CAREGIVER CHARACTERISTICS AND PERCEPTIONS, QUALITY OF INTERACTIONS WITH CHILDREN, AND CHILDREN'S DEVELOPMENT IN FAMILY-LIKE ORPHAN CARE IN SOUTH AFRICA

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This mixed-methods study included a total of 49 children (birth to 5 years) and 28 caregivers from two family-like institutional care settings in KwaZulu-Natal, South Africa. The purpose of the study was to assess the associations between caregivers' age, education, experience, depression, and social support and the quality of interactions they have with the young children in their care, and to test the associations between caregiver-child interaction quality and child attachment and growth outcomes. Results indicated that caregivers' perceived social support from friends was positively associated with caregiver-child interaction quality. In addition, among HIV+ children, interaction quality was positively associated with children's height *z*-scores, and regardless of children's HIV status, interaction quality was positively associated with children's weight *z*-scores. No other significant associations were found. The qualitative portion of the study included an in-depth exploration of caregivers' perceptions of their role, their reports of challenges they experience, and the resources they desire. Caregivers' discourse about what their role entailed included each of the six parental role beliefs that comprise Mowder's (2005) Parent Development Theory. This study contributes to the institutional orphan care field by addressing the shortage of research on care and development in existing family-like care settings, and includes recommendations for future research, policy, and practice.

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PREFACE

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1.0 INTRODUCTION

According to recent estimates, there are over 2 million Orphans and Vulnerable Children (OVCs) living in institutional care worldwide (UNICEF, 2009). These children often experience significant delays in multiple developmental domains (Bakermans-Kranenburg et al., 2011; Dobrova-Krol, van IJzendoorn, Bakermans-Kranenburg, Cyr, & Juffer, 2008; Engle et al., 2007; Gunnar, 2001). There is evidence that frequent transitions, high child-adult ratios, and social-emotional deprivation common to traditional institutions (i.e. “orphanages”), may be partially to blame for these delays, including delays in physical growth (Gunnar, 2001; Johnson et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2008). Not all institutions follow the patterns of traditional institutions. Intervention studies indicate that providing children with more family-like environments by restructuring standard care or transitioning children to foster care vastly improves their chances at healthy development (The St. Petersburg-USA Orphanage Research Team, 2008; Johnson et al., 2010). Current international policy dictates that children should be provided with care in the most family-like setting as possible (Cantwell, Davidson, Elsley, Milligan, & Quinn, 2013; United Nations, 2010). Family-like settings may include family-like institutional settings, such as children’s villages, where a small number of children of mixed ages are assigned to a single consistent caregiver in a home environment. However, limited research has been conducted within existing family-like institutional care environments.

Although it is well known that quality interactions between caregivers and children predict healthy development in children, little is understood about how caregivers' characteristics or perceptions of their role might affect the quality of interactions they engage in with children. Research on sensitivity of mothers and child care workers suggests that psychological well-being, perceived social support, and education are predictive of quality caregiver-child interactions within home or child care environments (Bernier, Jarry-Boileau, Tarabulsy, & Miljkovitch, 2010; Biringin et al., 2000; Burrous, Crockenberg, & Leerkes, 2009; de Kruif et al., 2000; Donovan, Leavitt, & Walsh, 1998; Gerber, Whitebook, & Weinstein, 2007; Hamre & Pianta, 2004; Kim & Kim, 2009; Leerkes, 2010; Raikes, Raikes, & Wilcox, 2005; Sterling, Warren, Brady, & Fleming, 2013; Stack et al., 2012; Tarabulsy et al., 2005; van Doesum, Hosman, Riksen-Walraven, & Hoefnagels, 2007). Evidence of these predictors among caregivers and an improved understanding of obstacles that prevent caregivers from investing fully in the lives of the children they care for may help inform how best to support quality caregiver-child interactions and relationships in the future of institutional care.

The primary aims of this study are to explore these under-examined areas by assessing caregiver characteristics and perceptions and their connection to the quality of care they provide in a family-like institutional model of care in South Africa and add to existing evidence that quality caregiver-child interactions are associated with children's development. The present study uses a mixed-methods approach, utilizing quantitative methods to examine whether caregivers' educational background, age, experience, sense of their role as "parent," depression, and social support are associated with quality of interactions between caregivers and young children, and whether interaction quality is associated with child attachment and physical growth outcomes. In addition, qualitative interviews are used to explore caregivers' perceptions of their role, obstacles they face in connecting with children, and perceived needs. Together, the present study was expected to produce valuable information which may be used to inform the design of future interventions and/or policy recommendations to improve supports for caregivers, with a long term goal of improving quality of care and resident children's opportunities for healthy development.

2.0 REVIEW OF THE LITERATURE

The following section provides a detailed review of the literature relevant to the present study. First, common characteristics of traditional institutional care for Orphans and Vulnerable Children (OVCs) and children's development within that care are explained, along with current international policy considerations. Next, research regarding children's physical growth and its connection to psychosocial deprivation and HIV is presented. Then, attachment theory is outlined, along with its connections to long-term outcomes, institutional care settings, and cultural variation. This is followed by an explanation of quality caregiver-child interactions, the theoretical importance and caregiver and context predictors of such interactions. Finally, the goals, hypotheses, and practical value of the present study are presented.

2.1 ORPHAN AND VULNERABLE CHILDREN CARE

Since the discovery of extremely deficient conditions in Romanian orphanages in the 1990s, there has been great concern over deprivation in institutional care for OVCs. Levels of institutional deprivation vary greatly from institution to institution and country to country, with varying conditions and models of care in existence around the globe. The extent of deprivation has been categorized into three levels. At the worst, institutions may be considered globally depriving, failing to provide for children's basic physical, cognitive, and social needs (Gunnar, 2001). Other institutions may provide proper health care and nutrition, but fail to provide adequate cognitive stimulation (Gunnar, 2001). The better institutions may provide for children’s physical and cognitive developmental needs, but still lack opportunities for children to form stable relationships with caregivers (Gunnar, 2001). Despite differing levels of physical provisions and stimulation, a few common institutional characteristics may consistently lead to the psychosocial deprivation described in this last level of deprivation (Dobrova-Krol et al., 2008). This psychosocial deprivation is thought to be at least partially responsible for developmental delays experienced by young children living in institutional care.

2.1.1 Characteristics of institutional care

Although different models of care exist, the most commonly studied institutional care model is what might be considered a traditional orphanage. In these settings, children are typically divided into groups by age, gender, and disability status (van IJzendoorn et al., 2011). There are many common characteristics within these settings that contribute to psychosocial deprivation described in Gunnar’s (2001) third level of deprivation.

2.1.1.1 Group size and child-adult ratio

Children in traditional institutions are typically cared for in large groups with high child-adult ratios. There are often as many as 9-16 children per ward, although in some cases the group size may be much larger (Rosas & McCall, 2011; van IJzendoorn et al., 2011). Reports of institutional care environments have suggested child-adult ratios can also be quite high, sometimes ranging from 8:1 to 31:1 (Rosas & McCall, 2011; van IJzendoorn et al., 2011). Such large group sizes and high ratios may provide caregivers with only enough time and resources to meet children's physical needs.

2.1.1.2 Transitions

Children typically experience numerous transitions throughout their stay in institutional care. Many institutions separate children into groups based on their age or developmental level, so children transition to a new ward with new peers and caregivers when they reach a new stage of development. Such transitions typically occur two to three times in the first 3 years of life (The St. Petersburg-USA Orphanage Research Team, 2005). In addition, many institutions have high caregiver turnover, caregivers may get up to two months of vacation, and substitute caregivers are not consistently assigned to the same ward (Rosas & McCall, 2011; The St. Petersburg-USA Orphanage Research Team, 2005, 2008; van IJzendoorn et al., 2011). The collective result is that children may experience 60-100 different caregivers over their first two years of life in the institution (The St. Petersburg-USA Orphanage Research Team, 2008). The inconsistency of caregivers across time, even day to day, may limit children's opportunities to form stable relationships with their caregivers, and may subsequently affect their development.

2.1.1.3 Caregiver-child interactions

Observational studies of institutional care have revealed that caregivers rarely interact with children in warm, sensitive, contingently responsive ways. Because of the high child-adult ratios and large group sizes, caregivers spend nearly all their time with children in routine care, such as bathing, feeding, and toileting, and very little time interacting with the children in play (Dobrova-Krol et al., 2008; van IJzendoorn et al., 2011; The St. Petersburg-USA Orphanage Research Team, 2005). In one study of Russian baby homes, caregivers spent only 16% of their time engaged in group or one-on-one activities with children (Tirella et al., 2007). On average, children birth to three years old spent half of their waking hours not engaged in interactions with either peers or caregivers. Even when caregivers are required to interact with children for routine care, they demonstrate little warmth, sensitivity, or affection (The St. Petersburg-USA Orphanage Research Team, 2005; van IJzendoorn et al., 2011).

2.1.2 Child development in institutional care

Institutionalized children often experience delays in physical, cognitive, and social-emotional development (Bakermans-Kranenburg et al., 2011; Dobrova-Krol et al., 2008; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010; Smyke et al., 2007; The St. Petersburgh-USA Orphanage Research Team, 2005; van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2007). Increased time in the institution is related to greater delays, and children placed in adoptive or foster families and those experiencing interventions in institutions often experience catch-up growth following the change in care quality (Bakermans-Kranenburg et al., 2011; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010; Smyke et al., 2007; van IJzendoorn et al., 2007). This suggests that institutional deprivation may be responsible for the early delays. The present study includes both physical growth and attachment outcomes because of their clear connections to quality interactions with caregivers, as well as other developmental domains, in existing literature.

2.1.3 Current policies and models of care

In February 2010, the United Nations (UN) released a resolution outlining guidelines for the alternative care of children without permanent parents. The purpose of these guidelines was to emphasize the importance of family preservation and reunification, and where such attempts were not possible to make alternative care decisions with the best interest of the children in mind, prioritizing long-term family-based and family-like options for care (United Nations, 2010). The UN guidelines as well as the Hague Convention of 1993, put forth the use of institutional care as a last resort, only to be used as temporary care until more permanent family-based solutions are found (United Nations, 2010; Joint Council on International Children's Services, 2009). In all cases, where short- or long-term institutional care is necessary, policy states that care should be made as family-like as possible, with small groups and consistent caregivers (United Nations, 2010). In 2007, the South African government also put new legislation in place with provisions for cluster foster care settings (aka family-like care, children's village), in which trained foster mothers are assigned up to six children and live in one of a collection of family-style homes (Meintjes, Moses, Berry, & Mampane, 2007).

2.1.4 OVC care and development in South Africa

Published research on OVC care and development in South Africa is limited. Most of it focuses on the psychological well-being of older OVCs and the vulnerability of OVC caregivers in informal kinship and foster settings. Approximately 90% of OVCs in South Africa reside with extended family (Monasch & Boerma, 2004). The literature identifies extensive burden for family-based caregivers of OVCs. Caregivers who care for OVCs are typically older and in worse health than caregivers of non-orphans, frequently care for more children, have fewer financial resources per family member, and experience more food insecurity (Bachman DeSilva et al., 2008; Bachman DeSilva et al., 2013; Govender, Penning, George, & Quinlan, 2012; Hill, Hosegood, & Newell, 2008; Kidman & Thurman, 2014; Kuo & Operario, 2010). OVCs themselves are more likely to experience multiple caregiver changes and have greater psychological challenges (Cluver, Operario, & Gardner, 2009; Govender et al., 2012; McNally, Hadingham, Archary, Moodley, & Coovadia, 2006).

Very few studies from South Africa include institutional care and almost none address children under 6 years of age (Nestadt et al., 2013). In 2007 an extensive report was released, detailing the variety of residential care facilities in four regions of South Africa (Meintjes et al., 2007). It is difficult to accurately assess the number of children’s homes, or institutional care facilities, in South Africa, because many are unregistered and are operating outside of legal guidelines (Meintjes et al., 2007, Nestadt et al., 2013). A survey in 2003 by Pilay (as cited in Meintjes et al., 2007), identified a total of 203 registered children’s homes within the nation, 48 of which were located in KwaZulu-Natal province. By 2008, there were an estimated 21,000 children living in 345 registered South African children’s homes, with an unknown number living in unregistered facilities (UNICEF, 2015). One hundred children’s homes, with just over 1,000 children, participated in the study by Meintjes et al. (2007). Of these, 70% were registered as children’s homes, 7% were operating as foster care or private places of safety, and 23% were unregistered. Thirty percent of the children in the sampled children’s homes were under 6 years of age. Only 48% of children in the study had been tested for HIV, with 34% of the 486 tested children testing positive for HIV (Meintjes et al., 2007). Another study conducted on institutional care reported that caregivers express concern over not having the resources needed to provide for children’s psychological needs, especially related to disclosing HIV status (Domek, 2013). From the available studies, it is clear that institutional care is relatively common within South Africa, and that more local research is needed to assess the quality of care and unique needs of resident children.

2.1.5 Remaining questions

Despite a movement in international policy towards requiring institutional care to occur in the most family-like settings as possible (Cantwell et al., 2013), research on the conditions of care within existing family-like institutional care settings around the world is extremely limited. At this point, only two known published studies have compared the development of young children in family-like institutions to children in more traditional institutional care. In one study, children in a Greek SOS children's village, ages 4-6 years, significantly outperformed children in a traditional institution on all domains of the Griffiths scales (Locomotor, Personal-Social, Hearing and Speech, Eye-Hand coordination, Performance, and Practical Reasoning; Giagazoglou, Kouliousi, Sidiropoulou, & Fahantidou, 2012). However the same children were significantly outperformed on all scales by children reared in typical two-parent families (Giagazoglou et al., 2012). The second children's village study was conducted with children 4-16 years old in a SOS village in Karachi, Pakistan, but had considerable flaws in reporting and therefore does not provide helpful information in assessing the impact of family-like care (Lassi, Mahmud, Syed, & Janjua, 2011).

There is a clear shortage of research on the conditions of care and development for children reared in family-like institutional care environments, especially for infants and toddlers. Current international policies place family-like settings in higher regard than traditional institutions. Extensive research is needed to determine whether these settings are indeed preferable for children and whether their family-like nature facilitates quality relationships between caregivers and children and benefits to children's development.

2.2 PHYSICAL GROWTH

A large number of children reared in institutions experience poor physical growth and stunting (Dobrova-Krol et al., 2008; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010; van IJzendoorn et al., 2007). Stunting is defined as having a height-for-age of two or more standard deviations below the norm for parent-reared children (Grantham-McGregor et al., 2007). It is negatively associated with indices of secure attachment, play quality, positive affect, attention skills, social skills, cognitive development, and school achievement (Grantham-McGregor et al., 2007; Johnson et al., 2010).

2.2.1 Physical growth in institutional care

Although poor physical growth is usually attributed to poor nutritional intake, research with institutionalized and post-institutionalized children has indicated that social factors play an important role (Dobrova-Krol et al., 2008; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2008; van IJzendoorn et al., 2007). According to the psychosocial short stature hypothesis, social-emotional deprivation leads to increased stress, which, if chronic, can dysregulate the hypothalamus-pituitary-adrenal (HPA) axis, inhibiting the production of growth hormone (Johnson & Gunnar, 2011; The St. Petersburg-USA Orphanage Research Team, 2008). Some convincing evidence for the psychosocial short stature hypothesis came from The St. Petersburg-USA Orphanage Research Team's (2008) Russian baby home study. Children who had experienced improved caregiving quality following an intervention of caregiver training grew physically at greater rates than children who had not experienced improvements in care, despite no changes in nutrition or medical care. Studies in which institutionalized children were transferred to adoptive or foster families have documented substantial physical growth catch-up (Dobrova-Krol et al., 2008; Engle et al., 2007; Johnson et al., 2010), but improved caregiving in these studies was likely confounded with improved nutrition (Engle et al., 2007).

2.2.2 HIV and growth

Medical research documents the influences of HIV on physical growth. Children who are HIV+ are at a much higher risk for growth failure than non-infected children (Aurpibul, Puthanakit, Taecharoenkul, Sirisanthana, & Sirisanthana, 2009; Bailey, Kamenga, Nsuami, Nieburg, & St Louis, 1999; Dobrova-Krol, van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2010; Potterton et al., 2009). HIV+ infants in Congo without access to Antiretroviral Treatments (ARTs) were between two and three times more likely than HIV- infants to experience growth retardation in height, weight, and weight-for-height by 20 months of age (Bailey et al., 1999). Differences in growth were detectable by 3 months of age, and height and weight scores progressively declined over time for both HIV+ and HIV- infants (Bailey et al., 1999). Potterton et al. (2009), also identified substantially delayed height, weight, and head circumference growth among HIV+ children under 2.5 years of age (15% on ARTs during the study).

There are an estimated 360,000 children under 15 years in South Africa living with HIV (UNICEF, 2014). Whereas in previous years, an HIV diagnosis was akin to a death sentence, the availability of effective ARTs has increased rapidly, changing the long-term prognosis for HIV+ children and adults (Bor, Herbst, Newell, & Bärnighausen, 2013; Brady et al., 1999; Ndirangu, Newell, Tanser, Herbst, & Bland, 2010). ARTs have been shown to improve physical growth among young HIV+ children, even reversing growth failure (Aurpibul et al., 2009). In a trial of a non-nucleoside reverse transcriptase inhibitor–based ART with Thai children up to 15 years of age, 58% of children who started the trial with growth *z*-scores less than -1.5 below the standard, scored above -1.5 by the end of the 240 week follow-up period, with weight returning to acceptable levels by 24 weeks of treatment and height by 48 weeks of treatment (Aurpibul et al., 2009).

Dobrova-Krol, van IJzendoorn, Bakermans-Kranenburg, and Juffer (2010) specifically assessed growth retardation among family-reared and institution-reared, HIV+ and HIV- children in Ukraine. There were significant differences in height between each of the four groups. HIV- family-reared 3- to 6-year-old children were significantly taller for their age than their HIV+ family-reared peers, who were in turn significantly taller for their age than HIV- institution-reared peers, who were in turn significantly taller for their age than HIV+ institution-reared peers (Dobrova-Krol, 2010). HIV+ institution-reared children were substantially more likely to meet the clinical cut-off for growth stunting ($z \leq -2.00$ according to CDC norms; Dobrova-Krol et al., 2010). It is vital to take these results into consideration when interpreting growth results from the present study, because many of the sampled children were HIV+.

2.3 ATTACHMENT

Attachment theory is critical to understanding the long-term effects of deprivation and institutional care. Strong expectations of responsive care in caregiver-child relationships are thought to be foundational to young children’s abilities to explore and learn from their world, therefore effecting their long-term development. Such expectations are formed from a history of warm, sensitive, and responsive caregiver-child interactions (Bowlby, 1969). Therefore, attachment security can be considered an indicator of quality caregiver-child interactions and a predictor of lifelong psychosocial outcomes, and may provide valuable information about strengths and needs in institutional care settings (Ainsworth, 1979; Bakermans-Kranenburg et al., 2011; Brumariu & Kerns, 2010; Sroufe, 2005).

2.3.1 Defining attachment

Bowlby (1969), the originator of attachment theory, proposed that there is an evolutionary drive for infants and young children to maintain proximity to a competent caregiver, especially in times of threat or uncertainty. Over time, the infant forms an internal working model of their caregiver's role as comforter and protector based on the consistency of the caregiver's responses to the infant's bids for attention. As a result, the infant can use such a caregiver as a dependable secure base from which to venture out to explore their environment.

Attachment is typically defined by the behaviors present in individual children as they react to and interact with their caregivers, representing the type of bond formed between the children and caregivers. This can be seen in one of the two primary assessments of children's attachment: the Strange Situation Procedure (SSP). In the SSP, an observer rates individual children's behavior during a series of separations and reunions with their caregiver and a stranger. The procedure is designed to be mildly to moderately stressful to the child participants (Main & Weston, 1981). When caregivers are sensitive and responsive to young children, those children should develop a *secure attachment* to those adults (Ainsworth, 1979; Brumariu & Kerns, 2010). Securely attached children are usually distressed in their caregivers' absence, but are easily comforted upon their caregivers' return during the SSP. However, if children's caregivers are inconsistent in interacting with the children or neglect children's bids for attention, children will likely develop insecure resistant or insecure avoidant attachments (Brumariu & Kerns, 2010). *Insecure avoidant* infants often seem unconcerned with their caregivers' presence or absence, are rarely distressed when their caregivers leave, and may appear angry or disinterested when their caregivers return (Ainsworth, 1979). *Insecure resistant* infants are often anxious when their caregivers are present and are very upset upon their caregivers' departure. When they return, insecure resistant infants will seek contact with their caregivers, but will also pull away (Ainsworth, 1979). Finally, *disorganized* infants show no consistent pattern in response to a caregivers' presence or absence (van IJzendoorn, Schuengel, Bakermans-Kranenburg, 1999).

