy et al. (2011) have negatively influenced their engagement with and buy-in to the intervention.

A small sample study of 38 children by Okimoto et al. (2000) investigated the change in levels of playfulness between children with cerebral palsy and developmental delays receiving either one-on-one NDT therapy intervention or an intervention aimed at improving mother-child interactions through discussions on play, modelling and positioning techniques. It was found that the mother-child intervention had higher levels of playfulness at post assessment, indicating that involving caregivers as part of the therapy process can have a positive impact on a child's playfulness. An eight-week occupational therapy led playgroup programme working with children (aged 15 months to three years) and caregiver dyads also indicated improvement in overall playfulness levels upon post assessments (Fabrizi, Iton & Winston, 2016). A seven week play based occupational therapy programme focused on improving social play of children with ADHD utilised therapist and peer modelling, video feed forward/ feedback as well as parental involvement within sessions demonstrated an improvement in social play items as assessed by the test of playfulness (Wilkes et al., 2011). The improvement in social play skills and improved level of playfulness was maintained in an 18 month follow up study of children with ADHD (Cantrill et al., 2015).

Studies with children with developmental disabilities and other diagnosis have established that playfulness levels can improve when the intervention is targeted at play as an end, with involvement of occupational therapists, caregivers, children and in some studies typically developing peers as part of the therapeutic process. Although power was lost and significant differences could not be confirmed between the PICIHBI and one-on-one occupational therapy interventions in the current study, changes in ToP items over time and effect sizes that will be discussed in the following section can encourage occupational therapists to include caregivers as role-players in the goal of play as an end in itself.

5.4.3 COMPARISON OF ITEMS ON THE TEST OF PLAYFULNESS

ToP items for the PICIHBI group of *decides what to do (extent)*, *engaged (intensity)* and *transition (skill)* displayed significant changes ($p < 0.05$) from pre-post-follow up. Children were observed to more readily choose play activities, indicating that internal control and intrinsic motivation had improved from baseline assessments. Children in the PICIHBI group appeared to play with more ease in post assessments and less wandering and non-focused activity was also observed. A large effect size in

decides and medium effect sizes in *engaged* and *process* contributing to the change in observed play behaviour. During the baseline assessments of children with HIV it was observed that caregivers would start handing toys or suggesting activities to their child after a period of wandering or inactivity, caregivers were encouraged not to continue suggesting play activities during those recordings. However, at post assessments children more readily made their own play decisions and caregiver interference was not observed. This may have been due to children's increased intrinsic motivation and internal control to explore the play context, an improvement in developmental skills which was more aligned with play options therefore providing the child with more ease to engage in play or having had the opportunity to engage more in free play within their home contexts due to caregivers' increased knowledge and awareness of the importance of play in relation to development and learning through the PICIHBI intervention. The ToP item of *decides* scored very low for children with cerebral palsy as it was found that mothers of children within the sample often made play decisions for their child due to the child's physical disability (Okimoto et al., 2000).

Onlooker play, although still present for some children within the PICIHBI group, minimised and more instances of cooperative play was observed. Children did not engage in cooperative play for the full fifteen-minute observation as the play games often did not evolve, opting to then play their own game after playing with playmates with smoother transitions when a play activity did not evolve. Children with prenatal alcohol exposure from a low socio-economic context were also found to have difficulty with social play (intensity and skill) and initiation when compared to the reference group of children from a similar low socio-economic status and similarly had difficulty transitioning between activities (Pearson et al., 2014). Although this was not an intervention study, it shares resemblance in ToP items with the children in this study with HIV from a low socio-economic background.

Social play encompasses initiating, reading and giving play cues for play transition, which appeared to be challenging for some of the children within this study. The small effect sizes for *initiates*, *responds* and *cues* all relating to the playfulness element of framing clarify the small shift in social play that occurred from pre to post assessment, with further input to improve framing skills required. However, it was noted that although children were making more attempts to initiate play, their strategies were not always effective. *Engagement* of play, *initiation* and *modification* of play activities and games are ToP items that have been described by Mortenson & Harris (2006) that relate to cognition. As recent results from Potterton et al. (2016) regarding severe developmental delay of preschool aged children with HIV is taken into consideration, in particular the subscale indicating significant delay in cognition, it may provide insight as to why some ToP items have demonstrated improvement, while other more advanced items such as *modifying*, *initiation*, *unconventional and creative use of objects* and *pretends*

demonstrated small or no change in effect size across both the PICIHBI and conventional groups. Freedom to suspend reality remained a challenge for many children, with very few children displaying developmentally appropriate pretend actions and no effect size or significant changes identified for these ToP items for the PICIHBI group.

The conventional one-on-one group did not demonstrate significant changes ($p < 0.05$) from pre to post assessments. Small effect sizes in *decides*, *engaged* and *process* were identified with children displaying more internal motivation and internal control regarding their play engagement. Play *cues* had a small effect size, while *responds* and *supports* had medium effect sizes. Children's framing improved with an ability to show playmates with body language and gestures their interest in joining play or wanting to play alone as well as responding more to these play cues of other children and supporting playmates play activities through ideas or encouragement. Interestingly, the conventional group had a small effect size for *pretend* from pre to follow up with more pretend actions being observed and becoming more elaborate consistent with their developmental age group. One-on-one occupational therapy may have contributed to this effect size by being able to focus on the child's pretend play interests as a motivational tool during play as a medium.

A shift in the abovementioned ToP items suggests that there is an important role and contribution for occupational therapists to make towards playfulness outcomes for children with HIV. The PICIHBI demonstrated significant changes ($p < 0.05$) from pre-post-follow up for ToP items *decides what to do (extent)*, *engaged (intensity)* and *transition (skill)* with resulting change in play behaviour as children were more actively focused on play engagement. This provided children with more opportunity to practice developmental skills in a play context with play as an end being the focus of the intervention. Play as an end can contribute to improved developmental outcomes, similar to play as a means, but children are additionally able to apply and engage themselves in play contexts and situations as described in O'Brien et al. (2000). Although statistical differences were not detected between the two groups, the significant difference in ToP items for the PICIHBI group and effect sizes demonstrate that the intervention had a positive impact on the children's playfulness from the PICIHBI group and that with a higher power the study may have demonstrated a larger difference between the PICIHBI and conventional one-on-one intervention groups playfulness scores.

5.4.1 PICIHBI INTERVENTION

Caregivers of children with HIV experience higher levels of stress and require emotional support due to impact of HIV/AIDS on family life (Ferguson & Jelsma, 2009; Visser et al., 2012; Whitehead et al., 2013). With concerns related to basic survival overshadowing the need to explore and further

understand child development, play and learning through play engagement may not be deemed a priority (Ginsburg, 2007). With high loss to follow up rates, as mentioned earlier due to possibly travel distances and monetary constraints, considerations regarding early childhood intervention programmes at community clinic levels need further consideration.

In this study it was found that a high percentage of caregivers perceived their child's development to be on par or even better than their peers. As discussed earlier, this could have affected participation as some caregivers may have felt that they would not have gained anything for themselves or their child in attending sessions. Caregivers did not seem to be well informed regarding their child's additional diagnoses. Education regarding their child's medical condition/s as well as explaining to caregivers which milestones children should reach at certain ages during clinic check-ups may lead to a different perception related to their child's overall developmental status and needs.

The caregiver's own playfulness interactive style with the child, strengths and weaknesses should be taken into consideration by the occupational therapist in order to model and support the child's playfulness development, and in some cases further develop the caregiver's playfulness (Chiarello, Huntington, & Bundy, 2006). It has been described that children and adults alike are all different players, with our own unique areas of strengths (Sutton-Smith, 1997). It would be ideal to first explore the caregivers' player style, to understand which elements of playfulness to provide caregivers with adequate support and modelling for skill transfer to occur. Rigby & Gaik (2007) found that playfulness levels differ across environments. Providing parents with home sheets with pictures of the categories of play to tick off when they observe it between monthly sessions can provide further information to guide the playfulness goals for each dyad.