Some attachment theorists may argue that the association between interaction quality and child attachment is bi-directional, and that attachment security impacts interaction quality with the same strength that interaction quality impacts attachment security. On one hand, interactions do involve at least two actors, children and caregivers, and therefore children's characteristics may impact the overall quality of interactions between them and their caregivers. For example, children with greater attachment security may elicit higher quality interactions from their caregivers. On the other hand, the core tenet of attachment theory is that children develop their attachment relationships out of previous interaction experiences with their caregivers. Therefore, it is reasonable to state that interaction quality has much more of an influence on attachment security than *vice versa*. There is substantial evidence that attachment interventions which improved caregivers' sensitivity and responsiveness had significant effects on children's attachment security (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Dozier, Peloso, Lewis, Laurenceau, & Levine, 2008). Consequently, it is appropriate to treat caregiver-child interaction quality as a predictor of attachment security as is done in the present study.

2.3.2 Importance of attachment

Attachment security is not just an end itself but is theorized to influence continued development throughout the lifespan. Attachment security is thought to be based on children's internal working models of relationships with caregivers; that is, children subconsciously build expectations of relational events based on past experiences of actions, goals, and outcomes between them and their individual caregivers (Main, Kaplan, & Cassidy, 1985). These internal representations include general rules for interaction and expectations of outcomes, guiding subsequent interactional behaviors (Main et al., 1985). If, indeed, attachment security stems from these internalized expectations and rules, if children differ in their experiences of warmth and responsiveness from caregivers and therefore their attachment security, and if these expectations and rules influence subsequent social behavior, it follows that attachment should predict a variety of long-term psychosocial outcomes.

Research does suggest that attachment security in early childhood predicts long-term outcomes in multiple domains. For example, children with avoidant and resistant attachment relationships are at increased risk for developing difficulties with peers, conduct problems, anxiety disturbances, depression, and other internalizing and externalizing problems (Bohlin, Hagekull, & Rydell, 2000; Pasco Fearon & Belsky, 2011; Sroufe, 2005). Insecure attachment has even been associated with adult inflammation-related physical illnesses such as asthma, diabetes, hypertension, and heart disease (Puig, Englund, Simpson, & Collins, 2013). Disorganized attachment is most strongly related to a variety of psychiatric symptoms and other adverse outcomes in adolescence (Carlson, 1998; Sroufe, 2005). Although the available studies are correlational in nature, limiting causal inference, the strength and breadth of long-term predictions in combination with the theoretical explanations of internal working models, suggest that caregiver-child relationships in early childhood are important and are worth investing in.

2.3.3 Attachment and culture

The SSP has been used frequently outside of the United States, and researchers have brought up a number of concerns about its appropriateness and validity in some cultures (Nakagawa, Lamb, & Miyaki, 1992; Takahashi, 1986). Separations from mother may be extremely stressful in some countries, such as in Japan where infants are rarely left alone or with someone other than their mothers (Nakagawa et al., 1992; Takahashi, 1986). As a result, some researchers have avoided a separation and reunion procedure entirely, instead using the continuous Attachment Q-Sort (AQS) measure to assess attachment security (Peterson, Drotar, Olness, Guay, & Kiziri-Mayengo, 2001). To complete the AQS, raters systematically observe the mother and child within the home environment. Observers rate the child-mother pair on 90 items, many of which closely criteria in the SSP. Raters sort the 90 statements into one of 9 piles based on how well the item statements describe the child, and children are assigned an attachment score. The AQS shows significant convergent validity with security measured by the SSP (van IJzendoorn, Vereijken, Bakermans-Kranenberg, & Riksen-Walraven, 2004).

The AQS has been used to measure attachment, as originally designed, but it has also been used to determine culturally related understandings of ideal caregiver-child relationships (Schölmerich & van Aken, 1996; Vereijken, Riksen-Walraven, & Van Lieshout, 1997). Mothers in a number of cultures have been asked to describe the ideal child and actual child behavior using the ASQ. Mothers’ descriptions of the ideal child in China, Colombia, Germany, Israel, Japan, Norway, and the United States were similar across cultures (Posada et al., 1995). Although there were no significant differences between the overall ratings, there were some differences between countries in mothers' emphasis on the following subscales: smooth interactions with mother, proximity to mother, physical contact with mother, and interactions with other adults, indicating some cultural difference in socialization goals. This and other studies suggest that parents around the world share at least some childrearing goals, although emphases on areas of social interaction may differ (Keller, 2013; Posada et al., 1995).

An understanding of the underlying cultural values may illuminate how the development of attachment relationships is embedded in culture. People of various nations hold differing concepts of what types of social interaction are preferable. In some cultures, high value is placed on autonomy and independence. In other cultures, reliance on others is preferred. Differing approaches to independence influence parental behaviors which in turn influence the development of infant attachment relationships.

2.3.4 Attachment in institutional care

Approximately 73% of institutionalized children are categorized as having disorganized attachment to their caregivers; this contrasts sharply with the approximate 15% of family-reared children who are categorized this way (Bakermans-Kranenburg, 2011, Dobrova-Krol et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2008; Vorria et al., 2003; Zeanah, Smyke, Koga, & Carlson, 2005). Attachment theory posits that disorganized infants view caregivers as a source of care and comfort but also a source of anxiety and fear (Bakermans-Kranenburg et al., 2011). However, institutional caregivers are more likely unavailable than an expected source of anxiety (Bakermans-Kranenburg et al., 2011). Due to high child-adult ratios and multiple caregiver changes, children in traditional institutions may not have enough close interactions with any one caregiver to form an organized attachment (Ainsworth, 1979). Therefore, high numbers of disorganized attachments in institutional care may reflect lack a of opportunity to develop an organized attachment rather than the kind of disorganized attachment seen in parent-reared children (Bakermans-Kranenburg et al., 2011). More specifically, institutionalized children's disorganized behavioral patterns in the SSP may reflect a coping strategy for dealing with caregivers who are detached and distant, even when providing adequate physical care (as cited in Bakermans-Kranenburg et al., 2011).

2.4 QUALITY OF CAREGIVER-CHILD INTERACTIONS

Quality caregiver-child relationships are a foundation for healthy child development, and relationships are built from a series of caregiver-child interactions. As outlined in the bioecological systems theory framework:

> Especially in its early phases, but also throughout the life course, human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment. To be effective, the interaction must occur on a fairly regular basis over extended periods of time. Such enduring forms of interaction in the immediate environment are referred to as proximal processes (Bronfenbrenner & Morris, 2006, p. 797).

For caregivers and children, proximal processes include everyday interactions during routine care. A core tenet of attachment theory is that secure attachment relationships stem from children's expectations resulting from caregivers' sensitive responses to the children's bids for attention and comfort (Ainsworth, 1979)

The quality of caregiver-child interactions is a broad concept and could be operationalized in many ways. Theory regarding quality interactions and attachment frequently focuses on caregiver sensitivity, primarily because sensitivity and responsiveness to infants' signals were identified specifically by the originators of attachment theory as being the most vital to the development of attachment (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969). However, evidence suggests that sensitivity is just one of many caregiver behavioral factors that predicts attachment security (De Wolff & van IJzendoorn, 1997). Factors such as maternal affect, tone, responsivity, stimulation, and synchrony may all play important roles in the development of attachment (De Wolff & van IJzendoorn, 1997). In fact, many researchers have operationalized sensitivity as a combination of these behavioral responses rather than adhering to a strict definition of sensitivity (perceiving, interpreting, and responding to infants' signals appropriately; De Wolff & van IJzendoorn, 1997).

2.4.1 Mother-child

Among biological mother-child pairs, positive maternal behavior during interactions is a consistent predictor of child attachment. De Wolff and van IJzendoorn (1997) used meta-analysis to estimate average effect sizes for predicting attachment from the following maternal behavior variables: sensitivity, $r = .22$; mutuality, $r = .32$; contiguity of response, $r = .10$; physical contact, $r = .09$; cooperation, $r = .13$; stimulation, $r = .18$; positive attitude, $r = .18$; and emotional support, $r = .16$. Although some of these correlations are relatively small, they do suggest that quality mother-child interactions are important to attachment. Results from another meta-analysis indicated that interventions that were designed to improve maternal sensitivity significantly improved attachment security as well (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). Quality mother-child interactions predict more than just attachment. Maternal responsiveness, in various forms, has been related to many child outcomes, including but certainly not limited to quality of play in infancy, self-regulation in kindergarten, and reading comprehension in elementary school (Landry, Smith, & Swank, 2006; Taylor, Anthony, Aghara, Smith, & Landry, 2008; von Suchodoletz, Trommsdorff, & Heikamp, 2011).

2.4.2 Child care

There is also ample evidence from child care settings that quality interactions matter to both attachment and broader child development. For example, children who spend more time with sensitive and responsive primary caregivers in child care are more likely to be securely attached to their caregivers than those with caregivers who spend less time with the children (Howes & Hamilton, 1992; Ritchie & Howes, 2003). In one study, a sensitivity training intervention was provided to family child care providers and it produced increased sensitivity of caregivers that was related to improvements in children's attachment (Howes, Galinsky, & Kontos, 1998). Specifically, toddlers in classrooms where caregivers had increased in sensitivity were more likely to become or remain securely attached to their caregiver over time. In another study of center-based child care, positive caregiving, including but not limited to positive physical contact, speaking and responding to the child, teaching skills, engaging in mutual exchanges, and reading to the child, was related to children's secure attachment to their primary child care caregiver (De Schipper, Tavecchio, & van IJzendoorn, 2008). Other research indicates that stimulation provided by child care providers who are high in sensitivity is related to better cognitive development among infants at 9 months, and that better quality interactions between caregivers and children at 24 and

54 months is related to better cognitive development (Albers, Riksen-Walraven, & de Weerth, 2010; NICHD Early Child Care Research Network & Duncan; 2003).

2.4.3 Institutional care

As mentioned previously, within traditional institutional care environments, caregivers frequently spend most of their time assisting with routine care and rarely interacting with children in a warm, sensitive, contingently responsive fashion (Dobrova-Krol et al., 2008; van IJzendoorn et al., 2011; The St. Petersburg-USA Orphanage Research Team, 2005). The low quality of caregiver-child interactions frequently found in institutional care has also been related to low cognitive scores, poor physical growth, and more negative behavior (Smyke et al., 2007). Interventions designed to facilitate higher quality caregiver-child interactions within institutional care environments have improved both interaction quality and child development in multiple domains, including attachment security, adaptive, personal-social, motor, communication, cognitive, internalizing and externalizing behavior, and physical development (Groark et al., 2013; Johnson et al., 2010; McCall et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2005; Warner et al., n.d.).

2.4.4 Predictors of interaction quality

As the summarized literature suggests, quality interactions between caregivers and children are vital to the development of secure attachment and healthy development in other domains. If there is a desire to encourage healthy child development and caregiver-child relationships, it is therefore important to consider the sources and predictors of quality interactions.

2.4.4.1 Theoretical models

In recent years, an interest in determinants of parenting behavior has led to the development of a few related theoretical models that emphasize caregiver, child, and context characteristics as predictors of caregiver behavior. These models closely fit with Bronfenbrenner and Morris's (2006) bioecological model of human development in that they emphasize interactions between individuals and their surrounding contexts. For example, in Belsky's (1984) determinants of parenting model, parenting behavior is determined by individual parent's characteristics, child's characteristics, and the social context. Parent characteristics include parent's developmental history, personality, and psychological well-being (Belsky, 1984). Children's characteristics frequently include temperament (Belsky, 1984), and context characteristics typically include levels of social support perceived by the parent (Belsky, 1984). The three sources of parenting behavior are not considered to be equally influential, but rather vary in strength (Belsky, 1984). Abidin (1992) presents a model which integrates parts of Belsky's model, but places greater emphasis on parenting stress and parents' cognitions regarding their commitment to the parenting role. Abidin (1992) suggests that there is value to studying parents' beliefs, because such beliefs may influence children's development through their effects on parenting behavior.

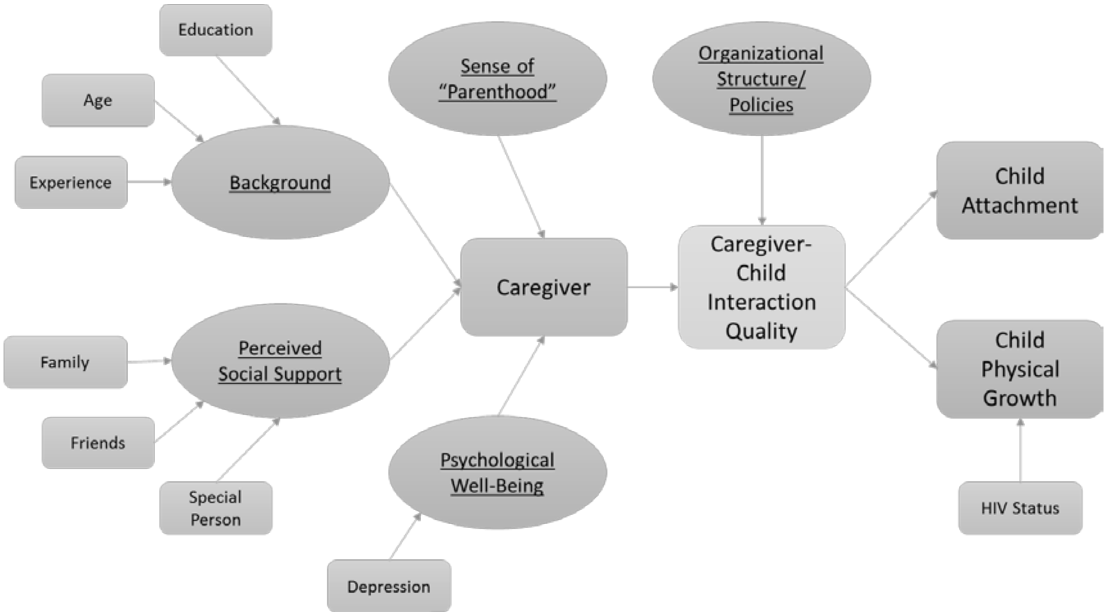

Figure 2.1. Initial Conceptual Model

The present study emphasized the role of caregiver beliefs and characteristics in quality caregiver-child interactions, as seen in the left portion of figure 1. Most child characteristics, including temperament, were beyond the scope of the study. However, some child characteristics, such as HIV status and length of time with primary caregiver were considered.

2.4.4.2 Caregiver

Studies of caregiver predictors of quality caregiver-child interactions, primarily focusing on caregiver sensitivity as the determinant of quality, have taken a variety of forms.

Depression

There is substantial evidence that caregivers' psychological well-being, especially in terms of depression, frequently in conjunction with other variables, is related to caregivers' sensitivity to the young children for whom they care. For example, levels of depression as measured by Center for Epidemiologic Studies-Depression Scale (CES-D) or the Beck Depression Inventory-II (BDI-

II) have been associated with varying measures of maternal sensitivity in samples of mothers with typical young infants, young children with Fragile X Syndrome, and children with Attention Deficit Hyperactivity Disorder (ADHD), mental retardation, and Pervasive Development Disorder (PDD; Burrous et al., 2009; Donovan et al., 1998; Leerkes, 2010; Sterling et al., 2013). Other studies have failed to find a significant association between depression and sensitivity, such as in samples of high risk mothers and adolescent mothers (Sidor, Kunz, Schweyer, Eickhorst, & Cierpka, 2011; Tarabulsy et al., 2005). Other studies have found that the association between depression and sensitivity was moderated by other variables. For example, in a sample of first-time mothers with their 4-8-month-old infants, high depression and anxiety was related to lower maternal sensitivity, but only for children who were perceived as being temperamentally high in negative emotionality (Mertesacker, Bade, Haverkock, & Pauli-Pott, 2004). In a sample of depressed mothers with young infants, the association between depression symptoms and sensitivity was significant only for younger mothers (Van Doesum et al., 2007).

Similar connections have also been found among non-parental caregivers. For example, Hamre and Pianta (2004) found that within child care centers, family child care settings, and home-based care settings, caregivers experiencing more depression symptoms on the CES-D were less sensitive and more withdrawn with the children in their care. This association was stronger with caregivers in family child care settings, with less education, and who more frequently worked alone (Hamre & Pianta, 2004). In another study of child care settings, depression predicted caregiver sensitivity in center-based care, but additional early care and education (ECE) training buffered this effect (Gerber et al., 2007).

Background: Age, experience, and education

Mothers' and professional caregivers' backgrounds in terms of age, experience, and education have also frequently been included in studies of caregiver sensitivity, but more often as covariates to be controlled rather than focal variables. Age of caregivers, itself, has rarely been found to predict sensitivity (Bernier et al., 2010; Biringen et al., 2000; de Kruif et al., 2000; Goldstein, Diener, & Mangelsdorf, 1996; Hamre & Pianta, 2004; Leerkes, 2010). Experience, like age, rarely significantly predicts sensitivity. Gerber et al. (2007) did find that although years of experience working in child care did not significantly predict overall sensitivity, it was the strongest of teacher background predictors of a caregiver attunement subscale at *p*-value of less than 0.10. Years of experience failed to predict teaching style cluster membership which differed by levels of sensitivity for toddler and preschool center child care teachers (de Kruif et al., 2000). Length of time as a certified foster mother also failed to predict sensitivity in a study of attachment and sensitivity in foster care (Ponciano, 2010).

Unlike other background variables, levels of education and child-specific education are frequently predictive of caregiver sensitivity. Maternal education has predicted sensitivity among first-time mothers, adolescent mothers, depressed mothers, and mothers of infants, toddlers, pre-kindergarteners, and children with Fragile X Syndrome, on a number of measures including but not limited to the Maternal Behavior Q-Sort (MBQS) and the Emotional Availability Scales (EAS) (Bernier et al., 2010; Biringin et al., 2000; Burrous et al., 2009; Van Doesum et al., 2007; Tarabulsy et al., 2005). Other studies have not found significant predictions. For example, Leerkes (2010) did not detect a significant correlation between maternal education and sensitivity of mothers during emotion-eliciting tasks. Goldstein et al. (1996), also found that education level did not predict sensitivity, but the variability in educational background was limited in the sample (almost 75% of mothers had completed a college degree).

Within child care settings, there is also evidence for education predicting teacher sensitivity. Small to medium correlations between teachers' educational background and their sensitivity to children have been found (de Kruif et al., 2000, Hamre & Pianta, 2004; Raikes et al., 2005). However, in one study of teachers in child care centers, level of teacher education did not predict sensitivity, but years of specific ECE training did (Gerber et al., 2007).

Caregiver role

In 1992, Abidin introduced the idea of parenting role and self-expectations related to viewing the "self-as-parent" to his model of determinants of parenting behavior. According to the theory, the extent of an adult's commitment to the parenting role influences how he or she experiences parenting stress based on the surrounding resources and context (Abidin, 1992). For example, Abidin's theory might suggest that a mother who is strongly committed to the parenting role would experience increased stress from a financial challenge in the family if she views providing for her child to be an important part of her role as parent and senses the financial challenge will hamper her ability to fulfill this role. In this case, her increased stress level may direct her attention away from her child and to the source of the stress, perhaps leading her to be less responsive or more irritable when interacting with her child. Whereas, a mother who is not committed to the parenting role and does not have high expectations for herself as provider may be less apt to alter her parenting behavior in the presence of the same financial challenges. Similarly, according to Parent Development Theory, parent role beliefs include self-expectations of parenting behavior related to bonding, discipline, education, general welfare and protection, responsivity, and sensitivity that are built out of childhood experiences with caregivers and shape parents' behavior with their own children (Mowder, 2005). Anyone who takes on a parenting role, regardless of their biological relationship to a child, develops role beliefs that influence their parenting behavior

(Mowder, 2005). Parent Development Theory, unlike Abidin's theory, does not assume a mediating effect of parenting stress.

The empirical evidence related to caregivers' sense of "self-as-parent," however, is quite limited. There is much literature addressing the theory of maternal role attainment, which involves new mothers' adjustment to the parenting role (see Koniak-Griffin, 1993 for a review). However, the maternal role attainment literature emphasizes feelings of prenatal connection and physical and hormonal changes associated with pregnancy. Therefore, maternal role attainment literature may only loosely apply to caregivers taking on maternal identities when caring for non-biologically related children.

Despite the dearth of relevant literature, there are indications that the concept of maternal identity is a potentially important and emerging concept in institutional OVC care. For example, an article outlining a comprehensive intervention in a Nepali institution recounts how early in the intervention period, caregivers requested to be called the Nepali word for "mother" rather than the word used for "maid," explaining that this title would bring them more personal dignity and encourage a sense of family within the institution (Wright, Lamsal, Ksetree, Jarma, & Jaffe, 2014). Similarly, in a survey study of caregivers in Ukrainian baby homes, caregivers were asked how they would describe their relationship with the children they care for (Vashchenko, Easterbrooks, & Miller, 2010). Although 54%, described their relationship as "professional," and that they do what their job requires, as many as 45% described their relationship as "motherly," stating that they treat the children as if they were their own (Vashchenko et al., 2010). Some mentioned that they essentially functioned as substitute mothers, but many also wrote that the idea of substitute mother was inaccurate or incomplete. Additional research may provide greater insight into the unique perceptions of caregivers in institutional care settings, and especially in family-like institutions, who are essentially employed to fill a parent-like role.