Baseline assessment results of overall playfulness scores and ToP items specifics of children with HIV from a low socio-economic status, should be taken into consideration when planning and altering play based interventions for this vulnerable group. Shifts in some ToP items, as demonstrated by effect sizes, could guide PICIHBI intervention focus on certain playfulness characteristics and skills initially, before moving on to more advanced ToP items. With the severity of the developmental delay of pre-schoolers with HIV from a South African context recently being confirmed again by Potterton et al. (2016) the importance of play-based early childhood interventions for children with HIV cannot be ignored.

5.6 LIMITATIONS OF THE STUDY

5.6.1 SAMPLE SIZE, HIGH LOSS TO FOLLOW UP AND INCLUSION CRITERIA

The study had a small sample of 24 participants with 12 participants per group. This was due to withdrawals and loss to follow up of 11 participants and 24 participants that did not attend the minimum required 5 out of 10 sessions and as a result had to be excluded from the final sample. This demonstrated the challenges of time commitment and socio-economic constraints (especially transport money) within a 19-month study with 79% of overall participants reported being unemployed with many households surviving on social security grants only. Although attempts were made to reduce the burden on caregivers in terms of scheduling appointments (for assessments and therapy sessions during the intervention periods) on the same day as doctor appointments and reimbursement of transport costs, these did not prove adequate. The resulting small sample size limited generalisability of the results and the loss of power in the study impacted on detecting differences between the two groups.

5.6.2 CLINIC CONTEXT AS PLAY ENVIRONMENT

Only indoor play was video recorded within this study. Concerns with safety appear to limit freedom and time spent engaging in outdoor play in most urban based South African communities, therefore assessing the manner in which these kids engage in indoor play appeared to be apt. A difference in playfulness levels may have been observed if the study was extended to observe and record outdoor play. Although attempts were made relating to considerations of space, as well as toys and materials made available to children it was still not a natural play environment as there were observers, including a research assistant. Although the research assistant remained at a reasonable distance, the recording process may have made some children feel uncomfortable, negatively impacting on their play behaviours.

5.6.3 LANGUAGE BARRIERS

Language barriers did limit the manner in which the therapist was able to engage with children during both interventions, relying on the translator to carry information across to caregivers and children at times with some critical information possibly being lost.

5.6.4 CAREGIVERS

All children were not consistently brought to the clinic for intervention sessions by the same caregiver due to work commitments. This was particularly more challenging for the PICHIBI intervention as it relied on the main caregiver to attend sessions in order for skills and activities to be engaged in at home on a more regular basis. In instances where different caregivers engaged in different sessions, the information may not have been shared between caregivers and family members. Ideally the

programme is performed with the same caregiver attending all 10 sessions. Play activities that were discussed during sessions for example: to promote independent self-care or improvement of fine motor skills could be passed to various caregivers of a child within one family. The list of play activities (play as means) included descriptions and pictures of games to play at home to develop the skill/s discussed at the group that day. However, this technique could not be done with play as an end, as the focus was the manner in which these activities were engaged in, the modelling observed during the experimental part of the sessions was a critical part of improving the play behaviours and playfulness of children. Perhaps future interventions would need to include more information regarding playfulness that can be passed to other family members in an understandable way and greater use of modelling. This is difficult as playfulness principles are less concrete than suggested play activities to improve various developmental skills.

CHAPTER 6: CONCLUSION

6.1 CONCLUSION

This study described the playfulness levels of a small group of 24 children with HIV from a low socio-economic status attending a clinic within Cape Town, South Africa. Low levels of playfulness were identified indicating that children in this study are at risk of occupational deprivation as they do not engage in play with ease. The measurement scores of children within this sample was below the norms for typical and atypical children within the ToP dataset. This demonstrated the need for play focused early childhood interventions for children with HIV from a low socio-economic status.

Descriptive statistics were performed and no significant differences were found between the measure scores of the PICIHBI and one-on-one conventional groups at baseline, mid and post assessments. However, statistical significant changes in ToP items over time for the PICIHBI group and the group's effect sizes demonstrated an improvement in ToP items, contributing to improved playfulness and increased playful engagement for the PICIHBI sample. These findings are positive and provide insight that playfulness can be improved for this vulnerable population. Considerations making the PICIHBI more effective and increase the attendance and commitment from caregivers is critical and could further contribute to improved playfulness levels for children with HIV from a low socio-economic status. The group structured intervention allowed more access to a larger proportion of caregivers and children to occupational therapy. Group interventions are critical in an over-burdened health care system through providing all who need intervention the opportunity, rather than restricting access to only the most severe cases due to shortages of health rehabilitation specialists, including occupational therapists.

This study was the first of its kind to establish that children with HIV on HAART from a low socio-economic status had lower levels of playfulness. With the value of play as the main occupation of childhood, it is necessary to improve access to play of vulnerable groups including children with HIV from a low socio-economic status. The majority of caregivers in both research groups indicated that they felt their child was on par with their age group regarding play, development and learning prior to intervention. It is important to equip caregivers from low socio-economic status with knowledge of play, development and learning as well as tools and ideas regarding play activities to enhance playfulness and developmental skills. It is hoped that through this knowledge less time will be spent in sedentary activities, such as watching television, and that children will have more opportunities for active free play as caregivers start to understand the important role of play in health, well-being and development.

6.2 RECOMMENDATIONS

6.2.1 FOR FUTURE RESEARCH

- Completing both indoor and outdoor observations in order to gain a full picture of the child's overall playfulness level or measure score.
- A control group (HIV negative children from similar low socio economic status) to match the two types of interventions in order to further understand the possible impact of HIV (with known impact on developmental delay) and separate it from the impact of poverty and challenges and barriers of play could add further value.
- It would have been valuable to have gained information from caregivers regarding the PICHIBI suggested home activities and use of play within their home contexts through one-on-one exit interviews. However, the challenges of transport money and attendance was highlighted in this study indicating the difficulties in arranging an additional assessment as part of the process.
- Longitudinal exploration of ongoing levels of playfulness over time can provide valuable information. The challenges of follow up and attendance, as experienced within this study, can present difficulties.

6.2.2 FOR PICHIBI

- Further considerations as to intensity, delivery and frequency are aspects that need to be considered with regards to the PICHIBI intervention.
- Not all 10 sessions within the 3 different age groups focused as intensely on playfulness as others. Some sessions were more skilled focus, utilising play as a means, rather than play as an end. Therefore, all 10 sessions were not equally playful. Play and playfulness principles within every session needs to be revisited.
- The mode of delivery related to playfulness elements should be further explored to understand what would be most effective in ultimately improving playfulness levels.
- Talking to caregivers about different categories of play and determining what type of player they are may be useful at the start of the PICHIBI. This can allow the occupational therapist to identify the caregiver's areas of strength and how best this can be utilised during playful engagement and eliciting playfulness with their child during sessions.

6.2.3 FOR OCCUPATIONAL THERAPISTS

- The ToP should continually be part of pediatric occupational therapists' assessments of children as it is a quick observational tool that can provide valuable information regarding the main occupation of childhood.

- Pediatric occupational therapist can benefit from considering their own player style and level of playfulness as a playful model has a greater impact on the effectiveness of play-based interventions.

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APPENDIXES

ANNEXURE A: ETHICS APPROVAL LARGER STUDY

UNIVERSITY OF CAPE TOWN



Faculty of Health Sciences
Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • Facsimile [021] 406 6411
e-mail: shuretta.thomas@uct.ac.za
Website: www.health.uct.ac.za/research/humanethics/forms

17 September 2013

HREC REF: 560/2013

A/Prof E Ramugondo
Occupational Therapy
Health & Rehab
F56.76, OMB

Dear A/Prof Ramugondo

PROJECT TITLE: THE EFFECTS OF PLAY-INFORMED CARE GIVER IMPLEMENTED HOME-BASED INTERVENTION ON PARTICIPATION OUTCOMES FOR HIV POSITIVE CHILDREN ON HAART AND LIVING IN FAMILIES WITH LOW SOCIO-ECONOMIC –STATUS

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th September 2014

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: www.health.uct.ac.za/research/humanethics/forms)

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.

Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.

The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

s.thomas

ANNEXURE B: ETHICS APPROVAL PLAYFULNESS STUDY



UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee



Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492 • Facsimile [021] 406 6411
Email: Sumayah.ariefdien@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

23 October 2014

HREC/REF: 771/2014

A/Prof E Ramugondo
Occupational Therapy
Health & Rehab Sciences
F-45
OMB

Dear A/Prof Ramugondo

Project Title: THE EFFECTS OF A PLAY-INFORMED CAREGIVER-IMPLEMENTED HOME BASED INTERVENTION ON PLAYFULNESS FOR HIV POSITIVE CHILDREN ON HAART FROM A LOW SOCIO-ECONOMIC STATUS (MSc-candidate-A Uys)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above mentioned study.

Approval is granted for one year until the 30 October 2015.

Please submit a progress form, using the standardised Annual Report Form, if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

We acknowledge that the following student:-Anande Uys is also involved in this project.

Please note that the on-going ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.

Hrec/ref:771/2014

ANNEXURE C: PERMISSION LETTER TO ACCESS GROOTE SCHUUR HOSPITAL



GROOTE SCHUUR HOSPITAL

Enquiries: Dr Bhavna Patel

E-mail : Bhavna.Patel@westerncape.gov.za

Associate Professor E. Ramugondo
Occupational Therapy
Health & Rehabilitation
F56.76 – Old Main Building

E-mail: oletwani.ramugondo@uct.ac.za / paul.roux@uct.ac.za

Dear A/Professor Ramugondo

RESEARCH PROJECT: The Effects of Play-informed Care Giver Implemented Home-based Intervention on Participation Outcomes for HIV Positive Children on Hoar and Living in Families with Low Socio-Economic Status

Your recent letter to the hospital refers.

You are hereby granted permission to proceed with your research.

Please note the following:

- a) Your research may not interfere with normal patient care
- b) Hospital staff may not be asked to assist with the research.
- c) No hospital consumables and stationary may be used.
- d) **No patient folders may be removed from the premises or be inaccessible.**
- e) Please introduce yourself to the person in charge of an area before commencing.
- f) Please provide the research assistant/field worker with a copy of this letter as verification of approval.
- g) Confidentiality must be maintained at all times.

I would like to wish you every success with the project.

Yours sincerely

DR BHAVNA PATEL
CHIEF EXECUTIVE OFFICER
Date: 14th January 2014

C.C. Mr Lionel Naidoo
Dr Janine Hendricks
Mrs Rogini Pillay

G46 Management Suite, Old Main Building,
Observatory 7925

Tel: +27 21 404 6288 fax: +27 21 404 6125

Private Bag X,
Observatory, 7935

www.capegateway.gov.za

ANNEXURE D: FORMS FOR PARTICIPATION IN RESEARCH STUDY (ENGLISH)



School of Health and Rehabilitation Sciences

Faculty of Health Sciences

Divisions of Communications Sciences and Disorders,
Nursing and Midwifery, Occupational Therapy,
Physiotherapy

F45 Old Main Building, Groote Schuur Hospital,

Observatory 7925

Dear parent/caregiver

Thank you for taking the time to read this information letter. My name is and I am an occupational therapist (OT) busy doing research with other researchers.

We have found that many of our children attending our ARV clinics are developing and learning slowly and/or struggling at school. We have also found that our caregivers are struggling to meet the needs of their children in this specific area, of development and learning. Therefore, we are researching what are effective ways to improve development, play and learning for children living with HIV.

We are researching two different types of therapy. A computer program will randomly allocate all participants to only one of the two therapies so unfortunately you and your child will not be able to choose which therapy you will receive.

One therapy involves individual therapy where your child would be seen by an occupational therapist for an hour, working on your child's specific needs. The other therapy involves 1,5 hour group sessions for caregivers and their children facilitated by an occupational therapist. These groups will assist caregivers to know how to stimulate their children at home. These therapies will take place once a month at Groote Schuur with 10 sessions in total. Therefore, a monthly commitment will be required from you and your child to be able to attend most of the sessions.

To be able to see whether our therapy is effective we will need to assess the children and require you to fill in some forms. We need to assess the children before, during and after the therapy to record progress. Assessments will be approximately 2,5 hours for all the assessments and forms that you and your child will complete and needs to be completed at 5 to 6 month intervals. For the assessments your child will be required to complete certain activities for example, building blocks, running or drawing. Your child will also be video recorded on how they naturally play in the Groote Schuur playroom. The researchers will be the only ones who will look at this video and then the video will be destroyed afterwards. You will also be required to fill in forms regarding general details about your family and how you feel about parenting. Your assessments and details will be kept strictly confidential.

At some point during the study, you and your child will be provided with a 'GO box' (a take home toolkit) in which various materials such as balls, crayons, and toys will be provided for you to use with your child at home. Assessments and therapy will be carried out at Groote Schuur Hospital, at the pediatric out-patient clinic where you bring your child for follow-up treatment. The researchers will find out from you about suitable time convenient for you and your child. You and your child will be provided with R20 to help cover the cost of using public transport. You and your child will receive this on the day of each visit.

You and your child are under no pressure to participate in this study and you have the right to withdraw at any point without providing an explanation. There will be no penalty involved should you or your child wish to withdraw. The researchers or the hospital cannot use your decision to refuse participation or withdraw against you or your child in any way.

There are no risks in taking part in the study and there will not be any reward. Findings from the study will be analysed by the research team and used for presentations, reports and research publications. Your identity as well as your child will not be revealed when the results are reported for research.

Thank you for considering this request. Please find the consent form attached for you to complete. Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee of the University of Cape Town (HREC Reference number 560/2013).

Please forward any question or concern you may have regarding this research to the contact details furnished below.

Researchers' details:

Robyn Meissner (robyn.jess@gmail.com)
Jessica Ferguson (ferguson.jes@gmail.com)
Caraleigh Otto (caraleigh@nthandohome.co.za)
Anande Uys (anandeuys@gmail.com)
Cell: 0737150749

If you any questions about your rights and welfare as a research participant, please contact:
Human Research Ethics Committee
Groote Schuur Hospital
Tel: 021 406 6626

Principal Investigator:

A/Prof Professor Elelwani Ramugondo
Elelwani.Ramugondo@uct.ac.za
021- 406 6048

Chairperson of the UCT faculty of Health Sciences Human Research Ethics Committee:

Professor Marc Blockman
021- 406 6496



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Consent form to participate in study titled: The effects of play-informed care-giver implemented home-based intervention on participation outcomes for HIV positive children on HAART and living in families with low socio-economic status.

I, (caregiver's name) have received the information sheet from
..... (researcher's name) about the research study.

The following has been explained to me:

- The purpose of the research study
- The two types of intervention: Group and individual therapy
- Monthly commitment for intervention
- R20 to assist with transport
- Assessment to record progress before, during and after intervention
- Video assessment
- Box of toys received at some time during the next 12 to 14 months
- Confidentiality
- No pressure or obligation to be part of the study
- I can withdraw at any stage without negative consequences

I understand what is required of me and my child to participate in the study. All my questions have been answered. I do not feel that my child or I are being forced to partake in this study. I choose to participate of my own free will. I am aware that I can withdraw from the study at any time should I wish to do so. I have been assured that if I refuse to participate in the study or choose to withdraw at a later stage there will be no consequences for me or my child.

Tick your chosen response:

- I do consent to both our participation in the study (you agree).
- I do NOT consent to both our participation in the study (you disagree).
- I do consent to the video assessment (you agree).
- I do NOT consent to the video assessment (you disagree)

Signed:..... Date:

Caregiver Full Name:.....

Place:.....

Researcher:.....Signed:..... Date:.....

Witness:.....Signed:..... Date:.....

If child's legal guardian is not the caregiver:

I do consent to my child's participation in the study (you agree) with the above caregiver.

I do NOT consent to my child's participation in the study (you disagree).

Signature of guardian:..... Date:.....

Guardian Full Name:.....

Information letter to child participants for participation in main research study:



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My name is and I am an OT busy doing research about how to improve play and learning in children. My team and I would like to find out whether working with parents/caregivers is the same or even better than working with children alone in improving learning and play in the children.

I have asked your parent/caregiver if you can help join us in the study, and he/she said it is alright. If you would like to take part in the study, you will need to do come to the clinic with your parent/caregiver once a month and do things like kicking a ball, cutting with scissors, tying shoe-laces and identifying shapes, for almost an hour. You will sometimes be video-taped while playing with your friends in the play-room at the clinic. You may need to do some activities at home with your parent/caregiver on the things you learnt at the clinic. If you say yes, but change your mind later, you can tell us you want to stop. You can ask me any question you want about the study.

Assent forms for child participants to participate in the main research study:

I am  happy to be part of the study

I am  unhappy to be part of the study

Please circle the first face if you would like to be part of this study, or circle the second face if you would not like to be part of this study.

Signed:

Parent / Guardian

Researcher


Witness

Date and place

Date and place

Date and place

ANNEXURE E: FORMS FOR PARTICIPATION IN RESEARCH STUDY (AFRIKAANS)

	School of Health and Rehabilitation Sciences
	Faculty of Health Sciences
	Divisions of Communications Sciences and Disorders, Nursing and Midwifery, Occupational Therapy, Physiotherapy
	F45 Old Main Building, Groote Schuur Hospital, Observatory 7925

Beste Ouer/Voog

Dankie dat u die tyd neem om hierdie inligtingsbrief te lees. My naam is en ek is 'n arbeidsterapeut wat op die oomblik navorsing doen saam met ander navorsers.

Ons het gevind dat baie van die kinders wat ARV klinieke toe kom, stadig leer en ontwikkel, of sukkel in die skool. Ons het ook gevind dat baie van ons voogde of kinderversorgers sukkel om die behoeftes van kinders na te kom, veral in die areas van ontwikkeling, leer en speel. Dus het ons besluit om effektiewe maniere van ontwikkeling, speel en leer vir kinders wat met MIV saamleef, na te vors.

Ons doen navorsing oor twee tipes terapie. 'n Rekenaarprogram sal outomaties alle deelnemers aan net een tipe terapie allokereer, op arbitrêre wyse. Gevolglik sal u ongelukkig nie kan kies watter terapie u wil ontvang nie.

Een soort terapie behels dat die arbeidsterapeut u kind individueel sal sien vir omtrent 'n uur, en aan die kind se spesifieke behoeftes werk. Die ander soort terapie behels 1.5 uur groep-sessies vir voogde en die kinders in hul sorg, gefassiliteer deur 'n arbeidsterapeut. Hierdie groepe sal versorgers assisteer deur hul te wys hoe om die kinders tuis te stimuleer vir ontwikkeling. Albei soorte terapie is voordelig vir die kinders en sal een keer per maand plaasvind by Groote Schuur Hospitaal met 'n total van 10 sessies. Dus sal u uself en die kind maandeliks moet verbind om een keer per maand by die hospitaal te wees om meeste van die sessies by te woon.

Om vas te stel of ons terapie effektief is, sal ons die kind se vordering moet assesseer en u moet vra om 'n paar vorms in te vul. Ons moet die kinders voor, tydens en na die terapie assesseer om vordering aan te teken. Assesserings sal omtrent 2.5 ure duur en moet elke 6 maande gedoen word. Vir die assesserings sal die kind sekere aktiwiteite moet voltooi soos by voorbeeld: blokkies bou, hardloop of teken. U kind sal ook met 'n videokamera verfilm word tydens 'n natuurlike speelyd in die Groote Schoor speelkamer. Slegs die navorsers sal na hierdie video-opnames kyk en daarna sal die video vernietig word. U sal ook gevra word om algemene inligting van u familie in te vul op vorms, asook hoe u voel daarvoor om 'n ouer te wees. U assesserings en inligting sal streng vertroulik bewaar word.

Tydens die studies sal u op 'n stadium voorsien word van 'n 'TUIS boks' ('n huis-toe-vat gereedskapskas) waarin verskeie materiale soos balle, kryte en speelgoed aan u voorsien sal word om by die huis te gebruik saam met u kind. Assesserings en terapie sal by Groote Schuur Hospitaal se Pedreatiese buite-pasiënte kliniek, waar u u kind bring vir opvolg behandeling, gedoen word. Die navorsers sal by u uitvind watter tyd die maklikste vir u sal wees. R20 sal aan u gegee word om te help met die koste van publieke vervoer wat u gebruik vir die dag. U sal die bedrag ontvang op elke dag van u besoek vir terapie.

U is onder geen druk om deel te neem aan die studie nie en u het enige oomblik tydens die studie die reg om te onttrek van die studie sonder om 'n rede te gee. Daar sal geen negatiewe gevolge wees as u wil onttrek nie. Die navorsers of hospitaal kan onder geen omstandighede u besluit teen u gebruik deur dit teen u te hou of hulp van u te ontnem nie.

Daar is geen risiko's verbonde aan die deelname aan die studie nie en daar sal geen beloning of betaling wees nie. Bevindinge van die studie sal deur 'n navorsingsspan geanaliseer word en gebruik word vir voorstellings, verslae en navorsingspublikasies. Wanneer die resultate in navorsingsverslae gebruik word, sal u identiteit nie geopenbaar word nie.

Dankie dat u ons versoek oorweeg. Vind asseblief die aangehegte toestemmingsvorm vir u om in te vul. Etiese goedkeuring is van die Fakulteit van Gesondheidswetenskappe se Menslike Navorsing Etiese Komitee van die Universiteit van Kaapstad ontvang (HREC Verwysingsnommer 560/2013).

Stuur asseblief enige vrae of bekommernisse wat u mag hê oor die navorsing na een van die volgende persone.

Navorsers se kontakbesonderhede:

Robyn Meissner (robyn.jess@gmail.com)

Jessica Ferguson (ferguson.jes@gmail.com)

Caraleigh Otto (caraleigh@nthandohome.co.za)

Anande Uys (anandeuys@gmail.com)

Sel: 0737150749

Hoof Ondersoeker:

A/Prof Professor Elelwani Ramugondo

Elelwani.Ramugondo@uct.ac.za

021- 406 6048

Voorsitter van die Universiteit van Kaapstad Fakulteit van Gesondheidswetenskappe Menslike Navorsing Etiese Komitee:

Professor Marc Blockman

021- 406 6496



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Toestemmingsvorm vir die deelname aan studie genaamd: Die resultate wat spel-ingeligte kinderversorgers wat tuisgerigte intervensies fasiliteer op Deelname Uitkomst vir MIV-positiewe kinders op HAART en die leef in families met lae sosio-ekonomiese status het.

Ek, (versorger naam) het die inligtingsblad oor die studie van (navorsers naam) ontvang.

Die volgende is aan my verduidelik:

- Die doel van hierdie navorsingsstudie
- Die twee tipes intervensie: Groeps- en Individuele terapie
- Die maandelikse verbintenis wat ek maak vir die verloopstyd van die intervensie.
- R20 bydrae vir Vervoerkostes
- Assessering om vordering voor, tydens en na intervensie aan te teken.
- Video assessering
- Boks speelgoed wat ontvang sal word binne die volgende 12 tot 14 maande
- Vertroulikheid
- Geen druk of verpligting om deel te neem aan die studie nie
- Ek kan enige tyd onttrek sonder enige negatiewe gevolge

Ek verstaan wat van my en die kind wat ek versorg verwag word, om deel te neem aan die studie. Al my vrae is beantwoord. Ek voel nie dat ek of die kind geforseer word om deel te neem aan die studie nie. Ek kies om deel te neem uit my eie vrye wil. Ek is bewus daarvan dat ek enige tyd van die studie kan onttrek as ek sou wou. Ek is verseker dat indien ek of die kind sou kies om op 'n latere stadium te onttrek uit die studie, ons geen negatiewe gevolge sal beleef of ervaar nie.