Within an OVC care setting, non-biological caregivers' perception of their role as a parent may even influence whether their personal expectations regarding parenting behavior apply to the children within their care. For example, caregivers may hold a set of parenting role beliefs, but if they do not see themselves as holding a parenting role, they may not apply the expected behaviors to the children directly within their care. For example, caregivers who may believe bonding is an essential part of their role as a biological parent, but do not consider their position in an institutional care setting to be parenting role, may behave in ways that perpetuate social-emotional deprivation common in institutional care settings. There is little known about non-biological caregivers' perceptions of their role and how those perceptions may shape the care that they provide. This is an important area for study, because a greater understanding of what caregivers perceive their role to entail may help to identify obstacles to quality interactions between children and caregivers.

2.4.4.3 Context

Context, whether proximal or distal, can have an important influence on interactions between caregivers and children and therefore children's development.

Social Support

Social support experienced by parents is an important part of children's exosystem. Depending on the source of the support, a child may never have direct contact with his or her parent's social circle, yet the effects of that circle can indirectly influence their life and development. Numerous studies have identified a clear correlation between social support and maternal sensitivity in interactions with children (Goldstein et al., 1996; Kim & Kim, 2009;

Kivijärvi, Raiha, Virtanen, Lertola, & Piha, 2004; Shin, Park, & Kim, 2006; Stack et al., 2012). These studies have included samples ranging from mothers of 3-month-old infants to parents of children in middle childhood and have also included measures of satisfaction with social support, size of social support networks, and social support from parents, spouses, and others. In one study of depressed mothers, however, social support generally failed to predict sensitivity (Van Doesum et al., 2007).

There is a reason to believe that the caregivers' status of being employed to give care to a group of children makes institutional caregivers' situation more similar to a child care workplace than a family. Research on social support for caregivers in child care settings is limited thus far and fails to detect an association between social support and caregiver-child interaction quality (Gerber et al., 2007; Mill & Romano-White, 1999). These few studies utilize measures of general social support, rather than workplace-specific supports. Gerber et al. (2007) suggests that the surprising lack of correlation between social support and sensitivity may result from the presence of multiple caregivers available in most child care settings. Research on these variables in child care settings is far from complete, and more evidence is needed to understand the lack of significant predictions. Although the employment in institutional care settings may make workplace-related social support relevant, the present study will follow the example of previous family and child care studies and include more general measures of social support, which could include sources of support within or external to the workplace.

2.5 CULTURE

All development occurs within and is affected by culture (Bronfenbrenner, 1977). There are varying cultures both within and between countries, continents, and people groups. When conducting research, the cultural context must be considered. Issues regarding measurement, interpretation, and generalizability may all arise. For example, one must consider whether the results found in one sample would generalize to other samples of different cultural backgrounds, or whether the target outcomes would be considered valuable or appropriate within the cultural setting.

The present study was conducted in a unique cultural setting in the KwaZulu-Natal region of South Africa and included mostly Zulu participants. Thus far, searches in prominent psychological and anthropological databases for articles regarding parenting young children or child socialization practices among contemporary Zulu people have failed to identify relevant literature. However, some research on basic Zulu and other world cultures may be informative for the present study. For example, many African cultures are described as collectivistic, emphasizing the interdependence of people (Eaton & Louw, 2000). Evidence from a study of self-descriptions in South Africa supports the claim that a number of cultures within South Africa may be interdependent at their core. Eaton and Louw (2000) found that African language-speaking South Africans, including people of Zulu descent, described their identity in more concrete terms that suggested interdependence when compared to English-speaking South Africans.

Additional research suggests that immediate and extended family is particularly important among Zulu people (Sithole, 2002; Kuo, Fitzgerald, Operario, & Casale, 2012; Wickström, 2014). An ethnographic study on responses to health problems identified that Zulus frequently consider disharmony with family and ancestors, in addition to biological causes, to be a cause for physical illness. Zulus frequently seek to return home and make things right with family when experiencing illness (Wickström, 2014). In a different study, both caregivers of orphaned and non-orphaned children in KwaZulu-Natal indicated that they perceived family members to be greater sources of social support than friends or significant others (Kuo et al., 2012). Caregivers of AIDS-orphans perceived lower social support than caregivers of orphans who lost their parents to other causes. Caregivers of other-orphans and non-orphans, however, had similar social support levels (Kuo et al., 2012). This also suggests that stigma associated with HIV/AIDS may isolate caregivers from important sources of support (Kuo et al., 2012). Within the present study, the presence of HIV+ children and possible isolation from family and traditional social networks resultant from living in a family-like institutional care community may influence caregivers' perceptions of available social support.

It is also important to consider the unique role social support has been found to have in other interdependent cultures. Research with Asian, Asian American, Latino American, and European American college students has suggested that people from interdependent cultures may actually be less likely to call on their sources of social support than people from more independent cultures (Chang, 2015; Taylor et al., 2004). Reasons for choosing not to request help from social networks vary by cultural background, but concerns with losing face, disrupting group harmony, social expectations of solving problems independently, and worrying others have been cited (Chang, 2015; Taylor et al., 2004). Cultures do not always follow this same trend. A study with Spanish and British college students indicated that although Spanish participants were more collectivist than British participants, they reported more perceived social support and more received support from family members (Goodwin & Plaza, 2000). How these trends generalize to Zulu culture is currently unknown, but such concepts should be considered when interpreting results for the present study.

In the present study, attention was paid to the cultural setting, but not as the main focus of the study. This study was primarily exploratory in nature, with an emphasis on the unique family-like nature of care. Results should be considered to be specific to the study's unique setting, and future studies should explore whether results are generalizable to other cultural settings within Africa and around the world.

2.6 PRESENT STUDY

The goal of this mixed-methods study was to assess the role of caregiver characteristics in predicting caregiver-child interaction quality and reconfirm that caregiver-child interaction quality predicts child attachment and growth outcomes. An additional goal was to explore caregivers' perceptions of their role. The results of the present study may help identify potential areas for intervention or policy change to increase support for caregivers as they provide sensitive care to children in need. This study will also add to the institutional care field by filling a gap in literature on existing family-like care models.

2.6.1 Research questions and hypotheses

Although this was a mixed-methods study, including both quantitative and qualitative approaches to data collection and analysis, the quantitative and qualitative portions of the study addressed separate but complementary sets of research questions.

2.6.1.1 Quantitative

Quantitative methods were used to answer the following research questions. Each question is followed by relevant hypotheses as supported by theory and previous literature:

QUANT1: Are caregivers’ educational backgrounds associated with caregiver-child interaction quality? (Hypothesis: Level of education is positively associated with caregiver-child interaction quality.)

QUANT2: Are caregivers’ ages associated caregiver-child interaction quality? (Hypothesis: Caregivers’ age is not associated with caregiver-child interaction quality.)

QUANT3: Are caregivers’ years of experience as caregiver associated with caregiver-child interaction quality? (Hypothesis: Caregivers’ years of experience as caregiver are not associated with interaction quality.)

QUANT4: Is caregivers’ sense of their role as “parent” associated with caregiver-child interaction quality? (Hypothesis: Perception of self in a parenting role is positively associated with caregiver-child interaction quality.)

QUANT5: Is caregivers’ level of depression symptoms associated with caregiver-child interaction quality? (Hypothesis: Depression is negatively associated with caregiver-child interaction quality.)

QUANT6: Is caregivers’ perceived social support associated with caregiver-child interaction quality? (Hypothesis: Perceived social support is positively associated with caregiver-child interaction quality.)

QUANT7: Is caregiver-child interaction quality associated with children’s attachment to their primary caregivers? (Hypothesis: Caregiver-child interaction quality is positively associated with children’s attachment to their primary caregivers.)

QUANT8: Is caregiver-child interaction quality associated with children's physical growth (height, weight, head circumference). (Hypothesis: Caregiver-child interaction quality is positively associated with children's physical growth.)

2.6.1.2 Qualitative

Qualitative methods were used to answer the following research questions:

QUAL1: How do sampled caregivers describe their role as caregiver? What do sampled caregivers perceive their caregiving role to entail?

QUAL2: What obstacles do caregivers experience in connecting with, attaching to, and caring for young children?

QUAL3: What supports do caregivers believe would be helpful to them and would assist them in providing more sensitive and appropriate care?

3.0 METHOD

3.1 SAMPLE

The study was conducted with convenience samples from two family-like care institutions in KwaZulu-Natal, South Africa. The two institutions were located within a 60-km radius of Durban. In the family-like care model, up to approximately six children are assigned to a housemother and live together in small cottages.

The sample for the quantitative portion of the study potentially included all eligible resident children birth to 5 years of age and their assigned caregivers at each institution. Two family-like OVC care settings within the same region were selected so that variation in care models could be considered, if present, and inform generalizability. All eligible children were included, except one child at institution A whose primary caregiver was on long-term leave during data collection. At institution B, 3 children were excluded from eligibility because they had severe disabilities and were cared for in a special clinic away from their registered "primary caregiver" who would have been able to consent for their participation. Two children from institution B were not able to be included due to a lack of time for data collection. One child in institution B was originally enrolled in the study but did not have complete data and therefore was excluded from all analyses.

The sample with full data available included 49 children (see Table 3.1). Children in the study ranged in age from 10.91 months to 5.86 years of age, averaging 3.95 years (47.42 months) of age. Children had been with their primary caregiver for between just over one month to over 5 years. A majority of the child sample was female. From the caregivers' knowledge, only 28.6% of all children had two living parents. This rate was slightly higher in institution B than in institution A. Only 22.9% of the total child sample was HIV+, but the rate was much higher in institution A (30.8%) than B (13.6%). This was in concordance with reports from institution A administration that because of the institution's history, the Department of Social Welfare frequently places children with HIV in their care. Additional details regarding the child sample can be found in Table 3.1.

The full sample included data for 28 caregivers (see Table 3.2). Caregivers ranged in age from 33 to 57 years. Caregivers at institution A had worked there for anywhere from less than a year to 21 years, with an average of 11.85 years. Because institution B was a newer organization, caregivers had worked there for a minimum of less than 1 year and maximum of 5 years, with an average of 2.77 years of experience. All sampled caregivers considered their race or ethnicity to be Black. All caregivers at institution A considered IsiZulu to be their primary language, with secondary languages of English (75.0%) and IsiXhosa (25.0%). While most of the sampled caregivers at institution B considered IsiZulu to be their primary language (81.3%), 18.8% considered IsiXhosa to be their primary language. Secondary languages for caregivers at institution B varied, but no caregivers considered IsiZulu to be their secondary language. This means that of those who considered IsiXhosa to be there primary language, IsiZulu was not their secondary language, which is important because all materials were provided in English and IsiZulu. A vast majority of caregivers had completed at least grade 9 or its equivalent (89.3%), but only 32.1 % had completed high school or its equivalent. Additional details about the caregiver sample can be seen in Table 3.2.

Table 3.1: Child Sample Characteristics

Characteristic	Statistic/Category	Institution A	Institution B	*t*-test	Total
Sample size	*N*	27	22	-	49
Age in Months	*M* (*SD*)	42.02 (18.84)	54.06 (10.77)	-2.81**	47.42 (16.73)
Time /w caregiver in months	*M* (*SD*)	14.02 (12.92)	30.02 (15.11)	-3.83***	22.62 (16.26)
				χ^2test	
Gender	Male	37.0%	36.4%	0.00	36.7%
	Female	63.0%	63.6%		63.3%
Parent Status^	PKA	22.2%	36.4%	1.19	28.6%
	PDU	77.8%	63.6%		71.4%
Race	Black	96.3%	100.0%	-	98%
	Other	3.7%	0.0%		2%
HIV Status	Negative	69.2%	86.4%	1.98	77.1%
	Positive	30.8%	13.6%		22.9%
Health Rating	Excellent	18.5%	36.4%	-	26.5%
	Very Good	29.6%	27.3%		28.6%
	Good	25.9%	22.7%		24.5%
	Fair	22.2%	13.6%		18.4%
	Poor	3.7%	0.0%		2.0%

Note.****p* < .001, ***p* <.05, **p* <.10; ^PKA = Both parents known to be alive; PDU = At least one parent deceased or unknown

Table 3.2: Caregiver Sample Characteristics

Characteristic	Statistic/Category	Institution A	Institution B	*t*-test	Total
Sample Size	*N*	12	16	-	28
Age in Years	*M* (*SD*)	48.08 (7.88)	44.94 (5.64)	1.44	46.29 (6.74)
Experience in Years	*M* (*SD*)	11.85 (6.77)	2.77 (1.58)	4.56**	6.66 (6.400)
Race	Black	100%	100%	-	100%
Marital Status	Married	41.7%	0.0%	-	17.9%
	Never Married	41.7%	75.0%		60.7%
	Widowed	8.3%	6.3%		7.1%
	Separated	0.0%	6.3%		3.6%
	Divorced	8.3%	12.5%		10.7%
Primary Language	Afrikaans	0.0%	0.0%	-	0.0%
	English	0.0%	0.0%		0.9%
	IsiXhosa	0.0%	18.8%		10.7%
	IsiZulu	100.0%	81.3%		89.3%
	Sesotho	0.0%	0.0%		0.0%
Secondary Language	Afrikaans	0.0%	7.7%	-	4.8%
	English	75.0%	76.9%		76.2%
	IsiXhosa	25.0%	7.7%		14.3%
	IsiZulu	0.0%	0.0%		0.0%
	Sesotho	0.0%	7.7%		4.8%
How well do you speak English?^	Not Well at All	8.3%	12.5%	-	10.7%
	Not Well	25.0%	43.8%		35.7%
	Well	66.7%	43.8%		53.6%
	Very Well	0.0%	0.0%		0.0%
How well do you speak IsiZulu?^	Not Well at All	0.0%	0.0%	-	0.0%
	Not Well	0.0%	12.5%		7.1%
	Well	8.3%	12.5%		10.7%
	Very Well	91.7%	75.0%		82.1%
Highest Education Completed	Less than Grade 9	16.7%	6.3%	-	10.7%
	Grade 9 – 11	41.6%	62.5%		53.6%
	High School	33.3%	31.3%		32.1%
	Certificate or Diploma	8.3%	0.0%		3.6%

*Note.****p* < .001, ***p* <.05, **p* <.10; ^according to participant's assessment of their own ability

The qualitative interview portion of the study included 8 housemothers randomly selected from the quantitative sample. All random selections were completed using Microsoft Excel's random number command, with sampled participants selected from a complete list of eligible participants sorted by random number in ascending order. In addition, a director or another high-level administrator from each institution was interviewed. Institution administrators were asked to identify which person would be best suited to answer questions about the village's history, structure, and policies.

3.1.1 Institution A

3.1.1.1 Residents

A total of 27 children and 12 caregivers from institution A were included in the study. The primary reason for admission to Institution A was abuse/neglect or abandonment, rather than true orphanhood. Most children were expected to remain at the site until the completion of secondary school, although some were there as a more temporary placement or would eventually be adopted. All resident children were tested for HIV upon arrival at institution A, and approximately 70% of all resident children at institution A were HIV+. However, the HIV+ population was made up primarily of older children and only 30.8% of this study's sample was HIV+.

3.1.1.2 Structure and caregiver schedules

At Institution A, children were separated by gender. Children under 12 and 12 and over were typically housed in separate households, with some exceptions. Households typically included 6 children, though some had one or more additional teenagers assigned to that house who attended boarding school during the week. One caregiver was permanently assigned to each house, and was on duty 19.5 hours a day on weekdays and 16 hours a day on weekends. Four to six caregivers remained on duty, while all other caregivers were on scheduled breaks, to supervise all resident children (approximately 120). Each caregiver was scheduled 5 or 6 days off per month, during which time one of 10 relief caregivers filled in. These relief caregivers were not always assigned to the same households, but efforts were made to place them where relationships between children and relief caregivers already existed. In addition, caregivers received 20 relief days and 10 sick days per year.

3.1.2 Institution B

3.1.2.1 Residents

A total of 23 children and 17 caregivers from institution B were included in the study. One child and his caregiver were excluded from all analysis due to incomplete data. The primary reason for admission at institution B was abuse/neglect or abandonment rather than true orphanhood. All children were expected to remain at the institution until the end of secondary school, however children's placements are reviewed by the Department of Social Development every couple of years. All children had been tested for HIV, and approximately 17% of all resident children at Institution B were HIV+.

3.1.2.2 Structure and caregiver schedules

At Institution B, children were integrated by age (birth – 18 years) and gender in households of up to 6 children. Although the maximum number of children per household was 6, most households included fewer than 6. One caregiver was permanently assigned to each house. Each permanent caregiver was given one day off per week, one weekend off per month, and 21 additional days of leave per year. Relief caregivers substituted when permanent caregivers were on leave. The administration attempted to assign consistent relief caregivers to the same households as much as possible.

3.2 MEASURES

3.2.1 Material translation

Due to the high presence of Zulu participants, all surveys and materials were provided in both written IsiZulu and English. All materials were translated by a professional translator fluent in both English and IsiZulu. First materials were translated into IsiZulu and then back-translated and checked with local IsiZulu speakers for clarity and cultural understanding. When necessary, I was accompanied by a trained research assistant, proficient in both English and IsiZulu, to assist with live interpretation.

3.2.2 Site records

To understand the structure of the research sites, the age, gender, and home assignments of all sampled children and caregivers were collected. In addition, known HIV status of sampled children was collected from research site records. Site staff, such as medical personnel or administrators, with appropriate access to these records recorded each of the sampled children's status (positive, negative, unknown) in an electronic spreadsheet.

Table 3.3: Measures

Level	Variable	Measure
Caregiver	Demographics	Demographic survey
	Caregiver Role	Role questionnaire
	Depression	Center for Epidemiological Studies- Depression Scale (CES-D)
	Social Support	Multidimensional Scale of Perceived Social Support (MSPSS)
Interactions	Caregiver-Child Interaction Quality	Caregiver-Child Social-Emotional Relationship Rating Scale (CCSERRS)
Child	Demographics	Demographic survey & site records review
	HIV Status	Site records review
	Attachment Security	Short Attachment Security Scale (SASS)
	Height	WHO height *z*-score
	Weight	WHO weight *z*-score
	Head Circumference	WHO head circumference *z*-score

3.2.3 Demographics

Each sampled caregiver completed a brief demographic questionnaire about themselves and any sampled children within their care (Appendix A). This questionnaire included questions about the caregiver’s age, race, educational background, years of experience at the institution and other institutional care environments, and questions about the sampled children’s age, race, orphanhood status, health status (Whetten et al., 2009), and length of time residing at the site. In addition, site records were used to confirm children’s age, race, orphanhood status (non-orphan, single orphan, double orphan, or unknown), and length of stay.

3.2.4 Caregiver role

Sense of role as “parent” was assessed with a short caregiver relationship questionnaire designed to assess caregivers’ perceptions of their relationships with the children they care for (Appendix B). Each caregiver completed the questionnaire for each individual sampled child within their care. Questions in this section were inspired by a research protocol utilized in a study of caregiver perceptions in Ukrainian baby homes and the study results (Vashchenko et al., 2010). The relationship questionnaire was designed for the exploratory purpose of this study and had not previously been validated. There was almost no variability in the actual responses on the relationship questionnaire, and therefore further analysis was not deemed appropriate.

3.2.5 Depression

Depression symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Appendix C; Radloff, 1977). The CES-D is a 20-item scale which closely represents diagnostic criteria for depression and is used to measure the extent of self-reported depression symptoms experienced by an individual in the past few weeks (Radloff, 1977). The total score is a sum of the responses. In early psychometric studies, Radloff (1977) reported Cronbach’s alphas ranging from 0.84 to 0.90. In a study conducted with middle-aged mothers, the CES-D had good internal consistency (alpha = 0.88). The CES-D has been used in multiple studies on caregiver depression and sensitivity, including both mothers and professional caregivers (Burrous et al., 2009; Donovan et al., 1998; Gerber et al., 2007; Hamre & Pianta, 2004; Leerkes, 2010; Tarabulsy et al., 2005). The CES-D was previously translated into IsiZulu and utilized within the KwaZulu-Natal region (Goggin et al., 2010; Wilson et al., in press).

3.2.6 Social support

Caregivers' perceived social support and satisfaction with social support were measured using the Multidimensional Scale of Perceived Social Support (MSPSS; Appendix D; Zimet, Dahlem, Zimet, & Farley, 1988). This 12-item questionnaire is designed to assess participant's perceived level of social support from family, friends, and a significant other. Because caregivers at institution B were required to be single, the term "significant other" was changed to "special person" for all participants. Participants respond to statements such as "I have a special person who is a real source of comfort to me" (significant other) and "I can talk to my family about my problems" (family) on a 7-point Likert scale from "very strongly disagree" to "very strongly agree." Mean scores are computed to create a total score, and family, friends, and "special person" subscale scores.

The MSPSS has had good psychometric properties in past studies, with internal consistency alphas ranging from 0.81 to 0.98 and good test-retest reliability (Zimet et al., 1988; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). The MSPSS has also been used in many countries and has been translated to many languages. In a study using the MSPSS in Turkey, a non-Western developing nation, good internal consistency was also found (alphas ranging from 0.77 to 0.92; Eker & Arkar, 1995). An IsiZulu/English translation of the scale had also been utilized in the KwaZulu-Natal region of South Africa, including in a study of social support among orphan and non-orphan caregivers and in a study of coping strategies of adults newly diagnosed as HIV+ (Kuo et al., 2012; Myint & Mash, 2008).