Merk u keuse:

- Ek wil deelneem aan die studie. (u stem ooreen).
- Ek wil NIE deelneem aan die studie nie (u stem nie ooreen nie).
- Ek wil die video afname doen (u stem ooreen).
- Ek wil NIE die video afname doen nie (u stem nie ooreen nie)

Geteken:.....Datum:

Versorger se volle name:.....

Plek:.....

Navorsers:.....Geteken:.....



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My naam is en ek is 'n Arbeidsterapeut wat navorsing doen oor hoe om speel en leer onder kinders te bevorder. Ek en my span wil graag vasstel of dit dieselfde uitwerking sal hê of selfs beter sal wees om met ouers en kinderversorgers te werk in plaas daarvan om net met kinders te werk om speel en leer onder kinders te bevorder.

Ek het jou ouer/voog gevra of jy ons kan help met die studie, en hy/sy het ingestem. As jy aan die studie wil deelneem, sal jy een keer 'n maand saam met jou ouer/voog kliniek toe moet kom en dinge doen soos om 'n bal te skop, met 'n skêr te sny, jou veters moet vasmaak en vorms moet uitken vir omtrent 'n uur. Jy sal partykeer met 'n videokamera verfilm word terwyl jy met jou maats speel in die speelkamer by die kliniek. Jy sal dalk 'n paar aktiwiteite wat jy by die kliniek geleer het saam met jou ouer/voog by die huis moet doen. As jy ja sê, maar later nie meer wil deelneem nie, kan jy vir ons sê as jy wil ophou. As jy enige vrae het oor die studie, kan jy vir my vra.

ANNEXURE F: FORMS FOR PARTICIPATION IN RESEARCH STUDY (XHOSA)



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Molo Mzali/Bazali

Enkosi ngofundaincwadiyeimbalelwano. Igama ndingu..... ndingu mntu owenza uvavanyo.

Sifumanise ukuba baninzi abantwana abaza eARVclinc abafuyaniswe bekhula ngocotha/besokola eskolweni. Ngoku sense uvavanyo ngezinto abanokuthi bazenze ukuohuhlisa nokukhulisa indlela abakhula ngayo nobadlala ngayo bengabatwana abaphila no gawulayo.

Sifumene indlela ezimbini ezahlukileyo zovavanyo. Uvavanyo lokuqalalelomntwana omnye abonwe yedwa ngumntu lo uqeqeshelweyo uvavanyo elifuneka kumtana wakho nge yure exeliweyo. Olunye uvavanyo luthatha 1,5 iyure leyo bazobe bedibene nabanye abantwana nabazali kunye nomqeqeshi lowo. Ezondibano zoba zali zobe zancedisa ulwazi ekuphatheni abantwana emakhaya. Zombini ezintlobo zovavanyo ziyimfuneko kwaye zibanjwela eGroote Schuur Hospital kanye enyangeni zona zilishumi xa ziphelele.

Kubalulekil umama nomntwana aze kuvavanyo elo avumelene nalo.

Ukuze sibone ukuba uvavanyo luyenziwa sakuhlola umntwana sikunike namaphetshona ekufuneka uwagcwalisile 5 - 6 inyanga ezibekiweyo.

Uvavanyo kumntwana uyacelwa agqibe ezinye izinto umzekelo bukwakha ibhokisi, ubaleka, ubhala. Umntwana uya kube eVideo recorded ngelishesha adlalayo eGroote Schuur. Ngobaqeqeshi bodwa abavumelekileyo ubukela iVideo yobantwanaobo bazobe be fotiwe ipheliswe emveni koko. Uyakucelwa ukuba ugcwalise iform le sizo kunika yona malunga nedlela oziva ngayo wena mzali. Womntwa ngo kumkhulisa.

Elovavanyo luhlalo luyimfihlo lugcinwe. Ekuhambeni kwexesha lofunda baza kunikwa izinto zokudlala emkhaya iball, crayons, toys, ubane indlela umntwana adlala ngayo ekhaya.

Uvavanyo luzokube lise sibhedlele apho umntwana azothothwa ngumqeqeshi/lomtu. Uvavanyayo kulendowo aqhele uzakuyo azothetha amayeza ache. Baza liva ngawe ixesha elilungele wena mzali lokuza kuvavanyo lomntwana. Bancedisa ngeR20 ukuba ukwazi uwela ngawo amaxesha usiza kubo.

Akukho sinyanzeliso kaluvavanyo ungayeka xa ufina unganyanzelekanga uchaze nto ikuyekisayo. Akukho mdlwiwo ufunekayo kuwexa uyeka uvavanyo. Isibhedlela asinoku sebenzisa isigqibo sakho sokuyeka koluvavanyo. Akukho bungozi koluvavanyo nembuyekezo ayikho. Isazisi sakho asiyi kuvezwa xo iziphumo zixelwa kuba nlalutyi benqubo le yenziwayo.

Enkosi ngothatha inqalelo koluvavanyo. Nceda uthathe iform uyigcwalise.

Zonke izinto ubuzigcwalisa zihlala ezibhedlele apho zijongwa ngabaqeqeshelwe University of Cape Town (HREC Reference number 560/2013).

Nceda uthumele imibuzo yakho malunga noluvavanyo inombolo uzakuzifumana ngezantsi.

Researchers' details:

Robyn Meissner (robyn.jess@gmail.com)
Jessica Ferguson (ferguson.jes@gmail.com)
Caraleigh Otto (caraleigh@nthandohome.co.za)
Anande Uys (anandeuys@gmail.com)
Cell: 073 715 0749

Principal Investigator:

A/Prof Professor Elelwani Ramugondo
Elelwani.Ramugondo@uct.ac.za
021- 406 6048

Chairperson of the UCT faculty of Health Sciences Human Research Ethics Committee:

Professor Marc Blockman
021- 406 6496



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Umna, ndingu mzali womntwana ndifumene imbalelwana
ku..... malungu novavanyo lomntwana.

Ezi Zilandelayo ndizixelelwe/zicacisiwe kum:

- Unobangela Wovavanyo
- Indlela zimbini ekwenziwa ngazo badibana bonke okanye abayedwa
- Uza ngenyanga kubekanye
- Sincedisisa ngeR20 yokukwela
- Uvavango luyagcinwa kroqo bedibona
- Ne Video ikhona
- Izinto zokudlala bazozinikwa xa besakuvavanyo lwexesha eli 14 months
- Kuyimfihlo okwenziwayo konke
- Akho sinyanzeliso/ube koluvavanyo
- Ungayeka uthanda nanini na ufuna

Ndiyasisa isicelo mna no mntwana soba sithathe inxaxheba kuvavanyo. Zonke imibuzo yam ipendulekile.
Andivi ngathi mna nomntwana wam sinyanzelwe kolu vavanyo. Ndizikhethela ngendlela yam ekhululekileyo.
Ndiyayazi ukuba ndingayeka nange liphi na ixesha ndifuna. Ndixelelwe/ndaqinisekiswa ukuba andifuni
kuthatha nxaxheba/ndayeka pakathi akuzukuba khonto ichapazela mna nom twana wam.

Khetha Izimvo Zakho

- Ndiyazi/ndivuma ngexaxheba yam kuvavanyo
- Andivum/ndingafuni uthatha inxaxheba kuvanyo

Signed:..... Date:

Caregiver Full Name:.....

Place:.....

Researcher:..... Signed:.....