During data collection, it became clear that the term "special person" was vague and that respondents were interpreting the term differently. Some seemed to be thinking about a husband or boyfriend and others considering a best friend or other family member. In fact, there was evidence from conversations with sampled caregivers that some of them were considering “God” to be their “special person,” rather than a physical human being. Because of the lack of consistency on who was understood to be a “special person,” results regarding social support from a “special person” are excluded in this report.

3.2.7 Caregiver-child interaction quality

Quality of caregiver-child interactions was measured with the Caregiver-Child Social Emotional Relationship Rating Scale (CCSERRS; Appendix E). The CCSERRS was designed as an observational measure of caregiver-child interactions primarily for use in institutional care settings (McCall, Groark, & Fish, 2010). The CCSERRS involves observations of a series of episodes (5-minute periods of observation of natural interactions) during three types of activity (free play, feeding, changing/bathing/diapering).

The CCSERRS was adapted from its common method of use, in which observers rate an individual caregiver and their interactions with a group of children. For the present study, procedures were altered so that observers focused on the sampled caregiver and her interactions with an individual sampled child. This adaptation was necessary for two reasons: 1) there were children older than the target age present during most observations whose interactions could not easily be rated with the measure designed for younger children, and 2) it is possible that different children would experience different quality of interactions and this specificity could assist in clarifying possible connections between quality interactions and individual child outcomes.

The scale includes 9 items rated on a 4-point scale, with higher scores indicating more favorable behavior. Items include caregiver engagement, caregiver response to children, caregiver- vs. child-directed behaviors, caregiver disciplinary control, caregiver affect, child engagement, child response to caregiver, child affect, and child-caregiver relationship. Scores could be calculated in a variety of ways. Four types of CCSERRS scores were calculated. Three activity scores (play, feeding, & changing/bathing/diapering) were calculated as follows: first, ratings were averaged across all items per episode, then those scores were averaged for up to two episodes within the same type of activity. Then a total CCSERRS score was calculated by averaging the activity scores available for a caregiver.

CCSERRS data from one study in Latin America demonstrates high internal consistency, with Cronbach's alphas of 0.97 both pre- and post-intervention. In past research, quality of caregiver-child interactions as measured by CCSERRS were related to child outcomes. Specifically, when compared to a control institution, caregivers in institutions which received comprehensive caregiver training and structural interventions had significantly better CCSERRS scores, and children had better attachment security and physical growth outcomes (McCall, Groark, Fish, 2010). In other studies, improvements in CCSERRS scores after caregiver training interventions were associated with improvements in physical growth and general development (Groark et al., 2013; McCall, Groark, Fish, Harkens et al., 2010).

3.2.8 Attachment security

Caregiver-child attachment was assessed by observers with the Short Attachment Security Scale (SASS; Appendix F). The SASS is an observer-reported version of an attachment questionnaire created from 23 items with the highest and lowest loadings on the security scale of the full AQS (Chisholm, Carter, Ames, & Morison, 1995; Chisholm, 1998; Waters, 1987). In its original form, parents rated the items about their child's behavior on a 5-point scale from "Very Unlike" to "Very Like." Eleven of the items are reverse scored. In Chisholm's (et al., 1995; 1998) study of attachment and indiscriminate friendliness among children adopted from Romanian orphanages, the parent-report form marginally differentiated between children categorized as insecure or securely attached using a separation-reunion paradigm among children adopted from Romania at older ages and Canadian-born children. It failed to significantly differentiate between insecure and securely attached children who were adopted to Canada before four months of age (Chisholm, 1998).

Despite the reports of limited discrimination between securely and insecurely attached children in previous studies, there is strong evidence to suggest that the methods used in the present study would provide more valid results in regards to attachment security. Chisholm's (1998) original scale was completed by parents. Parent-report measures of attachment are sometimes criticized because they often differ greatly from observer-report measures. For example, a meta-analytical study suggests that AQS ratings sorted by mothers have poor convergent validity with attachment security as determined by the SSP (van IJzendoorn et al., 2004). In a comparison between parent-report and observer-report in studies with AQS and SSP attachment measures, studies in which the AQS was completed by trained observers had significantly higher correlations between the two attachment measures than those with the parent-report AQS (van IJzendoorn et al., 2004). In addition, strong correlations between AQS and measures of maternal sensitivity were found with observer-rated AQS but much weaker correlations were found with parent-report AQS (van IJzendoorn et al., 2004). The SASS utilized individual items from the full AQS and were likely to follow similar patterns. Therefore, the SASS should have been suitable for the purposes of the present study because trained observers were used to rate children's attachment behaviors. However, there were difficulties using the measure as planned, as described below.

In the present study, SASS ratings were completed after observing a sampled child's interactions with his or her primary caregiver in the child's home environment for at least one hour. The observers remained as unobtrusive as possible to see the most natural interactions. If a child attempted to interact with the observer, the observer respectfully responded that she was just there to watch for a while. As described in the procedures section, the first few minutes of the observer arriving in the home were important to assess behaviors such as using the caregiver's facial expressions as a source of information when in a new or threatening situation (item 20). Therefore, the first few minutes were used to rate those related items only. Then the observers ignored the next 10-15 minutes to allow the participants to get used to the observer's presence and return to their normal routine. Observations could last up to 3 hours if necessary to view enough behavior to complete the SASS scale and the longer observation did not seem to be overly burdensome to the caregiver. If not enough behavior was viewed within the observation session to rate all items, the caregiver was asked about the child's typical behavior and this information was used to complete the scale.

The protocol called for observations of 1-3 hours after which the observers would rate children's attachment behaviors on the SASS. In training and practice observations most items could be assessed by observers within the given observation time. However, in practice, observations were often cut short (no less than 1 hour) because of children needing to leave for school or appointments. Therefore, multiple items per child were rated by caregiver report rather than observation. In fact the number of items rated by caregiver-report ranged from 5 to 20 out of 23. Although there were a few specific items on which caregiver ratings were significantly different than observer ratings across the full sample, a paired sample *t*-test demonstrated that there were no significant differences between average caregiver and observer total ratings for individual children ($t(47) = -.341, p = .734$).

3.2.9 Physical growth

Height, weight, and head circumference were measured as indicators of physical growth (Appendix G). Each were converted to standardized *z*-scores using the World Health Organization growth standards.

3.2.9.1 Height

For height, measures (in centimeters) were obtained either with the child lying face up (for children who were unable to stand on their own) or standing (for those children who could stand). Three measures were be obtained, with the average of the three measures recorded.

3.2.9.2 Weight

A digital scale was used to measure weight (in kilograms), with children weighed clothed and the approximate weight of the clothing subtracted. For children who could not stand, a caregiver held the child during weighing, and the caregiver's weight was subtracted from the total weight of both child and caregiver. Two measurements were obtained, with the average weight recorded.

3.2.9.3 Head circumference

Head circumference (in centimeters) was measured utilizing a looped measuring tape around the widest part of the child's head. Three measurements of head circumference were taken, with the average recorded. Although head circumference was measured for each child, many of the children had atypical head shapes which made it difficult to know how to properly position the measuring tape. In addition, it appeared that several children had medical conditions that may influence the size of their head (i.e. hydrocephaly), but confirmation of these health conditions was not available. Because of the uncertainty over the accuracy of head circumference measurements and relevant health conditions that should be controlled for, analysis for this measure is not reported.

3.2.10 Qualitative interviews

Qualitative interviews followed a semi-structured interview protocol developed for the purpose of this study. The interview protocols can be found in Appendices H (Caregiver) and I (Administrator).

3.3 PROCEDURE

3.3.1 Training and reliability

My research assistant and I went through extensive training on the observational measures and piloted the survey/interview materials prior to beginning data collection. Training for the observational measures, the SASS and CCSERRS, began with a detailed overview of the measures and discussion of individual item meanings. We then individually practiced using the observational measures on a series of videotaped observations. After the first practice session, we discussed our ratings to clear up any confusion or concerns. With the subsequent videos, we completed the ratings individually and then checked interrater reliability. Once an acceptable level (85% of ratings with 1 point for raw scores on individual items) was reached, we conducted live practice observations within a local child care environment.

3.3.2 Data collection

Data collection began once acceptable reliability on observational measures was reached. Home observations and caregiver surveys and interviews were scheduled to be least disruptive to their typical daily routine. Home observations frequently occurred in the early morning or evening or were split between the two, with caregiver surveys and interviews being conducted during the middle of the day when most children attended child care or school outside of the home.

3.3.2.1 Observational data

The SASS and CCSERRS ratings were made from the same 1-3 hour observation period in the home. Upon the first time entering the home, my research assistant and I introduced ourselves to the caregiver and any children present and explained that we would be simply observing and writing down notes throughout our time at the home. We explained to the participants that we wanted to see what typical daily life looks like in that home and that the caregivers and children should continue their usual activities as if we were not present. We also ensured the participants that the we would not report on any individual caregivers' or children's behavior viewed during the observation, but all information collected from the observation would be kept confidential[1]. We sat or stood in an area of the home where we could observe the behaviors of the target child for the

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[1] Caregivers were informed that the only exception to confidentiality was if there was evidence of abuse or neglect that was required to be reported to authorities.

observation, and followed the child from a reasonable distance if he or she moved from room to room. The first 5-10 minutes were important for rating items on the SASS regarding the child's reaction to strangers. Those first few minutes were used to rate those items only. We then disregarded approximately the next 10-15 minutes of the observation time to allow the participants to become used to our presence and get back into their normal routine.

During the remaining observation time, we simultaneously watched for activity relevant to the SASS while occasionally completing CCSERRS episodes according to previously published guidelines (McCall, Groark, & Fish, 2010). SASS ratings were completed immediately after at least one hour of observation, though more observation time was occasionally used to view as much relevant behavior as possible. If certain behaviors were not seen during the observation period, we asked the caregiver questions regarding the target child's typical behaviors relevant to that question.

3.3.2.2 Physical growth data

Physical growth measurements were collected for a child on the same day that he or she was observed for the SASS and CCSERRS, typically immediately concluding the observation. There were 3 cases in which the physical growth measurements were retaken 1-2 days after the observation, due to errors in measurement on the first visit.

3.3.2.3 Survey data

Each sampled caregiver completed the survey (demographic questionnaire, caregiver role questionnaire, CES-D, & MSPSS) verbally with myself (and research assistant as interpreter if necessary) within a week of observations occurring in her home. The survey was completed prior to the observation in order for us to build rapport with the participants. We verbally asked the questions and provided answer choices where relevant. Caregivers' were provided with an English/IsiZulu copy of the questionnaire for their reference during the interview.

3.3.2.4 Local cultural assessment

As described previously, various cultures may have differing socialization and developmental goals for children. It was important to take these cultural values into consideration rather than simply importing Western concepts of ideal child development and fitting the local culture into those expectations. To better understand potential cultural differences in socialization goals, caregivers without sampled children were asked to review an adapted version of the SASS items and indicate how they would rate the "ideal" child according to the scale. A similar procedure was used to assess the cultural appropriateness of the CCSERRS. The same selected mothers were asked to review the CCSERRS items and indicate what they considered to be ideal for caregiver-child interactions and explain their selection.

The cultural assessment was not completed as planned. It was clear that some of the caregivers had difficulty completing the scales as asked. Some seemed to have difficulty determining what the word "ideal" meant to them. Others would verbally indicate that the "ideal" child would act in one way and then mark the opposite on their paper. Due to limited time for completion, this task was sometimes completed in a group setting. In those cases, caregivers were asked not to discuss their answers with their peers. In practice, however, there was much discussion.

My research assistant offered important insight into why the task may have been so difficult for the participants. She explained that over the past several decades, Zulu and other traditional South African cultures have changed considerably, affected by Western influences. It was unclear to her, and likely to the participants, whether they should be answering in accordance with historical

Zulu culture or with the current culture. Even if they focused on current culture, it could have been difficult to identify what current cultural ideals actually were.

Although the task was not completed as planned, we were able to identify a few clear differences between the caregiver-child interaction quality scale and cultural ideals through the discussion that took place. For example, the description of positive caregiver engagement on the CCSERRS measure includes “caregiver gets at the level of the child (kneels, sits on the floor with children) ...” The participants explained that although a good caregiver would be verbally engaged with children as they play, they would never get down on the floor with a child. Also, according to the measure, child-directed behaviors are rated as higher in quality. The participating caregivers generally disagreed with this and thought that good caregivers should be directive in their interactions with children rather than following children’s leads. Although no changes were made to analyses based on the cultural assessment of the SASS ad CCSERRS measures, these ideas were taken into account when interpreting results.

4.0 QUANTITATIVE ANALYSIS, RESULTS, AND DISCUSSION

4.1 QUANTITATIVE ANALYSIS PLAN

The sample included one to five children per caregiver, and therefore, children were nested within caregivers resulting in potential clustering effects. Three separate analysis strategies were used to address clustering effects. First, analysis utilizing the full sample was completed, ignoring all clustering of children within caregivers. Next, the same analysis on a smaller sample was completed, with only one child selected per caregiver to ensure independence. Finally, a multilevel model approach was applied to the full sample. The original analysis plan stated that if results from all three analysis approaches agreed, the results of the first analysis approach would be used. If results did not agree, this would suggest that clustering effects were vital to consider. In this case the multilevel model approach would be used. However, if the multilevel models failed to converge, the analysis utilizing the smaller restricted sample would be used. Details for each of the three analysis strategies are provided below.

4.1.1 Data preparation

Quantitative data analyses were completed using SPSS (version 24) and HLM (version 7.01) software. Prior to analyses, data were cleaned and composite scores were calculated where appropriate. All physical growth data were eliminated for any children with a physical growth *z*-

score above +4.00 (*SD*s) or less than -8.00, because scores beyond this range would be considered highly unlikely and would likely have resulted from inaccurate ages or physical measurements (Warner et al., n.d.). One child's physical growth data was eliminated by these criteria, because the child had a recorded head circumference *z*-score of 6.38.

4.1.2 Full analysis ignoring clustering

First, three separate regression models were used to test for an association between caregivers' level of education, age, and years of experience and caregiver-child interaction quality (research questions QUANT 1, 2, & 3). If significant predictions for any of these variables were detected for either institution, the variables were included as covariates in subsequent analyses of the same dependent variable. Next, separate hierarchical regression models were tested to assess whether the caregivers' depression symptoms and social support were associated with caregiver-child interaction quality, after controlling for appropriate covariates (research questions QUANT 5 & 6). Per the original analysis plan, the next step was to determine if there were any differences in predictions between the two institutions by adding the institution and institution by caregiver predictor interaction to the models. However, it quickly became clear that although there were some distinct institutional differences that should be accounted for, the size of the sample was far too small and the models far too complicated for reliable analysis and clear interpretation. Instead, to simplify the models, a decision was made to run the analysis separately for the two institutions. Next, separate regression models were used to test for an association between caregiver-child interaction quality and children's attachment security, height, and weight, after adjusting for covariates (QUANT 7 & 8). Again, separate models were tested for each institution. Potential covariates could include caregiver education, age, experience, child's time with current caregiver (months), child age (months), child HIV status, and child parent status (parents known to be alive or at least one parent deceased or unknown).

4.1.3 Restricted sample analysis

For this analysis, the same procedures described for the full analysis were followed, but on a restricted sample. For any caregiver in the full sample with two or more sampled children within their care, a single child was randomly selected from their household. The data from any non-selected children in those households were excluded from analysis. This analysis approach would ensure the assumption that participants are independent from each other. However, because it was necessary to treat the two institutions as separate for the regression analysis, the decrease in sample size made it unfeasible to conduct reliable analyses with this approach.

4.1.4 Multilevel model analysis

For the third approach, two-level random intercept models were tested using HLM software. Restricted Maximum Likelihood (REML) estimation was used to estimate fixed effects and variance components and Full Information Maximum Likelihood (FIML) estimation was used for model comparison purposes. First, the unconditional models were tested by calculating Intra-Class Correlations (ICCs) for each independent variable to determine if clustering effects were present and multilevel modeling was necessary. Next, each of the caregiver background characteristics were tested separately. Any caregiver background variables that did not significantly improve model fit were excluded from subsequent models. Next, relevant covariates, as determined by preliminary analysis, were added to the models and retained regardless of whether they improved model fit. Then the target predictor (i.e. depression symptoms, social support, interaction quality, etc.) was added to the model, followed by the institution and the institution by predictor interaction. Final models were determined by comparing model fit using the likelihood ratio test and Akaike Information Criterion (AIC). When likelihood ratio χ^2 tests indicated an improvement of $p < .10$ and AIC decreased, the more complex models were retained. Because the sample was small and had limited power, a *p*-value of cut-off of .10 was used. This would allow the detection of substantial but otherwise statistically non-significant changes in model fit. If the variable of interest was significantly associated with the dependent variable in the final model, percent variance accounted for was computed using Raudenbush and Bryk's (2002) version of R^2.

4.2 PRELIMINARY RESULTS AND DESCRIPTIVE STATISTICS

Prior to completing full analyses, descriptive statistics and some preliminary analyses were closely examined to assess psychometric properties of the measures used, identify which composite scores should be used for analysis, determine which possible covariates to include, detect the extent of nesting effects, and decide how to address institutional differences. The following sections contain information about the psychometric properties of the measures used in this study, followed by decisions made regarding some of the measures.

4.2.1 Interrater reliability

I completed 100% of the observations. A research assistant accompanied me to dual code 32% of the observations, with multiple dual-coded observations completed at each institution. For observations with dual coding, an average score was used for analysis. In his article on computing interrater reliability, Hallgren (2012) explains that an ICC is appropriate for use with studies with ordinal, interval, or ratio variables, and can be used when only part of the full sample is rated by multiple observers. It was originally proposed that interrater reliability for the CCSERRS and SASS was to be calculated as an ICC using mixed model, absolute agreement, single-measures (Hallgren, 2012). However, it became clear through our discussion during training and after a few observations that the research assistant's ability to fully understand the language being used within most homes sometimes created a different observation environment for my research assistant and I. My research assistant could use language to more carefully identify tone and content of interactions. Therefore, it was unlikely that we would have absolute agreement on individual items. Additionally, analyses were conducted with average scale scores, therefore the reliability between averages was more relevant and absolute agreement would not be anticipated with average scores. Therefore, consistency agreement, which assesses the extent to which observers provide ratings in the same rank order, was used (Hallgren, 2012). Interrater reliability for CCSERRS scale scores for play, feeding, and changing/bathing/diapering episodes were ICC = .88, ICC = .47, and ICC = .83. All ICCs were in the excellent range except for interaction quality during feeding (Cicchetti, 1994). The single-measures ICC was considered fair for interaction quality during feeding, but the average-measures ICC was considered good (ICC = .64). The interrater reliability for the SASS attachment measure was excellent (ICC = .91).

4.2.2 Internal consistency

Internal consistency was calculated for each of the scale measures using Cronbach's alpha. Internal consistency for the CES-D depression measure was considered excellent (Cronbach's alpha

= .85). Because the two utilized subscales from the MSPSS social support measure were treated separately in later analyses, the reliability of each subscale was computed separately. Cronbach's alphas for the family and friends subscales were .89 and .88 respectively.

Internal consistency of the CCSERRS caregiver-child interaction quality measure was assessed by calculating Cronbach's alphas separately for the full 9-item scale for each observer and each episode prior to creating composite scores (i.e. observer: PI, activity: play, episode: 1). Reliabilities ranged from .83 to .93, which are considered excellent.

Cronbach's alphas were also computed to test the internal consistency of the SASS attachment measure for each observer. Alphas were borderline acceptable (.58 and .64), which may reflect issues with the measure described above.

4.2.3 Correlations

To determine which composite scores to use for analyses, correlations between subscale scores were compared. For social support, as previously reported, there was considerable variability in how participants interpreted the term "special person," making it difficult to draw conclusions from findings using this subscale. Therefore, results from this subscale are not reported here. Correlations between social support from family and friends were examined. Social support from family was essentially uncorrelated with social support from friends ($r = .05, p = .801$).

For caregiver-child interaction quality, the correlations between caregiver-child interaction quality scores during play, feeding, and changing/bathing/diapering were compared. Play and feeding scores were significantly correlated ($r = .49, p = .002$) and feeding and changing/bathing/diapering were somewhat correlated ($r = .40, p = .087$), but play and changing/bathing/diapering were not well correlated ($r = .22, p = .288$).

4.2.4 Scale decisions

Many options for the use of full scale or subscale scores for the MSPSS social support measure and for the CCSERRS interaction quality measure were available. The psychometric properties of the scales and subscales were used to determine which scores to use for analyses.

4.2.4.1 Social support scale

For the social support measure, two separate subscales, social support from family and friends, or the composite of the subscales could be used for analysis. Both the family and friends subscales had excellent internal consistency, but subscale scores were minimally correlated. As a result, social support from the two sources were treated as separate subscales rather than combined as an average score.