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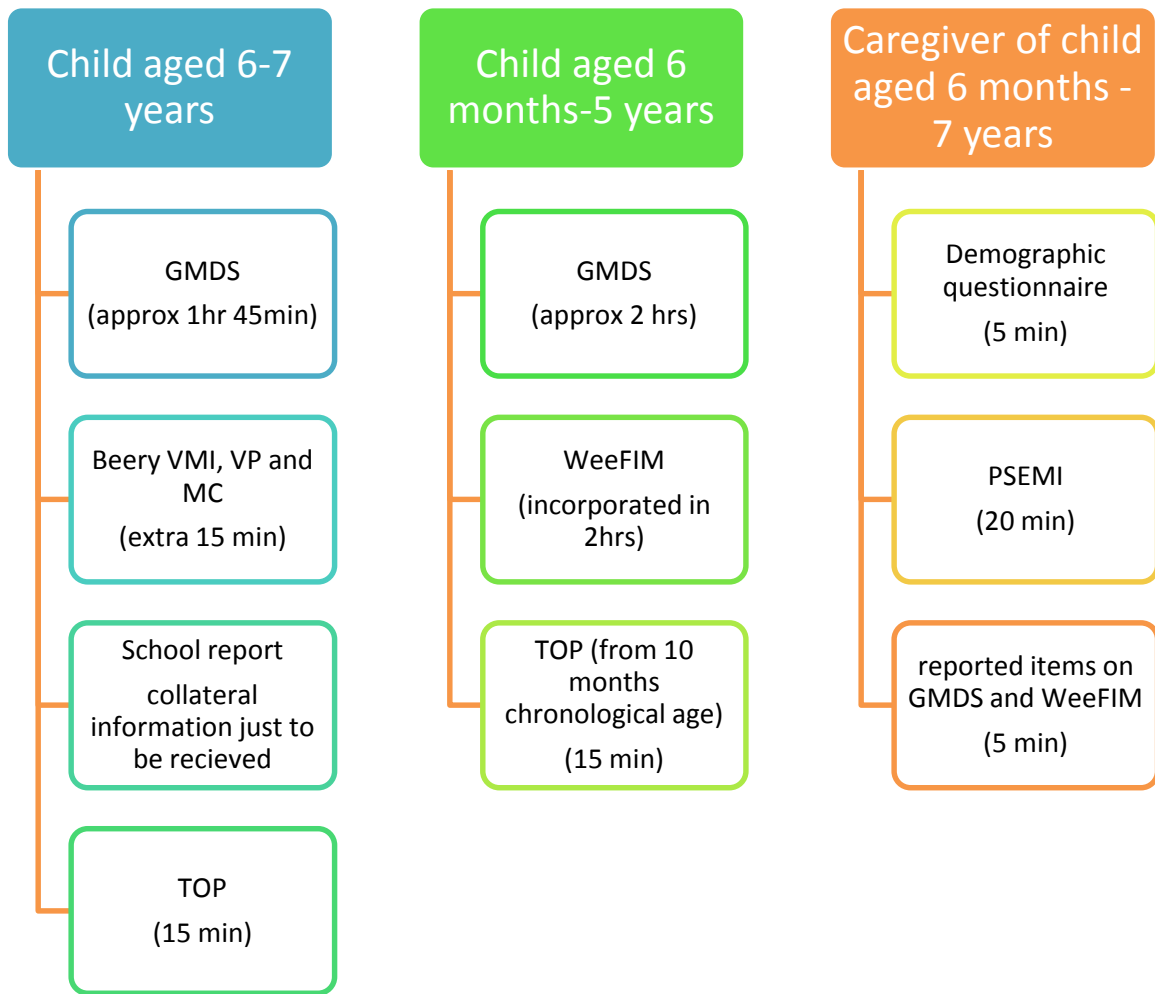
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Igama lam ndingu..... ndeza uvavanyo malunga noku khulisa umdlalo unfundisa, ebantwaneni. Ndina banye endincedisana nobo singavuya ukuva ukuba sincedisane nabazali kunye ngexesha elinye okanye sisebenze sodwa ukukhulisa izinga lemfundo yobontwana. Ndikubuzile mzali ukuba uyafuna na ukuba kunye nathi koluvavanyo. Uba uyavuma funeka uthathe inxaxheba kivavanyo. Uze rhaqa eclinic nomama wakho kanye enyangeni. Uzakwenza inzinto umzekelo ukhaba ibhola, cutting with scissors, uqhobosha imitya yesuhlangu uhlula ishapes. Kangange yure 1.

Izakuba khona Video ngoku udlala nobahlobo egumbini lodlala eclinic. Kufuneka wenze izinto ekhanyeni nobazeli bakho izinto ezifunileyo eclinic. Uba uyavuma kodwa uphinde uyeke phakathi ungasixelela. Ungandibuza yonke imbizo oyifunayo malunga novavanyo.

ANNEXURE G: ASSESSMENT MAP



ANNEXURE H: TEST OF PLAYFULNESS PROTOCOL SHEET

TEST OF PLAYFULNESS (ToP) (Version 4.0-5/05)

Child (#): _____ Age: _____ Rater: _____ In Out Video Live (Circle)	EXTENT 3 = Almost always 2 = Much of the time 1 = Some of the time 0 = Rarely or never NA = Not Applicable	INTENSITY 3 = Highly 2 = Moderately 1 = Mildly 0 = Not NA = Not Applicable	SKILLFULNESS 3 = Highly skilled 2 = Moderately skilled 1 = Slightly skilled 0 = Unskilled NA = Not Applicable	
ITEM	EXT	INT	SKILL	COMMENTS
Is actively engaged.				
Decides what to do.				
Maintains level of safety sufficient to play.				
Tries to overcome barriers or obstacles to persist with an activity.				
Modifies activity to maintain challenge or make it more fun.				
Engages in playful mischief or teasing.				
Engages in activity for the sheer pleasure of it (process) rather than primarily for the end product.				
Pretends (to be someone else; to do something else; that an object is something else; that something else is happening).				
Incorporates objects or other people into play in unconventional or variable and creative ways.				
Negotiates with others to have needs/ desires met.				
Engages in social play.				
Supports play of others.				
Enters a group already engaged in an activity.				
Initiates play with others.				
Clowns or jokes.				
Shares (toys, equipment, friends, ideas).				
Gives readily understandable cues (facial, verbal, body) that say, "This is how you should act toward me."				
Responds to others' cues.				
Demonstrates positive affect during play.				
Interacts with objects.				
Transitions from one play activity to another with ease.				

Figure 4-9
ToP protocol sheet.

(Skard & Bundy, 2008:78)

ANNEXURE I: TEST OF PLAYFULNESS ITEM DESCRIPTORS

Table 4-1
Definitions of ToP Items

<i>Item</i>	<i>Description</i>
Is actively engaged.	Extent—Proportion of time player is involved in activities rather than aims at wandering or other nonfocused activity or temper tantrums. Intensity—Degree to which the child is concentrating on the activity or playmates. Skill—Players' ability to stay focused or carry a play theme from activity to activity.
Decides what to do and how to do it.	Extent—Proportion of time when players actively choose what they are doing. Players may decide to do what another is doing, but no one is forcing them or rewarding them for doing the activity.
Maintains level of safety sufficient to play.	Extent—Proportion of time when players feel safe enough to play. If necessary, players may alter the environment.
Tries to overcome barriers or obstacles to persist with an activity.	Intensity—Degree to which the child perseveres in order to overcome obstacles to continuing the activity.
Modifies activity to maintain challenge or make it more fun.	Skill—Ease with which the child actively changes the requirements or complexity of the task in order to vary the challenge or degree of novelty.
Engages in playful mischief or teasing.	Extent—Proportion of time when players are involved in playful teasing or minor infractions of the rules designed to make the play more fun. Skill—The ease, cleverness, or adeptness with which players create and carry out mischief or teasing.
Engages in activity for the sheer pleasure of it (process) rather than primarily for the end product.	Extent—Proportion of time when players seem to want to do the activity simply because they enjoy it rather than to attain a particular outcome or for some extrinsic reward.
Pretends (to be someone else; to do something else; that an object is something else; that something else is happening).	Extent—Proportion of time when there are overt indicators players are assuming different character roles, pretending to be doing something, pretending something is happening, or pretending an object or person is something else. Skill—The degree to which the "performance" convinces the examiner.

Continued

(Skard & Bundy, 2008:76)

Table 4-1
Definitions of ToF Items—cont'd

<i>Item</i>	<i>Description</i>
Incorporates objects or other people into play in unconventional or variable ways.	Extent—Proportion of time when players (1) use objects commonly thought of as toys in ways other than those the manufacturer clearly intended, (2) incorporate objects not classically thought of as toys into the play (e.g., bugs, table legs), or (3) use one toy or object in a number of different ways. Creativity is a key. Skill—The ease or cleverness with which players incorporate objects or other people in creative ways.
Negotiates with others to have needs/desires met.	Skill—Ease and finesse with which players verbally or nonverbally ask for what they need.
Engages in social play.	Extent—Proportion of time during which player interacts with others involved in the same or similar activity. Intensity—The depth of the player's interactions with other people during play. Skill—The level of social play. Ranges from playing a one to being the leader.
Supports play of others.	Skill—Ease with which players support play of others (e.g., encouragement, ideas).
Enters a group already engaged in an activity.	Skill—Ease with which player does something to become part of a group (two or more) already engaged in an activity; the action is not disruptive to what is going on.
Initiates play with others.	Skill—Ease with which player initiates a new activity with another.
Clowns or jokes.	Extent—Proportion of time when players tell jokes or funny stories or engage in exaggerated, swaggering behavior, usually for the purpose of gaining others' attention. Skill—The ease or cleverness with which a player clowns or jokes. Ranges from not gaining others' attention to gaining positive reactions from others to being overtly funny.
Shares (toys, equipment, friends, ideas).	Skill—The ease with which players allow others to use toys, personal belongings, or equipment they are using or share playmates (friends) or ideas.
Gives readily understandable cues (facial, verbal, body) that say, "This is how you should act toward me."	Extent—Proportion of time during which players act in a way to give out clear messages about how others should interact with them.
Responds to others' cues.	Extent—Proportion of time during which the child acts in accord with others' play cues.
Demonstrates positive affect during play.	Intensity—Degree to which player's affect is positive ranges from mild enjoyment to real exuberance.
Interacts with objects.	Intensity—The degree to which players get involved with objects. Skill—The ease with which players interact with objects.
Transitions from one play activity to another with ease.	Skill—The ease with which players move from activity to activity when one has ended or is not evolving and another is available.

(Skard & Bundy, 2008:77)

ANNEXURE J: DEMOGRAPHICS QUESTIONNAIRE



Demographics Form

to be filled in by primary caregiver

Grey sections are to be filled in by researchers only

Administrated by: _____

Participant number/code: _____

Instructions: Please read the questions carefully and answer according to what applies to you and your family. Please ensure you answer all the questions. If you need any clarification on a question please ask the researcher or assistant to help you. Some questions require you to tick the relevant box related to your answer and other questions require you to write in your response. Please read the question to know whether you should tick only ONE option – if more than one option applies tick the one that applies the most. Some question will say that you can tick more than one option. If you make a mistake and mark the incorrect box, clearly scratch out the box and tick the new, correct answer. The questions are written in Xhosa in italics below the English question. If you need further assistance with language translation, please ask an assistant. Please answer honestly. Remember your results are kept confidential.

CAREGIVER'S DETAILS

1. How much time during the week are you usually with your child? This refers to time awake with the child therefore does not include sleeping time. Please tick only ONE answer.

Lingaphi ixesha olichithayo nomtwana wakho?

- Less than 7 hours per week
 8 to 20 hours per week
 more than 20 hours per week (most of your time is spent with the child)

1. _____

2. What is your home language? Tick ONE answer.

Uthetha oliphi ulwimi?

- English
 Afrikaans
 isiXhosa
 isiZulu
 Shona
 seSotho
 Other (specify) _____

2. _____

3. Please indicate which ONE of the 3 following languages is MOST spoken in your home. Tick ONE answer.

Bonisa loliphi ulwimi kula mathathu enilisebenzisa endlini.

- English
 Afrikaans
 isiXhosa

3. _____

4. What language do you prefer to read? Tick ONE answer.

Ufuna unfunda ngoluphi ulwimi.

- I cannot read
 English
 Afrikaans
 Xhosa
 I cannot read any of these specific languages

4. _____

5. What is YOUR (caregiver) age?
Mingaphi iminyata yakho? _____

5. _____

6. What is YOUR (caregiver) gender? (*Please tick your answer*)
Sithini isini sakho?

- Male
 Female

6. _____

7. What is YOUR (caregiver) highest level of education COMPLETED? Tick ONE answer.
Loluphi ubanga oluphezulu elwenzileyo?

- None
 Grade 1
 Grade 2
 Grade 3
 Grade 4
 Grade 5
 Grade 6
 Grade 7
 Grade 8
 Grade 9
 Grade 10
 Grade 11
 Grade 12 (Matric)
 1 year post school
 2 years post school
 3 years post school
 4 or more years post school

7. _____

8. Are you the biological parent of the child?
Ungumzali womtwana?

- Yes
 No

8. _____

9. If you answered 'no' to the above question, what is your relationship with the child?
Ukuba awunguye uyintoni emntwaneni?

- Grandparent
 Aunt / uncle
 Sister / brother
 Foster parent
 Other. Please specify _____

9. _____

10. How many children under the age of 18 do you take care of, in total (including child attending clinic)?

Bangaphi abantwana obanakekewayo abangaphantsi kweminyaka elishumi elinesibhozo?

- 1
 2
 3
 4
 5
 6
 7
 more than 7

10. _____

11. How old are the other children in the house? Fill in the children's ages in the gaps below.
Ungwesingaphi umntwana kubantwana bakho enduni?

Age of child 1: _____; age of child 2: _____; age of child 3: _____; age of child 4 _____;
age of child 5: _____; age of child 6: _____; age of child 7: _____

11. _____

12. How many other adults over the age of 18 do you live with at home?
Bangaphi abanye abantu abadala abangaphezulu kweminyaka elishumi elinesithoba?

- 0, I do not live with any other adults
 1 other
 2 others
 3 others
 4 others
 5 others
 6 others
 7 others
 more than 7 others. Specify amount: ____ others.

12. _____

13. What is the total amount of money that you and your family (who you live with) live off every month? This INCLUDES salaries, grants and all other sources of income. Tick ONE answer.
Yimalini imali olubanayo usapho lwakho ngempela nyanga?

- No income
 R1 - R400
 R401 - R800
 R801 - R1 600
 R1 601 - R3 200
 R3 201 - R6 400
 R6 401 - R12 800
 R12 801 - R25 600
 R25 601 - R51 200
 R51 201 - R102 400
 R102 401 or more

13. _____

14. What is YOUR (caregiver) level of employment? Tick all that apply.
Lithini izinga lomsebenzi/lengzesho?

- Unemployed: Looking for work Stay at home mom/parent Retired
 Kidzpositive Beadwork project
 Self-employed
 Part-time employment
 Full-time employment
 Seasonal/occasional employment

14. _____

CHILD'S DETAILS

15. What is your child's date of birth?
Uzelwe nini umntwana wakho? _____

15. _____

16. How many weeks were you/the biological mother pregnant when the child was born?
Ubuneveki ezingaphi ngoki ubunkhule lwe uzaku beleka?
 Under 29 weeks. The child was born very early – more than 3 months early (very premature).
 29 to 36 weeks. The child was born early (premature)
 37 weeks or more. The child was born at full term.
 I do not know 16. _____

17. Were there any problems during birth?
Zibekhona ingxaki xa ubeleka?
 Yes. Please specify _____

 No
 I do not know 17. _____

18. Are there any other confirmed medical diagnoses (other than HIV+)?
Zibekhona ezingxelo ezibonwe kuwe ngugqirha ngaphandle ko gawulayo?
 Yes. Please specify _____
 No
 I do not know 18. _____

19. Where is your child USUALLY during the day in the week? Tick ONE answer.
Ubaphi umntwana wakho emini phakathi, evekini?
 My child attends crèche/play school
 My child attends formal school
 My child stays with me during the day
 My child goes to another friend/family member/day mother during the day 19. _____

20. What is the name of your child's school?
Ngubaniigama lomntwana wakho esikolweni?
Please specify _____
 My child does not go to school. 20. _____

21. If your child is in school, what grade is he/she in?
Ukuba umntwana wakho useskolweni/wenza eliphi ibanga?
 Crèche
 Grade R
 Grade 1
 Grade 2
 Grade 3
 My child is not in school 21. _____

22. If your child is in school, is it a mainstream (normal) school or special school?
Ingaba umntwana wakho usesikolweni? Sisikolo somntu wonke okanye sesemeko emalunga nomntwana?
 Mainstream (normal) school
 Special school
 My child is not in school 22. _____

23. If your child is in school, has he or she failed any grades?
Mntwana wakho ukhe waliphinda ibanga?
 Yes. Specify grade _____
 No
 My child is not in school 23. _____

24. If your child is attending school, what is the MAIN language medium of the school that is taught to your child? Tick ONE answer.