4.2.4.2 Interaction quality scale

For caregiver-child interaction quality, CCSERRS scores for episodes during play, feeding, and changing/bathing/diapering were available. Internal consistencies for each of the individual episodes were excellent. Interrater reliability was high for play and changing/bathing/diapering episodes, but only fair for feeding. All sampled children had ratings from at least one play episode ($n = 49$), most had at least one feeding episode ($n = 39$), but far fewer had at least one changing/bathing/diapering episode ($n = 25$). Due to the low correlation between play and changing/bathing/diapering and the limited number of children with changing/bathing/diapering episodes, the changing/bathing/diapering data were excluded. Scores from feeding and play episodes were highly correlated. Thus, the average scores across items and episodes for any available play and feeding episodes were calculated to create the caregiver-child interaction quality variable (up to two episodes per activity).

4.2.5 Data structure and covariate options

To begin, correlations between all major variables and possible continuous covariates were computed for the full sample as well as divided by institution and possible categorical covariates (i.e. HIV status and parent status). Comparisons were made to determine whether correlations varied in size or direction across the institutions and HIV and parent status categories. An addition, scatterplots with fit lines were examined for clear differences on these same variables.

The examination of the scatterplots revealed that possible effects were fairly consistent in direction across institutions, although the slope of the possible effects did vary in grade. It was also clear that there were very few data points in some groups when split by institution and HIV status. Although there were differences between these groups, because of limited sample size in each group, estimates of effects of HIV+ children in institution B should be interpreted with caution. Examination of the correlations also revealed that HIV seemed to operate differently across and within institutions, indicating that it would be necessary to test for HIV by institution interactions.

Additional covariates were chosen on theoretical grounds. Specifically, a child's time with their caregiver would likely be associated with an opportunity to build attachment relationships with that caregiver. Therefore, time with caregiver (months), was included as a covariate for attachment models. In addition, age was considered vitally important to include for physical growth models, because children of different ages may differ in the extent of growth delays.

4.2.6 Intra-class correlations (ICC)

ICCs were computed using null models for each of the dependent variables in the study (Table 4.1). When computed with multilevel models, ICCs indicate the extent of clustering of level-one variables (child variables) within level-2 variables (caregiver variables). ICCs ranged from .15 to .47, indicating that anywhere from 15% to 47% of the variance in outcome variables was between caregivers. This substantial clustering indicates that the data violate assumptions of independence of observations. Therefore, HLM, the multilevel modeling approach, would provide more accurate statistical estimates than regression models using disaggregated data.

Table 4.1: ICCs that Reflect Clustering of Child and Caregiver Variables

Dependent Variable	Intra-Class Correlation
Interaction Quality	.47
Attachment	.15
Weight *Z*-scores	.36
Height *Z*-scores	.31

4.3 RESULTS

4.3.1 Predictions of interaction quality

4.3.1.1 Caregiver background characteristics

To investigate the association between caregivers' characteristics such as age, experience, and education and caregiver-child interaction quality and to determine whether such variables should be included as covariates in later models, a series of separate HLM models were computed.

Results are presented in Tables 4.2. I hypothesized that neither caregivers' age nor years of experience would be associated with caregiver-child interaction quality. Level of education was expected to be positively associated with interaction quality. None of the tested caregiver characteristics were significantly associated with interaction quality, and therefore were not included as covariates in later analyses.

Table 4.2: Fixed Effects, Variance Components, and Model Fit for Interaction Quality by Caregiver Background Characteristics.

Fixed Effects	**Coeff. (*SE*)**	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)
For Intercept							
Intercept	**1.85 (.09)*****	1.85 (.09)***	1.90 (.77)**	1.84 (.09)***	2.10 (.32)***	1.85 (.09)***	1.86 (.21)***
Institution			-.08 (1.39)		.46 (.48)		-.01 (.29)
Age		-.00 (.02)	-.00 (.02)				
Institution*Age			.00 (.03)				
Education				.04 (.02)	.02 (.03)		
Institution*Education					.04 (.05)		
Experience						-0.01 (0.01)	-.02 (.02)
Institution*Experience							-.04 (.09)
Variance Components	**Coeff. (*SE*)**	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)	Coeff. (*SE*)
Var. in Interaction intercepts	**.13 (.37)****	.15 (.38)**	.17 (.41)***	.14 (.38)**	.16 (.40)***	.15 (.38)**	.16 (.40)***
Likelihood Ratio chi^2	**-**	.57	.04	1.35	.49	.97	.62
No. of Parameters	**3**	4	6	4	6	4	6
Deviance (FIML)	**70.100795**	70.065548	70.062989	69.172327	68.682875	69.768014	69.141879
AIC	**76.10**	78.07	82.06	77.17	80.68	77.77	81.14

Note. *$p < .01$, **$p < .05$, **$p < .001$ All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

4.3.1.2 Caregiver role

There was almost no variability in the responses on the relationship questionnaire, and therefore further analysis was not deemed appropriate.

4.3.1.3 Caregiver depression symptoms

I hypothesized that caregiver depression symptoms would be negatively associated with caregiver-child interaction quality.

Fixed effects, variance components, and model fit results for HLM analysis for the association between interaction quality and depression are displayed in Table 4.3. The inclusion the HIV by depression interaction significantly improved model fit. Therefore, the final model for prediction of interaction quality and depression was:

$$\begin{aligned} &Level\ 1: InteractionQ_{ij} = \beta_{0j} + \beta_{1j}HIV_{ji} + r_{ij} \qquad r_{ij} \sim N(0, \sigma^2) \\ &Level\ 2: \beta_{0j} = \gamma_{00} + \gamma_{01}Depression_j + \gamma_{02}Institution_j + u_{0j} \\ &\qquad\qquad \beta_{1j} = \gamma_{10} + \gamma_{11}Depression_j + \gamma_{12}Institution_j \qquad u_{oj} \sim N(0, \tau_{00}). \end{aligned}$$

This model for the association between interaction quality during play and depression met the assumption of homogeneity of level-1 variance ($\chi^2_{10} = 1.66, p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and depression. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{48} = .98,\ p = .524$). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

Among HIV- children in institution A, the average interaction quality score was 1.89. Among HIV- children, caregiver depression was not associated with interaction quality, after controlling for institution ($\gamma_{01} = -.01,\ SE = .01, p = .154$). In institution A, child HIV status was negatively associated with quality of interaction quality after controlling for depression ($\gamma_{10} =$

$-.22, SE = .09, p = .020)$. HIV+ children in institution A, on average, experienced interaction quality ratings .22 units lower than HIV- children. There were no significant differences between institutions on overall interaction quality after controlling for depression and child HIV status $(\gamma_{02} = -.00, SE = .20, p = .987)$. However, a significant depression by HIV interaction indicated that among HIV+ children, each additional point in caregiver depression score was associated with an average .01-unit higher interaction quality rating $(\gamma_{11} = .02, SE = .01, p < .001)$. There were no institutional differences in the effect of HIV on quality of interaction $(\gamma_{12} = .14, SE = .26, p = .583)$. After adjusting for depression and child HIV status, significant variation in interaction quality remained $(\chi^2(25) = 62.29, p < .000)$.

Although there was a significant difference between HIV+ and HIV- children in the association between caregiver depression symptoms and caregiver-child interaction quality, the overall association between depression and interaction quality was not significant.

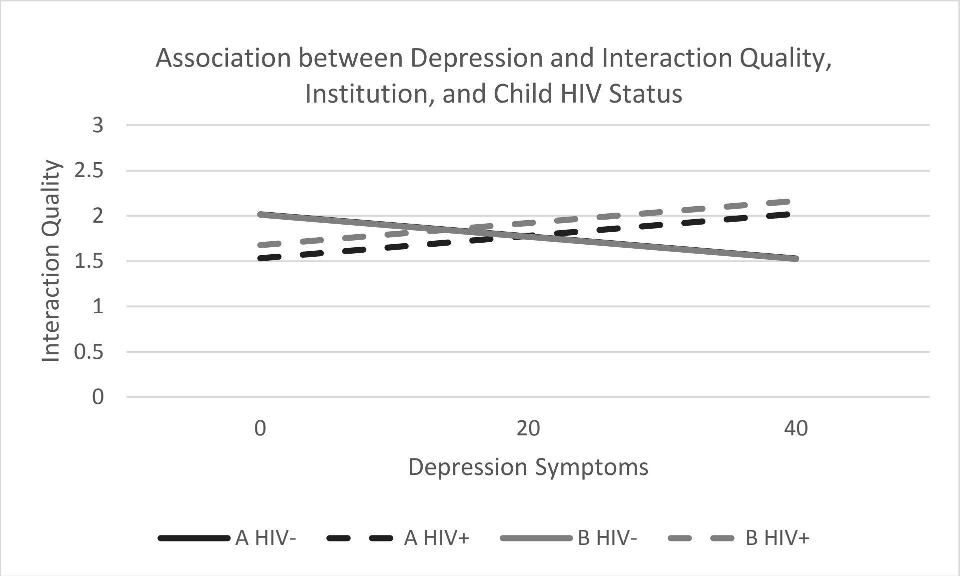

Figure 4.1: Association between Depression and Interaction Quality, Institution, and Child HIV Status.

Table 4.3: Fixed Effects, Variance Components, and Model Fit for Interaction Quality by Depression, Institution, and Child HIV Status.

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	Model 3 Coeff. (*SE*)	Model 4 Coeff. (*SE*)	**Model 5 Coeff. (*SE*)**
For Intercept					
Intercept	1.85 (.09)***	1.90 (.15)***	1.90 (.14)***	1.90 (.14)***	**1.89 (.14)*** **
Depression			-.01 (.01)	-.00 (.01)	**-.01 (.01)**
Institution		-.05 (.21)	-.03 (.20)	-.01 (.02)	**-.00 (.20)**
Institution* Depression				-.02 (.20)	
For HIV Slope					
Intercept		-.18 (.13)	-.17 (.13)	-.17 (.13)	**-.22 (.09)** **
Depression					**.02 (.01)*** **
Institution		.12 (.26)	.08 (.26)	.07 (.27)	**.15 (.26)**
Variance Components					
Var. in Interaction intercepts	.13 (.37)***	.14 (.37)***	.15 (.38)***	.16 (.40)***	**.15 (.39)*** **
Likelihood Ratio chi^2	-	.34	.28	0.06	**2.14**
No. of Parameters	3	6	7	8	**8**
Deviance (FIML)	70.100795	70.43728	70.161809	70.105784	**68.019242**
AIC	76.10	82.44	84.16	86.11	**84.02**

Note. *p < .01, **p < .05, **p < .001 All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

4.3.1.4 Caregiver perceived social support

To investigate whether perceived social support from family and friends were associated with caregiver-child interaction quality, a series of HLM models were computed. I hypothesized that social support from each of the two sources would be positively associated with quality of caregiver-child interactions.

Family

Fixed effects, variance components, and model fit results for HLM analysis for the association between caregiver-interaction quality and social support from family are displayed in Table 4.4. The HIV by social support from family interaction did not significantly improve model fit. Therefore, the final model for the association between interaction quality and social support from family was:

$$
\begin{aligned}
&Level\ 1: InteractionQ_{ij} = \beta_{0j} + \beta_{1j}HIV_{ji} + r_{ij} \qquad r_{ij} \sim N(0, \sigma^2) \\
&Level\ 2: \beta_{0j} = \gamma_{00} + \gamma_{01}Family_j + \gamma_{02}Institution_j + u_{0j} \\
&\qquad\qquad \beta_{1j} = \gamma_{10} + \quad \gamma_{11}Institution_j \quad u_{oj} \sim N(0, \tau_{00}).
\end{aligned}
$$

This model met assumption of homogeneity of level-1 variance ($\chi^2_{10} = 1.66, p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and social support from family. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{48} = .97,\ p = .330$). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

Among HIV- children in institution A, the overall average interaction quality score was 1.87. Social support from family was not significantly associated with interaction quality, after controlling for institution and child HIV status ($\gamma_{01} = .04, SE = .05, p = .433$). Among children in institution A, child HIV status was not significantly associated with quality of interaction during controlling for social support from family ($\gamma_{10} = -.17, SE = .183, p = .199$). There were no significant differences between institutions on overall interaction quality after controlling for child HIV status ($\gamma_{02} = .01, SE = .21, p = .950$), nor in the association between child HIV status and quality of interaction ($\gamma_{11} = .19, SE = .26\ p = .474$). After adjusting for social support from family, institution, and child HIV status, significant variation in interaction quality remained ($\chi^2(25) = 60.67, p < .001$).

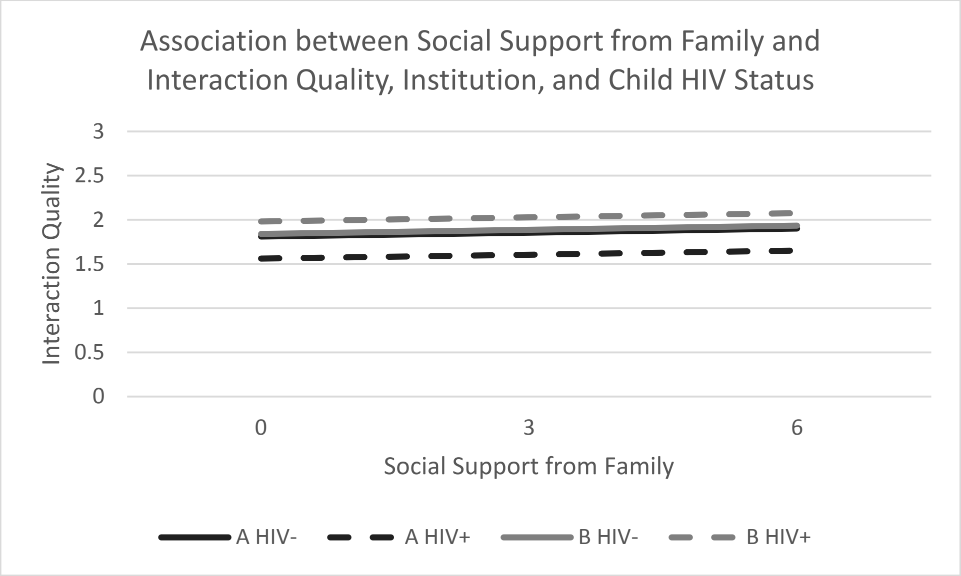

Figure 4.2: Association between Social Support from Family and Interaction, Institution, and Child HIV Status.

Table 4.4: Fixed Effects, Variance Components, and Model Fit for Interaction Quality by Social Support from Family, Institution, and Child HIV Status.

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	**Model 3 Coeff. (*SE*)**	Model 4 Coeff. (*SE*)	Model 5 Coeff. (*SE*)
For Intercept					
Intercept	1.85 (.09)***	1.90 (.15)***	**1.87 (.15)*** **	1.87 (.15)***	1.88 (.15)***
Family			**.04 (.05)**	.04 (.05)	.01 (.06)
Institution		-.05 (.21)	**-.01 (.21)**	.01 (.20)	-.02 (.21)
Institution* Family				.08 (.05)	
For HIV Slope					
Intercept		-.18 (.13)	**-.17 (.13)**	-.17 (.13)	-.20 (.10)*
Family					.11 (.05)**
Institution		.12 (.26)	**.19 (.26)**	.19 (.27)	.38 (.19)*
Variance Components					
Var. in Interaction intercepts	.13 (.37)***	.14 (.37)***	**.15 (.39)*** **	.15 (.38)***	.16 (.39)***
Likelihood Ratio chi^2	-	.34	**.35**	1.16	1.11
No. of Parameters	3	6	**7**	8	8
Deviance (FIML)	70.100795	70.43728	**70.083750**	68.919947	68.976878
AIC	76.10	82.44	**84.08**	84.92	84.98

Note. *$p < .01$, **$p < .05$, **$p < .001$ All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

Friends

Fixed effects, variance components, and model fit results for HLM analysis for the association between interaction quality and social support from friends are displayed in Table 4.5. The inclusion of the HIV by social support from friends interaction did not significantly improve model fit. Therefore, the final model for prediction of interaction quality by social support from friends was:

$$Level\ 1{:}\ InteractionQ_{ij} = \beta_{0j} + \beta_{1j}HIV_{ji} \qquad r_{ij}{\sim}N(0,\sigma^2)$$
$$Level\ 2{:}\ \beta_{0j} = \gamma_{00} + \gamma_{01}Friends_j + \gamma_{02}Institution_j + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11}Institution_j \qquad u_{oj}{\sim}N(0,\tau_{00}).$$

This model met assumption of homogeneity of level-1 variance ($\chi^2_{10} = 1.70, p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and social support from friends. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{48} = .96,\ p = .101$). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

HIV- children in institution A had an overall average interaction quality score of 1.86. Social support from friends was significantly associated with interaction quality, after controlling for institution and child HIV status ($\gamma_{01} = .12, SE = .05, p = .025$). On average, each additional unit in social support from friends was associated with and .12-unit higher rating of interaction quality. Among children in institution A, child HIV status was not significantly associated with interaction quality after controlling for social support from friends, however, it neared significance ($\gamma_{10} = -.24, SE = .12, p = .069$). HIV+ children in institution A had interaction scores, on average, .24 units below HIV- children. There were no significant differences between institutions on overall interaction quality after controlling for child HIV status ($\gamma_{02} = .02, SE = .20, p = .908$), nor in the effect of HIV on quality of interaction ($\gamma_{11} = .18, SE = .28, p = .527$). After adjusting for social support from friends, institution, and child HIV status, significant variation in interaction quality remained ($\chi^2(25) = 46.74, p = .005$).

Social support from friends was positively associated with quality of interaction, as hypothesized. Twenty-eight percent of the variance in caregiver-child interaction quality was explained by social support from friends. In contrast, social support from family was not significantly associated with interaction quality.

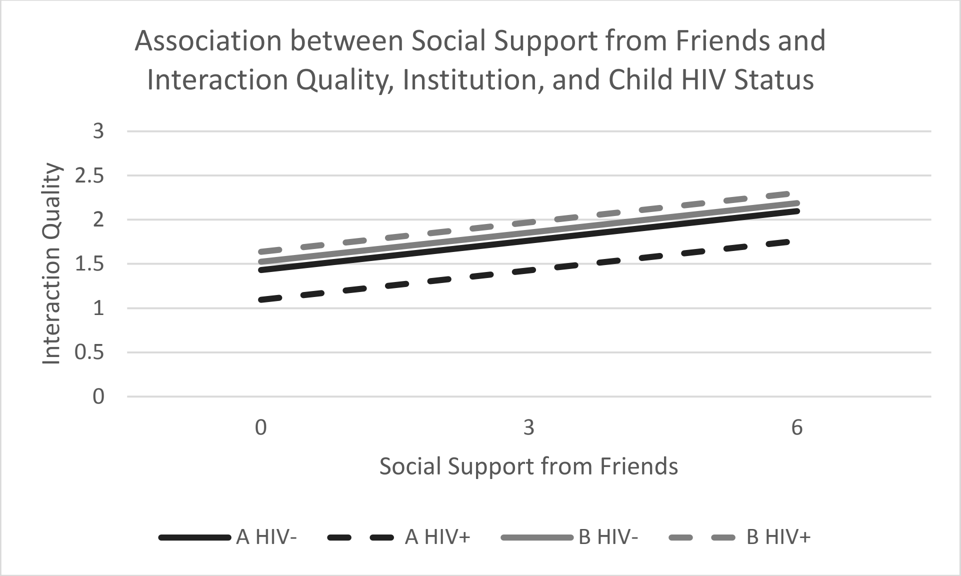

Figure 4.3: Association between Social Support from Friends and Interaction Quality, Institution, and Child HIV Status

Table 4.5: Fixed Effects, Variance Components, and Model Fit for Interaction Quality by Social Support from Friends, Institution, and Child HIV Status

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	**Model 3 Coeff. (*SE*)**	Model 4 Coeff. (*SE*)	Model 5 Coeff. (*SE*)
For Intercept					
Intercept	1.85 (.09)***	1.90 (.15)***	**1.86 (.13)*** **	1.86 (.13)***	.186 (.13)***
Friends			**.12 (.05)** **	.12 (.05)**	.12 (.05)**
Institution		-.05 (.21)	**.02 (.20)**	.10 (.08)	.03 (.20)
Institution* Friends				.02 (.20)	
For HIV Slope					
Intercept		-.18 (.13)	**-.24 (.12)* **	-.24 (.12)*	-.18 (.17)
Friends					-.05 (.08)
Institution		.12 (.26)	**.18 (.28)**	.38 (.28)	.10 (.35)
Variance Components					
Var. in Interaction intercepts	.13 (.37)***	.14 (.37)***	**.10 (.31)** **	.10 (.32)**	.10 (.32)**
Likelihood Ratio chi^2	-	.34	**4.69** **	1.42	.12
No. of Parameters	3	6	**7**	8	8
Deviance (FIML)	70.100795	70.43728	**65.751129**	64.335046	65.630661
AIC	76.10	82.44	**79.75**	80.34	81.63

Note. *p < .01, **p < .05, **p < .001 All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

4.3.2 Results: Predictions of child outcomes

4.3.2.1 Attachment

I hypothesized that interaction quality would be positively associated with child attachment. Fixed effects, variance components, and model fit results for HLM analysis for the association between quality of interaction and child attachment are displayed in Table 4.6. The inclusion of the interaction quality by institution slope did not significantly improve model fit, but the inclusion of the interaction quality by HIV interaction did improve model fit. Therefore, the final model for prediction of attachment by interaction quality was:

$$
\begin{aligned}
Level\ 1{:}\ Attach_{ij} &= \beta_{0j} + \beta_{1j}HIV_{ji} \\
&\quad + \beta_{2j}TimeWCaregiver_{ij} + \beta_{3j}InteractionQ_{ji} + \beta_{4j}HIV_{ji} \\
&\quad * InteractionQ_{ji} + r_{ij}
\end{aligned}
\qquad r_{ij}\sim N(0,\sigma^2)
$$

$$
\begin{aligned}
Level\ 2{:}\ \beta_{0j} &= \gamma_{00} + \gamma_{01}Institution_j + u_{0j} \\
\beta_{1j} &= \gamma_{10} + \gamma_{11}Institution_j \\
\beta_{2j} &= \gamma_{20} \\
\beta_{3j} &= \gamma_{30} \\
\beta_{4j} &= \gamma_{40} \qquad u_{oj}\sim N(0,\tau_{00}).
\end{aligned}
$$

This model met the assumption of homogeneity of level-1 variance ($\chi^2_{10} = .55, p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and attachment. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{42} = .98$, $p =$ .532). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

Table 4.6: Fixed Effects, Variance Components, and Model Fit for Attachment by Caregiver-Child Interaction Quality, Time with Caregiver, Institution, and Child HIV Status

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	Model 3 Coeff. (*SE*)	Model 4 Coeff. (*SE*)	Model 5 Coeff. (*SE*)	Model 6 Coeff. (*SE*)	**Model 7 Coeff. (*SE*)**
For Intercept							
Intercept	3.70 (.07)***	3.66 (.06)***	3.65 (.07)***	3.40 (.10)****	3.40 (.10)***	3.40 (.11)***	**3.40 (.10)*** **
Institution				.46 (.13)**	.46 (.13)**	.48 (.13)**	**.49 (.13)*** **
For HIV Slope							
Intercept			-.01 (.14)	.18 (.18)	.18 (.18)	.17 (.18)	**.12 (.14)**
Institution				-.27 (.31)	-.27 (.31)	-.27 (.31)	**-.22 (.33)**
For Time with Caregiver Slope							
Intercept		.01 (.00)**	.01 (.00)**	.00 (.00)	.00 (.00)	.00 (.00)	**.00 (.00)**
For Interaction Slope							
Intercept					.02 (.13)	-.10 (.21)	**.14 (.11)**
Institution						.24 (.25)	
For Interaction *HIV Slope							
Intercept							**-.82 (.33)** **
Variance Components							
Var. in Interaction intercepts	0.03	0.02	.01	.000	.00	0	**.00**
Likelihood Ratio chi^2		13.63***	2.78	8.70**	.02	1.34	**8.69** **
No. of Parameters	3	4	5	7	8	9	**9**
Deviance (FIML)	57.001653	43.368594	40.585510	31.880607	31.856891	30.516605	**23.163187**
AIC	63.00	51.37	50.59	45.88	47.86	48.52	**41.16**

Note. *p < .01, **p < .05, **p < .001 All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

HIV- children in institution A had average attachment scores of 3.40 after controlling for time with caregiver. For children in institution A, child HIV status was not significantly associated with attachment after controlling for time with caregiver ($\gamma_{10} = .12, SE = .14, p = .436$). Time with caregiver was not significantly associated with attachment after controlling for interaction quality, child HIV status, and institution ($\gamma_{20} = .00, SE = .00, p = .156$). Interaction quality was not significantly associated with attachment after controlling for time with caregiver, child HIV status, and institution ($\gamma_{30} = .14, SE = .11, p = .245$). There was a significant difference between institutions on overall attachment, after controlling for time with caregiver, child HIV, and interaction quality ($\gamma_{01} = .48, SE = .13, p < .001$). On average, children in institution B had attachment scores .48 units above those in institution A. There was no significant difference between institutions on the effect of HIV on attachment, after controlling for quality of interaction and time with caregiver ($\gamma_{11} = -.22, SE = .33, p = .508$). There was, however, a significant HIV by interaction quality interaction ($\gamma_{40} = -.82, SE = .33, p = .028$). On average, an addition unit in interaction quality was associated with a .14-unit greater attachment score among HIV- children, but among HIV+ children, each additional unit in interaction quality was associated with a .68-unit lower attachment score. After adjusting for social support from friends, institution, child HIV status, and parent status, no significant variation in interaction quality remained ($\chi^2(23) = 19.56, p > .500$).

Interaction quality was not significantly associated with attachment scores for HIV- children, but there was a significantly more negative association between the two variables for HIV+ children.

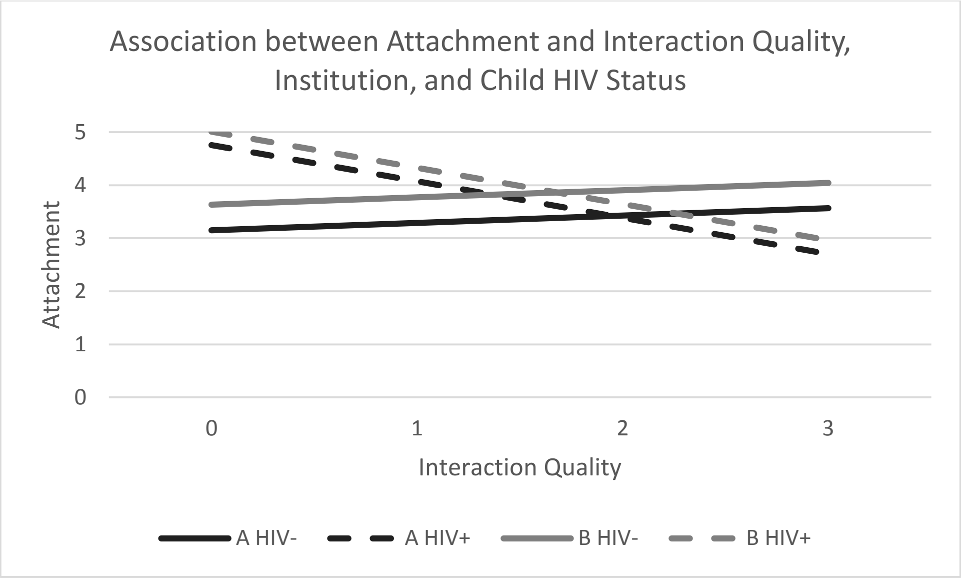

Figure 4.4: Association between Attachment and Interaction Quality, Institution, and Child HIV Status

4.3.2.2 Physical growth

Weight

I hypothesized that interaction quality would be positively associated with children's weight *z*-scores.

Fixed effects, variance components, and model fit results for HLM analysis for the association between weight *z*-score and quality of interaction are displayed in Table 4.7. Neither the inclusion of the interaction quality by institution slope nor the interaction quality by HIV interaction significantly improved model fit. Therefore, the final model for weight z-score by quality of interaction was:

$$Level\ 1: Weight_{ij} = \beta_{0j} + \beta_{1j}HIV_{ji} + \beta_{2j}AgeMos_{ij} + \beta_{3j}InteractionQ_{ji} + r_{ij}$$

$$r_{ij} \sim N(0, \sigma^2)$$

$$\begin{aligned} Level\ 2: \beta_{0j} &= \gamma_{00} + \gamma_{01}Institution_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11}Institution_j \\ \beta_{2j} &= \gamma_{20} \\ \beta_{3j} &= \gamma_{30} \qquad u_{oj} \sim N(0, \tau_{00}). \end{aligned}$$

This model met the assumption of homogeneity of level-1 variance ($\chi^2_{10} = 1.35\ p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and interaction quality. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{47} = .97,\ p =\ .375$). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

HIV- children in institution A had overall average weight *z*-score of -.50, after controlling for age in months ($\gamma_{00} = -.43, SE = .37, p = 256$). This is not significantly different than zero, with zero representing the average weight for age for the WHO norm group. Among children in institution A, child HIV status was significantly associated with weight *z*-score after controlling for age in months and interaction quality ($\gamma_{10} = .60, SE = .24, p = .025$). HIV+ children in institution A had weights .60 *z*-score units above than HIV- children. Age in months was not significantly associated with attachment after controlling for interaction quality, child HIV status, and institution ($\gamma_{20} = .00, SE = .01, p = .747$). Interaction quality was significantly associated with weight *z*-scores after controlling for age in months, child HIV status, and institution ($\gamma_{30} = .65, SE = .27, p = .030$). On average, each additional unit of interaction quality was associated with .65-unit higher weight *z*-scores. There was no significant difference between institutions on overall weight *z*-scores, after controlling for age in months, child HIV status, and interaction quality ($\gamma_{01} = .43, SE = .37, p = .256$). However, there was a significant difference between institutions on the effect of HIV on weight *z*-scores, after controlling for quality of interaction and age in months ($\gamma_{11} = -1.61, SE = .48, p = .004$). HIV+ children in institution B on average had weight scores 1.61 *z*-score units below HIV- children. After adjusting for quality of interaction, institution, age in months, and child HIV status, significant variation in weight *z*-scores remained ($\chi^2(25) = 80.24, p < .001$).

In accordance with hypotheses, caregiver-child interaction quality was significantly positively associated with children’s weight *z*-scores. Interaction quality accounted for 25% of the variance in children’s weight *z*-scores.

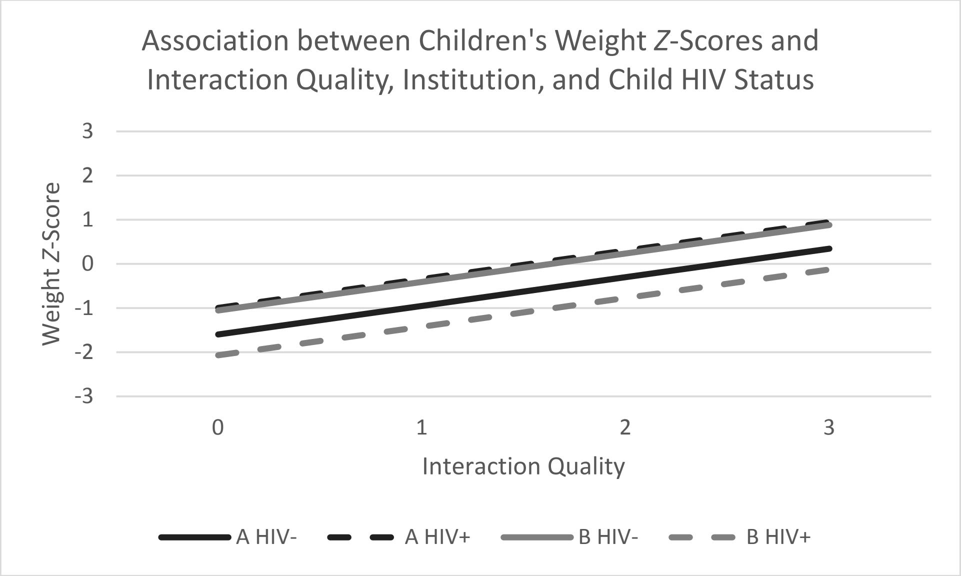

Figure 4.5: Association between Children's Weight *Z*-Scores and Interaction Quality, Institution, and Child HIV Status

Table 4.7: Fixed Effects, Variance Components, and Model Fit for Weight Z-Scores by Caregiver-Child Interaction Quality , Child Age, Institution, and Child HIV Status

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	Model 3 Coeff. (*SE*)	Model 4 Coeff. (*SE*)	**Model 5 Coeff. (*SE*)**	Model 6 Coeff. (*SE*)	Model 7 Coeff. (*SE*)
For Intercept							
Intercept	-.23 (.19)	-.80 (.49)	-.40 (.41)	-.49 (.43)	**-.43 (.37)**	-.42 (.367)	-.40 (.28)
Institution				.54 (.42)	**.54 (.43)**	.53 (.43)	.51(.44)
For HIV Slope							
Intercept			.11 (.25)	.51 (.26)*	**.60 (.24)****	.59 (.24)**	.63 (.29)**
Institution				-1.54 (.50)**	**-1.61 (.48)****	-1.60 (.48)**	-1.64 (.50)**
For Child Age Slope							
Intercept		.01 (.01)	.00 (.01)	.00 (.01)	**.00 (.01)**	.00 (.01)	00 (.01)
For Interaction Slope							
Intercept					**.65 (.27)****	.59 (.36)	.55 (.30)*
Institution						.13 (.51)	
For Interaction *HIV Slope							
Intercept							.52 (.50)
Variance Components							
Var. in Interaction intercepts	.45**	.42**	.51***	.48***	**.64*****	.66***	.60***
Likelihood Ratio chi^2	-	1.92	11.92***	4.70*	**5.13*****	.06	.73
No. of Parameters	3	4	5	7	**8**	9	9
Deviance (FIML)	142.83903	140.92013	129.00357	124.29917	**119.16470**	119.10017	118.43198
AIC	148.84	148.92	139.00	138.30	**135.16**	137.10	136.43

Note. *p < .01, **p < .05, **p < .001 All coefficients and standard errors of fixed effects, and variance components are calculated based on restricted maximum likelihood estimation.

Height

I hypothesized that interaction quality would be positively associated with children's height *z*-scores.

An assessment of the assumptions for HLM analysis indicated that there was an outlier for height that should be removed. The following results are after this outlier was removed. Fixed effects, variance components, and model fit results for HLM analysis for the association between height *z*-scores and quality of interaction are displayed in Table 4.8. The inclusion of the interaction quality by institution slope did not significantly improved model fit. However, the inclusion of the interaction quality by HIV interaction did significantly improve model fit. Therefore, the final model for height z-score by quality of interaction was:

$$\begin{aligned} Level\ 1{:}\ Height_{ij} &= \beta_{0j} + \beta_{1j}HIV_{ji} \\ &+ \beta_{2j}AgeMos_{ij} + \beta_{3j}InteractionQ_{ji} + \beta_{4j}InteractionQ * HIV_{ji} \\ &+ r_{ij} \end{aligned}$$

$$r_{ij} \sim N(0, \sigma^2)$$

$$\begin{aligned} Level\ 2{:}\ \beta_{0j} &= \gamma_{00} + \gamma_{01}Institution_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11}Institution_j \\ \beta_{2j} &= \gamma_{20} \\ \beta_{3j} &= \gamma_{30} \\ \beta_{4j} &= \gamma_{40} \qquad u_{oj} \sim N(0, \tau_{00}). \end{aligned}$$

This model met the assumption of homogeneity of level-1 variance ($\chi^2_{10} = 1.55, p > .500$). Plots of level-2 EB residuals did indicate some concern over heterogeneity of variance for institution and interaction quality. The assumption of normality of level-1 residuals was met (Shapiro Wilk's $W_{46} = .98,\ p =\ .429$). Due to potential violations of the homogeneity of variance assumption, fixed effects with robust standard errors are reported.

HIV- children in institution A, on average, had overall height *z*-scores of -1.38, after controlling for age in months ($\gamma_{00} = -1.38,\ SE = .30, p < .001$). This is significantly different than zero, with zero representing average height for age in the WHO norm group. Among children in institution A, child HIV status was not significantly associated with height *z*-scores, after controlling for age in months and interaction quality ($\gamma_{10} = .31,\ SE = .27, p = .274$). Age in months was significantly associated with height *z*-scores after controlling for interaction quality, child HIV status, and institution ($\gamma_{20} = .02,\ SE = .01, p = .018$). On average, each additional month in age was associated an additional .02 *z*-score units. Interaction quality, on its own, was not significantly associated with height *z*-scores after controlling for age in months, child HIV status, and institution ($\gamma_{30} = -.16,\ SE = .29, p = .586$). There were no significant differences between institutions on overall height *z*-scores, after controlling for age in months, child HIV status, and interaction quality ($\gamma_{01} = .44,\ SE = .38, p = .260$). However, there was a significant difference between institutions on the effect of HIV on height *z*-scores, after controlling for interaction quality and age in months ($\gamma_{11} = -1.92,\ SE = .54, p = .003$), and a significant HIV by interaction quality interaction ($\gamma_{40} = 1.50,\ SE = .54, p = .014$). The combined effect was that there was a very small negative association between interaction quality and height *z*-scores among HIV- children in both institutions, with each additional unit in interaction quality being associated with a .16-unit lower height *z*-scores. However, there was a large positive association between the two variables among HIV+ children. Each additional unit in interaction quality was associated with 1.34-unit higher height *z*-scores among HIV+ children. After adjusting for quality of interaction, institution, age in months, and child HIV status, significant variation in height *z*-scores remained ($\chi^2(25) = 47.01, p = .005$).

In partial accordance with hypotheses, interaction quality was positively associated with HIV+ children's height *z*-scores but not with HIV- children's height *z*-scores. Interaction quality and the interaction quality by HIV status interaction accounted for 8% of the variance in children's height *z*-scores.

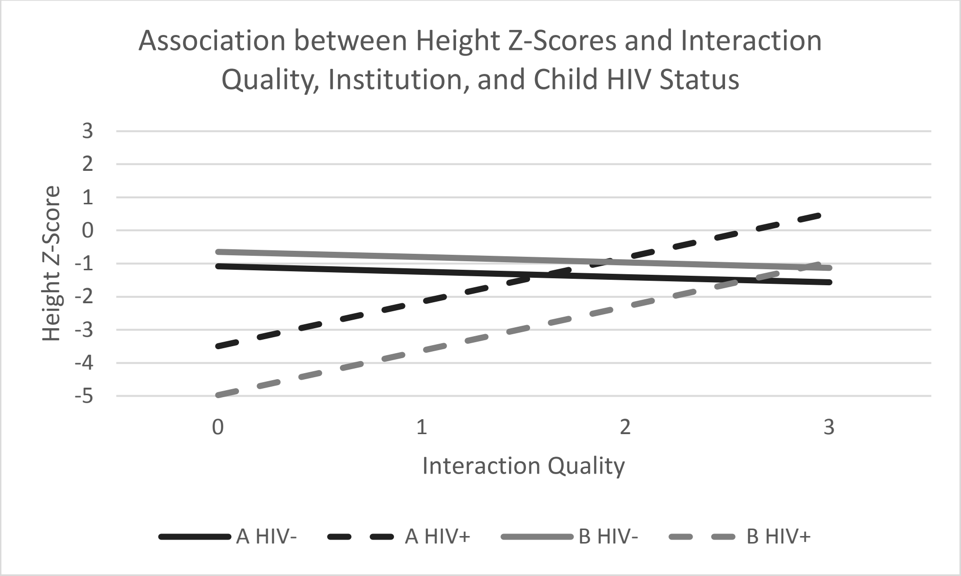

Figure 4.6: Association between Height Z-Scores and Interaction Quality, Institution, and Child HIV Status

Table 4.8: Fixed Effects, Variance Components, and Model Fit for Height Z-Scores by Caregiver-Child Interaction Quality, Child Age, Institution, and Child HIV Status

Fixed Effects	Model 1 Coeff. (*SE*)	Model 2 Coeff. (*SE*)	Model 3 Coeff. (*SE*)	Model 4 Coeff. (*SE*)	Model 5 Coeff. (*SE*)	Model 6 Coeff. (*SE*)	**Model 7 Coeff. (*SE*)**
For Intercept							
Intercept	-1.32 (.19)***	-1.31 (.18)***	-1.23 (.19)***	-1.47 (.29)***	-1.47 (.31)***	-1.45 (.31)***	**-1.38 (.30)*** **
Institution				.55 (.38)	.55 (.38)	.53 (.39)	**.44 (.38)**
For HIV Slope							
Intercept			-.31 (.39)	.25 (.32)	.26 (.33)	.23 (.33)	**.31 (.27)**
Institution				-1.86 (.53)**	-1.86 (.54)**	-1.83 (.54)**	**-1.92 (.54)** **
For Child Age Slope							
Intercept		.02 (.01)**	.03 (.01)**	.02 (.01)**	.02 (.01)**	.02 (.01)**	**.02 (.01)** **
For Interaction Slope							
Intercept					.04 (.29)	-.09 (.44)	**-.16 (.29)**
Slope						.29 (.53)	
For Interaction *HIV Slope							
Intercept							**1.50 (.54)** **
Variance Components							
Var. in Interaction intercepts	.44**	.43**	.40**	.42**	.43**	.46**	**.44** **
Likelihood Ratio chi^2	-	7.70**	1.23	5.90	.01	.24	**4.36** **
No. of Parameters	3	4	5	7	8	9	**9**
Deviance (FIML)	142.71033	135.00539	133.77917	127.88005	127.86608	127.62322	**123.50458**
AIC	148.71	143.01	143.78	141.88	143.87	145.62	**141.50**

Note. *$p < .01$, **$p < .05$, **$p < .001$ All coefficients and standard errors of fixed effects and variance components are calculated based on restricted maximum likelihood estimation.