Ukube umntwana wakho uyafunda loluphi ilwini lakhe lokuqala?

- English
- Afrikaans
- Xhosa
- Other. Please specify _____
- My child is not in school

24. _____

25. How long has your child been on HAART?

Unexesha elingakanani umntwana wakho efumana unyango?

- Less than 2 months
- 2 - 6 months
- 7 - 11 months
- 1 year
- 2 years
- 3 years
- 4 years
- 5 years
- 6 years
- 7 years
- 8 years

25. _____

26. How do you feel about your child's learning, development and play skills? Tick ONE answer.

Uva njani ngezifundo zomntwana wakho, kwizakhono zophuhliso?

- I am very concerned that he/she is developing very slowly and is far behind other children of the same age
- I feel that he/she is developing a little slower than other children of the same age
- I feel he/she is developing the same as other children his/her age
- I feel that he/she is developing a little better than other children of the same age
- I feel that he/she is developing very well and is far above the average compared to other children of the same age

26. _____

27. Is your child currently attending any of the following services? Tick ALL that apply

Ingaba umntwana wakho uyazifunda ezizifundo zilandelayo?

- Speech therapy
- Physiotherapy
- Occupational therapy (OUTSIDE OF GSH G26 clinic)
- Remedial teaching
- Psychologist
- Audiology
- Dietician
- Other. Please specify _____
- None, my child is not attending any other support services outside of GSH

27. _____

28. Has your child previously attended any of the following services? Tick ALL that apply

Ingaba umntwana wakho ukhe wahlangana nenye yesinkqubo?

- Speech therapy
- Physiotherapy
- Occupational therapy (OUTSIDE OF GSH G26 clinic)
- Remedial teaching
- Psychologist
- Audiology
- Dietician
- Other. Please specify _____
- None, my child is not attending any other support services outside of GSH

28. _____

29. Has your child ever had their hearing tested? (at school or at hospital/clinic)?

Umntwana wakho ukhe waxilongelwa ndlebe esikolweni okanye esibhedlela/ekliniki?

- Yes: result: normal/good hearing; poor hearing
- No
- I do not know

29. _____

30. Has your child ever had their vision tested? (at school or at hospital/clinic)?

Umntwana wakho uke waxilo ngelwa amehlo? Esikolweni okanye esibhedlela/ekliniki?

- Yes: result: normal/good vision; poor vision
- No
- I do not know

30. _____

31. Can you specify any concerns that you might have about your child's development (if any).

Ungasichazela ngendlela ovangayo ngokukhula komntwana wakho.

31. _____

32. Who is the MAIN person who plays with the child? Tick ONE answer.

Ngubani oyena mntu udlala nomntwana?

- The child mainly plays by himself/herself
- You, the caregiver
- Another adult (over 18 years)
- A younger child in your house
- An older child in your house (that is younger than 18 years)
- Another child outside the house eg (neighbour or friend)

32. _____

33. What are 3 of your child's favourite toys/things that s/he plays frequently with?

Zintoni ezintathu zokudlala ezinhandwa ngumntwana wakho?

1. _____
2. _____
3. _____

33. _____

34. Do you have a television inside your home?

Unaye umabona-kude?

- Yes
 No, we do not own a television. 34. _____

35. Is the television on every day?

Umabona-kude udlala yonke imihla?

- Yes
 No
 We do not own a television. 35. _____

36. Does your child watch television every day?

Umntwana wakho ubukela yonke imihla umabonakude?

- Yes
 No
 We do not own a television. 36. _____

37. How many hours a day does your child usually watch television? Tick ONE answer.

Uwubukela iyure ezingaphi umntwana wakho umabonakude ngosuku?

- Less than 1 hour
 1 hour
 2 hours
 3 hours
 4 hours
 5 hours or more
 We do not own a television. 37. _____

38. Does your child play in the same room/area as the television? Tick ONE answer.

Ingaba umntwana wakho udlala kweligumbi linye linomabonakude okanye kwelinye?

- Yes
 No
 No, my child is not allowed to play inside.
 We do not own a television 38. _____

39. Where inside the house does your child play (if they are allowed to play inside)?

Udlala phi imntwana wakho endlwini?

_____ 39. _____

----- Thank you for taking the time to complete this form -----

THIS PAGE IS TO BE FILLED IN BY RESEARCHER

Separate page of info to get from file or Road to Health card

Participant Code: _____

a) Primary G26 clinic Dr: Dr Mandy Inglis Dr Gwen Norton; Dr Rebecca Sher/Melissa Pascoe;
 Dr Kathie Walker; Dr Dale Zief (*Dr Wright is no longer with us so cannot be an answer*) a.

b) Primary Counsellor: Bonnie; Noxolo; Pumla; Sabrina; Vivienne b.

Birth History

c) Gestation _____ c.

d) Birth weight: _____ d.

e) Apgar 1min: 5min: not recorded _____ e.

f) Birth delivery: NVD; C/S; Unknown f.

g) Birth complications No problems; Problems. Specify:

_____ g.

Medical History

h) Date Started HAART _____ h.

i) Date Enrolled at G26 clinic _____ i.

j) Defaults History _____ j.

k) Line of Treatment 1st line; 2nd line; 3rd line k.

l) TB History No History; Yes History: dates _____ l.

m) Other Diagnoses No Yes: specify: _____ m.

Complimentary services

n) Other services attended in past. Eg dietician (Specify when, how often, GSH or service site etc)
Services currently attending (Specify when, how often, GSH or service site etc)

_____ n.

ANNEXURE K: PICIHBI INTERVENTION GROUP TOPICS

	6 months – 2 years 11 months	3 years-5 years 11 months	6-8 years
Session 1	Introduction and Gross Motor Development	Introduction and Gross Motor Development	Introduction and Gross Motor Development
Session 2	Discovery and Experimentation	Fine Motor Development (bilateral hand use, hand strength and isolative finger movements)	Fine Motor Development (hand strength, isolative finger movements, pencil grasp, motor control and cutting skill)
Session 3	Fine Motor Development (Sensorimotor messy play)	Language and Literacy (Shared reading and storytelling)	Numeracy (number concept, quantity and counting)
Session 4	Language and Literacy (oral motor development)	Visual Perception (position in space)	Literacy (reading and listening)
Session 5	Personal, Social and Self-care	Numbers and Size	Numeracy and Shapes
Session 6	Gross Motor Development	Gross Motor Development	Literacy (letter concept and phonics)
Session 7	Discovery and Experimentation	Fine Motor Development (drawing, pencil grasp and cutting skills)	Numeracy (patterns, sequencing and visual perceptual)
Session 8	Fine Motor Development (active grasp release, tool manipulation and eye hand coordination)	Language and Literacy (sounds and letter awareness)	Literacy (letter concept and phonics)
Session 9	Language and Literacy	Shapes	Numeracy (calculations)
Session 10	Parenting and Discipline	Numbers and Size	Literacy (reading and storytelling)

TABLE 9 PICIHBI Intervention Group Topics

ANNEXURE L: PICIHBI GO-BOX



PICTURE 1 GO BOX 6 MONTHS - 2 YEARS



PICTURE 2 GO BOX 3-5 YEARS



PICTURE 3 GO BOX GR R - GR 2

WORD COUNT

Total word count: 34 292

Excluding references: 32 504