4.4 DISCUSSION

The aim of the quantitative portion of this study was to examine whether caregivers' educational background, age, experience, sense of their role as "parent," depression, and social support were associated with the quality of interactions between caregivers and young children. I hypothesized that caregivers' level of education, sense of role as "parent," and perceived social support would be positively associated with caregiver-child interaction quality. I also hypothesized that depression would be negatively associated with interaction quality, and that caregivers' age and experience would not be associated with interaction quality. In addition, the quantitative portion of this study also included tests of the association between caregiver-child interaction quality and child attachment and physical growth outcomes. I hypothesized that quality of interactions would be positively associated with each of these outcomes. Results provided mixed support for hypotheses. Social support from friends was positively associated with interaction quality, and in turn, caregiver-child interaction quality was associated with children's weight and height *z*-scores, but no other significant associations were found.

4.4.1 Predictions of interaction quality

4.4.1.1 Caregiver background characteristics

Results supported only one of the hypotheses regarding caregiver age, education, and experience. Specifically, I hypothesized that caregivers' years of experience would not be associated with caregiver-child interaction quality. In accordance with hypotheses, no significant association was found. In fact, the addition of experience to the model decreased model fit. This replicates previous research that demonstrates no association between experience and various measures of caregiver sensitivity in child care or foster care settings (de Kruif et al., 2000; Gerber et al., 2007; Ponciano, 2010). Because the available data are not longitudinal, it is not possible to conclude change over time. However, the lack of association between experience and interaction quality suggests that caregivers are neither changing their caregiving quality as a result of burnout nor learning from previous years of work.

Caregiver age was not anticipated to be associated with caregiver-child interaction quality, because previous research from biological and non-biological caregivers does not support such an effect (Bernier et al., 2010; Biringen et al., 2000; de Kruif et al., 2000; Goldstein et al., 1996; Hamre & Pianta, 2004; Leerkes, 2010). Indeed, results of this study indicate no association between caregiver age and interaction quality, and the inclusion of caregiver age decreased overall model fit.

In contrast to my hypothesis, caregivers' educational background was not associated with caregiver-child interaction quality. Similar to the other caregiver background characteristics, the inclusion of educational background in the model decreased model fit. Most of the existing research was completed in the United States or European countries, with variability coming primarily from years of post-secondary education (Bernier et al., 2010; Biringin et al., 2000; Burrous et al., 2009; Van Doesum et al., 2007; Tarabulsy et al., 2005). Conversely, the current sample includes caregivers who completed their schooling in the South African education system. There was limited variability in level of education. Specifically, four caregivers had no education above elementary school, fifteen had completed at least some high school but had not graduated, nine had completed grade 12, and only one had a certificate or diploma (post-secondary education). A few of those who had graduated from high school mentioned that they had begun or were currently enrolled in post-secondary education, but they had not yet completed a degree. Only completed grade levels or degrees were included in the demographic questionnaire. In a previous study that detected a positive association between education and caregiver sensitivity, only years of ECE-specific training were significant (Gerber et al., 2007). Few, if any, of the caregivers included in this study would have had child development specific education or training beyond what was provided at the institution. For example, at the time of the study, caregivers with young children from institution A were receiving training on a program that uses playful activities to teach young children early learning skills (i.e., colors, numbers, shapes, etc.). However, there would have been no variability in this training among caregivers from institution A, because all caregivers with children of a certain age were involved.

4.4.1.2 Caregiver depression

Results from the analysis of depression did not support a negative association between depression symptoms and quality of interactions, as hypothesized. Although there was a significant difference between HIV+ and HIV- children in the association between caregiver depression symptoms and caregiver-child interaction quality, the actual associations between depression and interaction quality were quite small and not significant.

Much of the past literature on depression and caregiver sensitivity confirms a negative association between the two variables with both biological and professional caregivers (i.e. Gerber et al., 2007; Hamre & Pianta, 2004; Sterling et al., 2013; Van Doesum et al., 2007). However, the present study fails to support this conclusion. Within the sample, there was limited variability in the extent of depression symptoms. Depression scores could potentially range from 0 to 60, with a score of 16 or above indicating a clinical level of depression symptoms. Scores in the current sample ranged from 2 to 40 (*M* = 10.79), and only six caregivers passed the clinical cut-off for the measure. However, the overall range and average depression scores found in this study are similar to those found in studies conducted by Hamre and Pianta (2004) and Gerber et al. (2007) which also measured depression using the CES-D. Therefore, the limited variability is unlikely to explain the lack of evidence for an association between depression and interaction quality.

Although the above-mentioned studies use the CES-D as a measure of depression, each used a different measure of caregiver sensitivity. The present study, unlike the referenced studies, includes a measure of caregiver-child interaction quality rather than caregiver sensitivity. In other words, the dependent variable in the present study includes both caregiver actions towards children and children's responses to their caregivers, whereas caregiver sensitivity includes only caregiver responses to children. It is possible that caregivers with greater depression were demonstrating lower quality behaviors towards children but the children had higher quality behaviors in response. If this were the case, an association between depression symptoms and interaction quality would be difficult to detect. To test if ratings of child items were compensating for lower caregiver item ratings, specifically for caregivers with greater depression symptoms, a difference between average child and caregiver item ratings was computed and then correlated with depression scores. The correlations were not significant, suggesting that this does not account for the lack of support for the hypotheses.

Finally, a few previous studies demonstrated that associations between depression and caregiver sensitivity were present in only subgroups of the full sample, such as younger mothers and infants with negative temperaments (Mertesacker et al., 2004; Van Doesum et al., 2007). It is possible that any potential associations between the depression and interaction-quality variables were moderated by other variables that were not included in the study.

4.4.1.3 Caregiver perceived social support

The results of the study only partially supported the hypothesis that there would be positive associations between perceived social support from family and friends and caregiver-child interaction quality. On average, caregivers who reported greater social support from friends were rated has having slightly higher quality of interactions with children. This was a relatively small effect, but in accordance with hypotheses. Perceived social support from family was not, however, significantly associated with interaction quality, and its inclusion in the model decreased model fit.

Institutional characteristics may provide some insight into the mixed support for hypotheses. Caregivers in both institutions spend a majority of their time away from their biological families, although the overall access to family and external friends does differ between the two institutions. In institution A, many caregiving “staff” go home to their own families during their daily time off. Caregivers at institution B are considered to be full-time “foster mothers,” and must be single, widowed, or divorced. Their time off is limited in comparison to institution A caregivers. Such structural factors may impact caregivers’ access to external support, including from family. Although, on average, caregivers in both institutions reported the lowest perceived social support from friends, caregivers had constant access to other caregivers and institution staff whom they may have considered to be friends. Many caregivers were observed spending time with other caregivers throughout the day as they went about daily chores and watching over the children. Therefore, the relative access to friends as a source of support may influence the strength of the association between perceived social support from friends and quality of interactions with children.

4.4.2 Prediction of child outcomes

4.4.2.1 Attachment

Results did not support a positive association between quality of caregiver-child interactions and children's attachment behaviors. However, the lack of support for these hypotheses is likely due to measurement error. There were numerous concerns about success of the attachment measure. First, as previously described, the observational measure for attachment was not able to be carried out as originally planned. I expected that some of the items would require caregiver report if not enough behaviors were seen during the observation period to rate those items. However, far more items than anticipated had to be rated using caregiver report. When caregiver report was used in previous studies, the measure had poor discriminative validity (Chisholm et al., 1995; Chisholm, 1998). An additional challenge was that I frequently had to complete those caregiver-rated items with the caregiver without the assistance of an interpreter. Although the items had been previously translated into IsiZulu and the written translation was available for the caregivers to look at, some struggled to respond to the items. Finally, some of the psychometric characteristics were problematic: there was limited variability in scores ($M = 3.71, SD = .41$) and overall internal consistency for the measure was low. Due to these multiple concerns, attachment results should be considered with caution and no further interpretation of findings is provided.

4.4.2.2 Physical growth

The physical growth results provided some support for hypotheses and for the psychosocial stature hypothesis. There was some evidence that caregiver-child interaction quality was positively associated with children's weight and height.

Weight

Results confirmed that caregiver-child interaction quality was significantly and positively associated with children's weight *z*-scores. The size of this effect is substantial: a .65-unit variation in *z*-scores indicates that on average, the difference between lowest and highest possible interaction quality ratings could be the difference between a child being labeled undernourished (*z*-score of -2.00 or below) and being at an average weight for their age.

Height

The support for hypothesis regarding height was less consistent. A significant interaction between caregiver-child interaction quality by child HIV status indicated that although there was no clear association between interaction quality and height *z*-scores among HIV- children, there was a significant positive association among HIV+ children. The final model predicted 1.34-unit variation in height *z*-scores for each one-unit variation in interaction quality among HIV+ children. The HIV differences are discussed in more detail in section 4.4.3.

Psychosocial short stature hypothesis

The support for an association between caregiver-child interaction quality and children's height and weight *z*-scores provides additional evidence for what is known as the psychosocial short stature hypothesis. According to this theory, social-emotional deprivation, experienced as low-quality interactions with caregivers, can lead to chronic toxic stress and can inhibit growth hormone production (Johnson & Gunnar, 2011). Numerous studies from child welfare settings have supported this theory, and the present study is no exception (Dobrova-Krol et al., 2008; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010, The St. Petersburg-USA Orphanage Research Team, 2008; van IJzendoorn et al., 2007). Lower quality interactions between caregivers and children, which are characterized by low engagement, responsivity, and flat or negative affect from caregivers, were associated with growth delays. It is not possible to conclude from the present study, which includes neither measures of stress reactivity nor longitudinal data, that this is a causal association mediated by children's stress. Additional research is necessary to confirm that such effects are at play in family-like OVC care settings such as the institutions included in this study.

4.4.3 Additional findings: HIV differences

There were several unanticipated findings relating to children's HIV status that deserve consideration. Although in some cases HIV+ children seemed to be at a disadvantage in regards to caregiver-child interaction quality, they were also found to be healthier than HIV- children. Possible stigma regarding HIV may explain poorer interaction quality, but not the benefits in physical growth.

4.4.3.1 Interaction quality

Results provided some evidence of differences between HIV+ and HIV- children in the caregiver-child interaction quality that they experienced. For example, after controlling for caregiver depression symptoms and social support from friends, there were significant and trend-level differences in interaction quality between HIV+ and HIV- children. Although the HIV by institution differences were not significant, model estimates indicate that the differences existed only in institution A[2].

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[2] It is important to note that because institution B only had three HIV+ children, it is more difficult to draw conclusions regarding HIV in institution B.

One possible explanation was that caregivers in institution A were treating HIV+ with less responsivity/sensitivity than HIV- children due to stigma regarding HIV. The measure of caregiver-child interaction included items related to both caregiver and child. Therefore, it was possible that with the measure used, either caregivers' behaviors, the children's behaviors, or both could be responsible for the overall difference in ratings. If the differences in ratings relied mainly on caregivers' behaviors or both the caregivers' and children's, stigma may be a plausible explanation. If the difference was based solely on children's behaviors, however, it would suggest that the caregivers treated children no differently and the differences in quality of interactions would likely be associated with the children's disease in some way.

To test this, I reran the final models for interaction quality which previously displayed HIV differences (association with depression & social support from friends) with a modified dataset. Averages of caregiver items only and child items only were used in place of the overall interaction quality scores as the dependent variable. I compared these models to determine whether HIV differences were present in either or both. HIV differences were significant or nearly significant $(p < .10)$ only in the models utilizing caregiver item averages. This suggests that the differences in interaction quality between dyads with HIV+ and HIV- children were primarily associated with the caregiver ratings. Caregivers' behaviors towards HIV+ were significantly lower in quality than towards HIV- children.

Overall, one could conclude that there may be some stigma present particularly in institution A towards children with HIV and this is impacting the quality of care they receive. This conclusion, however, is muddled by the HIV differences in physical growth described below.

4.4.3.2 Physical growth

As mentioned previously, the literature on HIV indicates that children with HIV are at substantial risk for delays in physical growth (Aurpibul, Puthanakit, Taecharoenkul, Sirisanthana, & Sirisanthana, 2009; Bailey, Kamenga, Nsuami, Nieburg, & St Louis, 1999; Dobrova-Krol, van IJzendoorn et al., 2010; Potterton et al., 2009). Although this phenomenon is highly documented in existing research, only the data from institution B followed this trend. In institution B, HIV+ children had weight and height *z*-scores that were significantly below HIV- children with an average difference of 1.61 *z*-score unit for weight and 1.91 *z*-scores units for height. Children in institution A, however, completely violated expectations. HIV+ children in institution A had significantly greater weight *z*-scores and were closer to a healthy range and had greater height *z*-scores (n.s.) when compared to HIV- children. These differences were approximately .60 *z*-score units for weight and .31 *z*-score units for height. Furthermore, results confirmed a significant positive association between caregiver-child interaction quality and children's height *z*-scores, but only among HIV+ children.

One or more of several possible factors may explain the differences in growth between HIV+ and HIV- children. One possible explanation for the differences in growth between HIV+ and HIV- children, particularly in institution A, is the length of time that they have been with their current caregiver (which is highly correlated with time in institution $r = .92, p < .001$). Although the difference in months with current caregiver between HIV+ and HIV- children in institution A is not statistically significant ($t_{8.07} = -1.73, p = .116$, equal variance not assumed), there is a substantial difference in the means and standard deviations between the two groups. HIV+ children had been with their current caregiver, on average, for far longer than HIV- children (Table 4.9; Figure 4.7).

Table 4.9: Time with Caregiver (Months) in Institution A by HIV Status

Status	*n*	*M*	*SD*
HIV-	16	10.53	7.12
HIV+	8	22.40	18.37

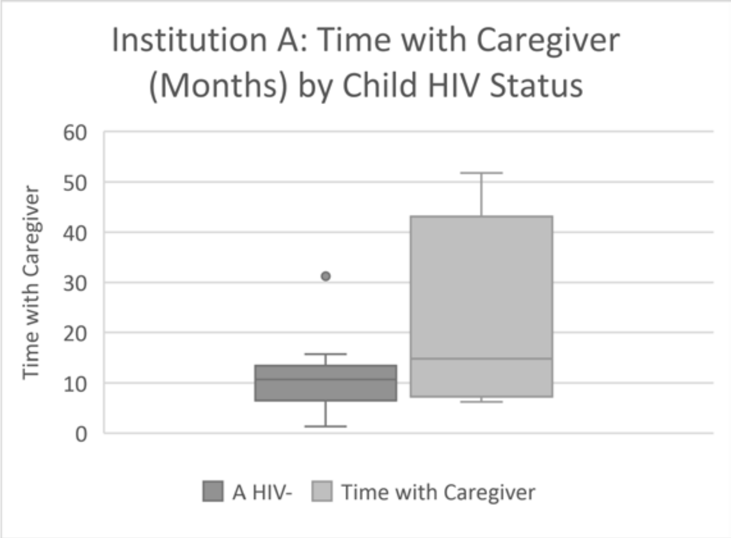

Figure 4.7: Institution A: Time with Caregiver (Months) Child HIV Status.

This institution, which had started as a children's AIDS hospice decades ago, had been working with children with HIV for years. Caregivers and staff have watched first-hand as HIV was transformed from a death sentence to a challenging, but manageable, chronic medical condition. Caregivers were open about children's health and frequently commented to me about how when certain children first arrived at the institution they were very sick, but now they are better. They saw long-term improvements experienced by children when they received the medical assistance they needed. Because the staff at institution A have years of experience in supervising the medical treatment of children with HIV, HIV+ children may have benefited greatly from the access to the medical care, including perhaps easy access and greater adherence to ARTs, which have been previously shown to improve HIV+ children’s growth (Aurpibul et al., 2009). In addition, because their fragile physical condition places them at greater risk for illness which can affect their growth, caregivers meeting a minimal level of sensitivity and responsivity, with a focus primarily on HIV+ children’s physical needs, may be enough to protect them against those risks. Therefore, despite lower-quality caregiver-child interactions, HIV+ children may be experiencing benefits resulting from quality medical care and caregivers’ attention to their physical needs, both compounded by a longer duration of receiving this care.

Final conclusions from the quantitative and qualitative portions of this study, along with limitations, implications, and directions for future research, are provided in chapter 6.

5.0 QUALITATIVE ANALYSIS, RESULTS, AND DISCUSSION

5.1 QUALITATIVE ANALYSIS

Interview data for the qualitative portion of the present study was analyzed using NVivo 11, a Computer Assisted Qualitative Data Analysis Software (CAQDAS). NVivo, is a valuable tool that can enrich the qualitative research process. The software assists with the management of data, analysis, and presentation of results (Bazeley & Jackson, 2013; Wickham & Woods, 2005). Some qualitative experts have expressed concern about how CAQDAS can ease the analysis process, claiming the speed with which analysis can be done can potentially hinder researchers from being intimately familiar with their data (Morison & Moir, 1998). It is important to note that although CAQDAS, such as NVivo, can aid in the qualitative research process, it cannot complete analysis for the researcher (Bazeley & Jackson, 2013). The use of a computer does not remove the human from the analysis process. Rather, the CAQDAS is a tool for researchers to use while completing their task. The researcher must be present and interact with the data and actively make decisions to complete a detailed and comprehensive analysis (Davidson & di Gregorio, 2013). In the present study, NVivo acted as a platform for the organization, analysis, and visualization of data, including interview transcripts and participant information.

5.1.1 Epistemology

I hold a postpositivist epistemological viewpoint, which influences my approach towards qualitative design and analysis. I believe in the existence of objective reality and that the imperfect measures that scientists use can only partially capture that reality (Ponterotto, 2005). As a postpositivist, I also agree that researchers should aim to be as unbiased as possible and utilize standardized and objective measures to capture reality as accurately as possible (Ponterotto, 2005). The mixed-method design of the present study conforms to my epistemological perspective in its inclusion of multiple well-validated quantitative measures and integration with qualitative interview methods to explore topics for which social scientists have not yet fully developed clear theory and/or objective measures. I also acknowledge the limitations of the qualitative data, particularly due to language differences between the myself and the caregivers whom I interviewed. I recognize that the interview text does not fully describe the caregivers' thoughts, feelings, and experiences, and provides only a rough approximation.

In addition, the use of CAQDAS, and NVivo specifically, may be particularly appropriate for postpositivist researchers, who wish to be as objective and transparent as possible. NVivo has the capacity to link qualitative and quantitative data, such as are available in this study. These linkages permit the triangulation of objective numerical or categorical data with areas of study that require more subjective interpretation. Although I did assign attributes to the caregivers based on their background and scores on quantitative measures, this was not useful for answering the three qualitative research questions addressed in this report. The mixed-methods data will be used in future extensions of this study.

Finally, many of NVivo's tools and functions help researchers to be transparent with their analysis process, such as by carefully documenting coding decisions through memos which can be linked to specific documents, nodes, or text selections (Saldaña, 2009; Wickham & Woods, 2005). For example, I composed memos as a running log of the steps I took in analysis and as record and justification of coding decisions. Because these memos are stored within NVivo, they are accessible along with the associated data and can be easily searched for information used to justify coding and interpretation decisions.

5.1.2 Data preparation

Eight of the ten interviews were audio recorded and later transcribed verbatim in preparation for coding. Two caregivers, however, were not comfortable with being audio recorded, so instead I transcribed the interview as close to verbatim as possible during the interview. The resultant type-written real-time transcriptions were imported into NVivo software, where the remainder of transcription and analysis was completed.

Many of the interviews were conducted with IsiZulu interpretation from the research assistant. Due to my language limitations, I transcribed only the English portions of the interviews. During the transcription process, I substituted basic descriptions for any identifiable information like names of the institutions or resident children (i.e. “institution A,” & “child X”). As soon as I completed transcription, I removed all audio files from the NVivo project because they included identifying information (i.e. names) that must be stored separately from the main data files for ethical reasons.

As Carter and Little (2007) explain, within qualitative research, “sampling, data collection, data management, analysis, and reporting—can be conceptualized in a continuous, iterative cycle” (p. 1325). I had a very limited amount of time within South Africa, and therefore time was best spent in data collection. However, to ensure the best quality of data, I considered how participants responded in previous interviews and used that to inform question wording and probes for subsequent interviews, but without formal analysis. For example, early interviews revealed possible patterns in how caregivers spoke about children who were placed in the institution because of orphanhood versus those who had experienced abuse or neglect. In later interviews, I intentionally probed caregivers about any differences they see between children admitted to the institution for these reasons.

5.1.3 Organization and coding

As indicated previously, I completed coding and organization of codes using NVivo. Within NVivo, qualitative codes are referred to as nodes and are assigned to selected text. When creating nodes, I entered a description or definition of the node. Nodes were organized hierarchically with parent nodes containing child nodes beneath them. I also used Nvivo's capabilities to produce a codebook with information about each node (see Appendix J). As initially proposed, I completed multiple coding cycles and composed memos describing the analysis process for organization and transparency.

For the first cycle of coding, I utilized structural coding to reduce data to content relevant to the main research questions (Saldaña, 2009). Rather than discarding unrelated portions of the data, I focused on selected portions, such as caregivers' speech, while the full set of data remained intact. As part of the structural coding process, I assigned provisional nodes, which were codes developed *a priori* from existing literature and hypotheses, to words and phrases in the transcripts (Saldaña, 2009). Provisional codes regarding caregiver role beliefs were adapted from Parent Role Development theory, which divides beliefs about what is involved in a parental role into six categories: bonding, discipline, education, general welfare and protection, responsivity, and sensitivity (Mowder, Harvey, Pedro, Rossen, & Moy, 1993; Mowder, 2005). Provisional nodes and their descriptions are provided in Appendix J, indicated by a bolded node name.

The purpose of the second cycle of coding was to refine nodes based on transcript content and to further categorize coded content into more detailed nodes. In this second cycle of coding, I used descriptive coding to identify additional recurring topics relevant to the research questions not captured in the structural coding process and to refine existing nodes (Saldaña, 2009). During this step, I also developed multiple emergent nodes, or codes that emerged from the content of the data, to further categorize data coded to the provisional nodes.

The provisional nodes as well as any emergent nodes were organized hierarchically. For example, under the provisional coding scheme, the resources parent node included five child nodes: emotional, financial, physical, social, and specialist. However, after structural coding was complete, it was clear that many of the desired resources mentioned by caregivers did not fit cleanly into the child nodes from the provisional coding scheme. Therefore, I added an emergent child node under which additional child nodes were included: decreased workload, material resources, managerial support, and regulatory support.

I coded the transcript text at an idea level. For example, if in one utterance, a caregiver referred to preparing porridge, washing dishes, and waking children for breakfast, each of those activities was coded as a separate idea. Ideas were usually made up of a single phrase or sentence. However, occasionally, a single idea was made up of multiple sentences. This occurred more frequently with nodes with broader definitions, like bonding. For example, a longer description of spending time as a family could have been coded as one idea to the bonding node. Because some caregivers were more verbose than others, and coded text units varied in length, I conducted most numerical analysis at the source level. In other words, I typically noted how many of the caregivers had at least some text coded to a certain node rather than reporting the total number of ideas coded to that node. In some cases, I also included the total number of references to a node to emphasize when caregivers repeatedly referred to a specific idea. Individual ideas could be simultaneously coded to multiple different nodes.

5.2 RESULTS AND DISCUSSION

The initial proposed study included three primary qualitative research questions. Although the rich dataset could be used to identify themes and patterns which reach far beyond these questions, this report addresses these three pre-specified questions only. I plan to conduct additional analysis beyond these questions in the future. Ideas for future analysis are detailed in section 6.1.3.5.

Because there were small and unequal numbers of caregivers who were interviewed at the two institutions, comparisons between the two institutions should be interpreted with caution. Although I probed caregivers for whether there was additional information they wished to share in response to an interview question, some provided much more information than others. When asked about which challenges they experience, for example, some caregivers reported on only one challenge even though they likely experience more than one type of challenge in their work. Even if a caregiver did not discuss challenges with children's behavior within their interview, they may still experience such challenges. The information provided by caregivers should not be considered exhaustive, but rather as a summary of what they may have deemed most important or relevant at the time of the interview.

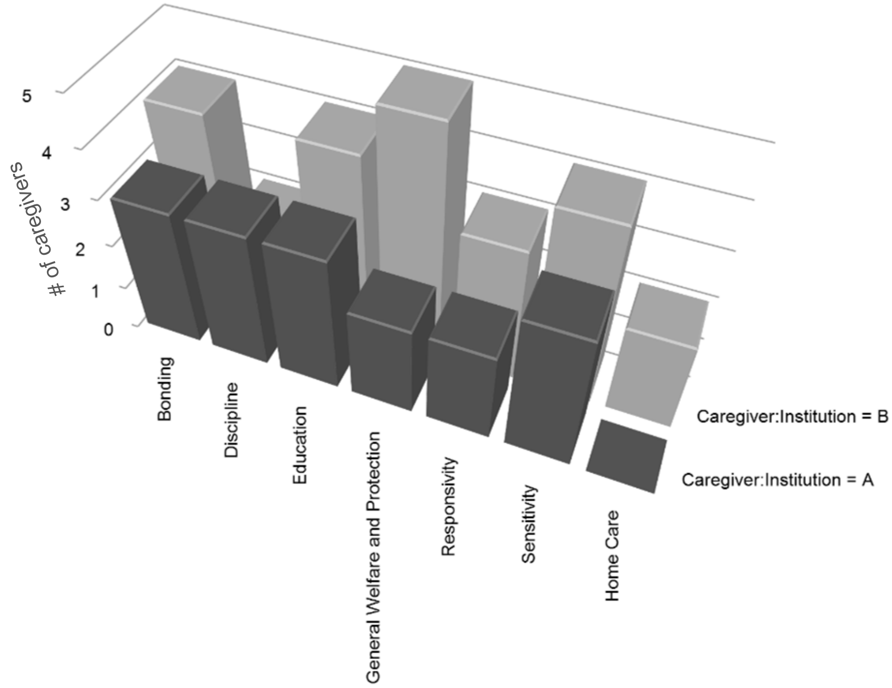

Figure 5.1: Caregivers' role beliefs by institution.

5.2.1 Role Beliefs

The first of the three qualitative research questions addressed how the sampled caregivers described their role beliefs. The caregivers were asked to talk about what they do in their role as caregiver at the institution, naming as many parts of their role as possible. In addition, they were asked to share what they themselves, their supervisors, and the children they care for would say is the most important part of their role. Responses were coded under the provisional coding scheme, with nodes and definitions based on Mowder's (2005) Parent Role Development theory. Ideas coded to the provisional nodes were then further coded into child nodes to explore these themes more fully.

Overall, caregivers' role beliefs fit quite well into the nodes adapted from Parent Role Development theory (Table 5.1). Findings from each of the six categories are detailed below in order of which they appear in Mowder's (2005) article (several role beliefs were mentioned by an equal number of caregivers).

Table 5.1: Role Belief Codes

Node	Definition
Bonding	Affectionate, trusting, loving displays; *behaviors or activities that supported the creation or maintenance of relationships*
Discipline	Sense of moral values and training or teaching
Education	Provision of guidance, role models, and enrichment through teaching
General Welfare and Protection	Provision of physical ~~*and emotional*~~ support
Responsivity	*Response to children's specified needs*
Sensitivity	*Awareness of children's* emotional, social, communicative, *and physical needs*

Note. Normal text indicates definitions taken directly from Mowder's writings on Parent Development Theory, whereas italicized text indicates my adaptations of her theory.

5.2.1.1 Bonding

There were 17 ideas from all eight caregivers that included mentions of bonding. Although this node was originally defined as "affectionate, trusting, loving displays," the definition seemed too narrow given caregivers' responses (Mowder, 2005). As a result, I expanded it to also include mentions of behaviors or activities that supported the creation or maintenance of relationships. Caregivers spoke of loving the children, spending time with them, enjoying their company, and the importance of apologizing to children for mistakes in caregiving and accepting forgiveness that the children so easily give in response. One caregiver expressed her appreciation of creating a true family environment:

> [What I most] enjoy is just the time where we've gathered together as a family. We're sitting together. We're laughing. We're chatting. And it's just a family [set-up]... Yes, there will be those [quarrels]. There will be ... those behaviors that are not good, but children are children at the end of the day. ... When the child does something wrong and ... what the child has done is still in my heart, ... and I see the child coming and sitting on my lap, and I'm like, "I don't know, this thing that we still need to resolve," but the child doesn't even recognize it. She's already forgotten or he's forgotten. He's just playing now. It's all happy happy. And I just learn that it's an everyday thing of positioning my heart to everything that we are doing with my children in this house.[3]

Bonding was clearly seen as an important part of the caregiving role. When one caregiver was asked to describe the most important part of her role, she replied that it "is to love [the children]." Although only one other caregiver mentioned "love" specifically in answer to a question about the most important part of her role, the term "love" was used repeatedly throughout other caregivers' discourse (Figure 5.2). NVivo visualization tools, such as word clouds and word trees, enabled me to recognize both the extent and breadth of the use of the word "love" (See Figures 5.2 & 5.3).

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[3] I made a few minor alterations to words and sentence structure in direct quotations to mask identifiable information and assist with readability. These changes are indicated by brackets.

Figure 5.2: Word Cloud of Text Coded to Bonding

For example, six of the eight interviewed caregivers used the term "love" to indicate feeling towards the children or the children's feeling towards them. This was carefully differentiated from times that the term "love" was used to express liking (i.e. enjoying working with young children) or desiring (i.e. wishing to go out at buy clothes for their children). To many of the caregivers, love was something that you could "express," "grow," and "give" (Figure 5.3).

This emphasis on love and bonding is particularly encouraging given that in past quantitative research, institutional care environments are characterized by limited, poor-quality interactions between caregivers and children and an overall lack of long-term relationships with consistent caregivers (Dobrova-Krol et al., 2008; Gunnar, 2001). The present dataset does not contain interview data from more traditional institutional care settings and therefore direct comparison is not possible. However, the current findings may indicate that the structure of family-like orphan care settings, in which a consistent primary caregiver looks after a small number of specific children, may encourage a considerable sense of bonding.

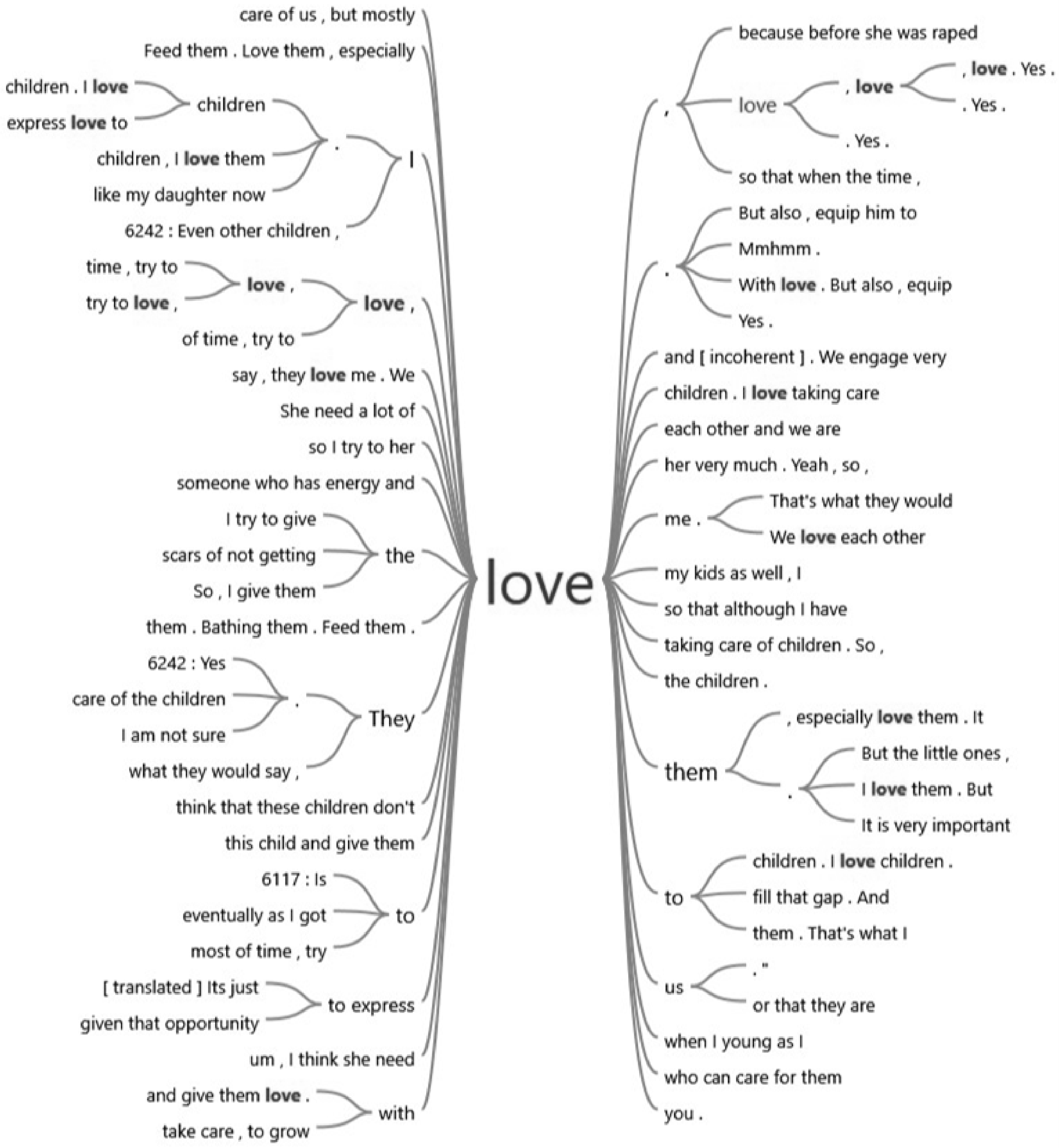

Figure 5.3: Word Tree for Love.

5.2.1.2 Discipline

Five of the eight interviewed caregivers spoke of discipline as a part of their role. Many mentioned teaching the children "good and bad things" or right and wrong. Caregivers believed it was their job to instill within the children a sense of responsibility for themselves and their possessions and a respect for others. These mentions of teaching children right from wrong frequently overlapped with what was coded to the education node (Table 5.2). In fact, 10 of the 12 text portions that were coded to discipline were also coded to education.

Table 5.2: Number and Percentage of Coding References to Discipline and Education

	Discipline Only	Education and Discipline	Education Only
Coding References	2 (7.41%)	10 (37.04%)	15 (55.56%)

5.2.1.3 Education

Education was clearly valued among the interviewed caregivers, but not only in the traditional sense of academic learning. Overall there were 25 references from seven caregivers to education, which was defined by Mowder (2005) as the "provision of guidance, role models, and enrichment through teaching." However, only four of these 25 references clearly referred to academic education. Rather, one caregiver summarized the many different ways she educates the children in her home:

> I teach them to make things for their own, I teach them to become a…How can I say this? About God. I teach them to respect. I teach them to take responsibilities of their own doings. I also teach them about how education is important to them. I tell them that when they here,

> that here is only the foundation of life. They will take it seriously. I teach them to respect other people and respect their bodies.

Many of references to educating children were related to teaching them life skills. These included teaching children how to feed themselves, dress themselves, iron their clothes, to interact respectfully with others.

Both institutions were religious organizations, and therefore, some caregivers also viewed spiritual education as a vital part of their role. They spoke of the importance of teaching the children about God and spirituality. For example, one caregiver explained that she takes joy in sharing spiritual lessons with the children in her home:

> I think the thing that I most enjoy about my role in [institution B], it comes from [the] source, which is God. Um, it's just that joy that I feel him filling me with. Especially when he reveals something that I've prayed about regarding my children. If he reveals something particularly about a certain child or about all my children, it makes me so joyful to just to know that. Just to make an example, recently I've been teaching them because there is something also that has been revealed to me that I need to teach my children.

Another caregiver shared how she uses their evening routine as a time for spiritual instruction:

> So, most of time, before we [sleep], we read the Word. We sing together. We pray. Sometimes I teach [the children] one by one to pray her Father or to his Father. "Please talk to your Father [and tell him] what you need ... before you sleep."

The emphasis on teaching lessons of many kinds clearly indicates that caregivers perceive their role entail much more than simply ensuring that children are clean, fed, and safe. Although, as described next, caregiver emphasized such activities as well.

5.2.1.4 General welfare and protection

General welfare and protection was the most frequently referenced category from the Parent Role Development theory. The interview dataset included 39 different references to general welfare and protection from seven of the eight interviewed caregivers. This is unsurprising given that adults surveyed with Mowder et. al.'s (1993) original Parent Role Questionnaire considered general welfare and protection to be a very important part of the parental role with children of all ages. The references to general welfare and protection in the current sample included attention to children's nutrition (6/8 caregivers), hygiene (5/8), physical health (4/8), sleep (3/8), clothing (2/8), along with numerous vague references to "taking care" of the children (4/8). Among the tasks coded to these nodes were ensuring children were taking their medications, changing children frequently to prevent diaper rash, being aware of when children are feeling ill and taking them to the medical clinic, preparing food, and ensuring that children were awake in time for school.

5.2.1.5 Responsivity and sensitivity

Mowder's (2005) description of Parent Development Theory specifies that sensitivity and responsivity should not include role beliefs covered by general welfare and protection. However, I disagree. A sensitive and responsive caregiver must differentiate between multiple types of needs, including physical needs, and respond appropriately. For example, if a caregiver notices that a toddler is crying, she must first identify the need by determining what is upsetting that child. The caregiver may recognize that the toddler is frustrated because he is unable to put a puzzle together and respond by assisting the him with the puzzle. Or, the caregiver may recognize that the toddler has not eaten in a few hours and may be hungry and respond by preparing a snack. Because caregivers cannot identify social, emotional, and communicative needs without ruling out physical needs, I chose to include physical needs within my definitions of sensitivity and responsivity.

Per the coding definitions, sensitivity refers to an awareness of children's needs and responsivity refers to the actions that result from that awareness in response to those needs. However, these two categories are difficult to differentiate, and the ideas I coded to the two nodes overlap extensively. Sixty-two percent of the ideas that were coded to sensitivity and/or responsivity were coded to both nodes, whereas no ideas were coded only to responsivity (Table

5.3). Sensitivity may not always precipitate responsivity, because a caregiver may choose not to respond to a need that she is aware of, but responsivity presumably requires some level of awareness of needs. In interviews, if a caregiver mentioned awareness of a need, she may have responded to that need, even if she did not go on to describe her responsivity. Therefore, although responsivity requires a step beyond sensitivity, they are closely related concepts, and I decided it was not necessary to separate them when interpreting the findings. In future interview research, sensitivity and responsivity could be treated as separate variables if researchers carefully probe to determine if, when, and how caregivers respond when they mention awareness of needs.

Seven of the eight interviewed caregivers referred to one or both of these role beliefs. Caregivers spoke of needing to listen and talk with the children, to be aware of children's pasts and the associated emotional challenges, and give children individual attention, looking out for children's health, and taking them to the medical clinic when necessary. For example, one caregiver mentioned the importance of considering children's individual needs:

> It is very important because they [are] coming from different backgrounds. Some of them, they are neglected. So, some of them, they [lost] their parents ... like [that one girl], she need a lot of love, because before, she was raped and um, I think she need love ... We engage very much with her. She take like I'm her biological mother to her.

Table 5.3: Number and Percentage of Coding References to Sensitivity and Responsivity

	Sensitivity Only	Sensitivity and Responsivity	Responsivity Only
Coding References	5 (38.46 %)	8 (61.54 %)	0 (0.0 %)

Although sensitivity and responsivity are likely to be common among biological and non-biological caregivers alike, the caregivers from the two institutions may have unique experiences to draw on in relation to the specific children they care for. As mentioned previously, many of the children have experienced abuse or neglect and/or are undergoing treatment for HIV. The caregivers are highly attuned to the impact of children's histories and medical conditions. One of the potential benefits of a family-like care model is that caregivers are responsible for a small select group of children and may be able to get to know each child and his or her unique individual needs. This may allow caregivers to be more sensitive and responsive to specific needs than would be possible in more traditional institutional care settings.

5.2.1.6 Home care

There was a common theme that was not captured by the Parent Role Development theory provisional coding scheme. Two of the eight caregivers made frequent references to taking care of their home as an important part of their role. This included cleaning rooms in the house, washing dishes, and teaching the children to keep the house neat. Although a few caregivers cited home care as part of their role as caregiver, and many biological parents would likely also consider home care to be a part of their role, I am hesitant to claim that home care could be considered a *parental* role belief. A responsibility for home care, unlike the other predefined role belief categories, neither depends on the presence of children nor is directed at children. Although I am reluctant to define the actual act of home care as a *parental* role belief, the goal of passing on home care values to children could be subsumed within education or discipline role beliefs.

This role belief also seems to have particular importance in the local culture. Even beyond the interview sample, there seemed to be a shared sense of responsibility for keeping one's house clean so that it is always prepared for visitors who could arrive at any moment. Of course, the caregivers in the study may have been more careful to keep their house neat when they were aware of upcoming appointments with the research team, but the houses were often spotless even if we arrived unexpectedly.

5.2.2 Challenges and obstacles

The second of the qualitative research questions involved identifying obstacles that caregivers experience in connecting with, attaching to, and caring for young children. Although the original research question referred specifically to young children who would be eligible for inclusion in the study (birth – 5 years), the interview protocol did not specify the age of the children. Therefore, many of the caregivers talked about both younger and older children. Although children's ages were irrelevant to many of the challenges, some caregivers made mention of how specific challenges were more common with older or younger children.

Caregivers varied in what they referred to as being substantial challenges for them, and no one type of challenge was mentioned by all the interviewed caregivers. Referenced challenges generally fit into the following categories: behavior (4/8 caregivers), discipline (4/8), workload (3/8), dealing with personal emotions (2/8), relationships with children (2/8), adjusting to new children (1/8), needing educational resources (1/8), judgment from other caregivers (1/8), and not having all the privileges of a typical family (1/8). Detailed descriptions of a few of these categories are provided below. Ideas from some of the nodes overlapped with other nodes. Therefore, the nodes not directly addressed here are subsumed within the remainder of section 5.2.2 and section 5.2.3.

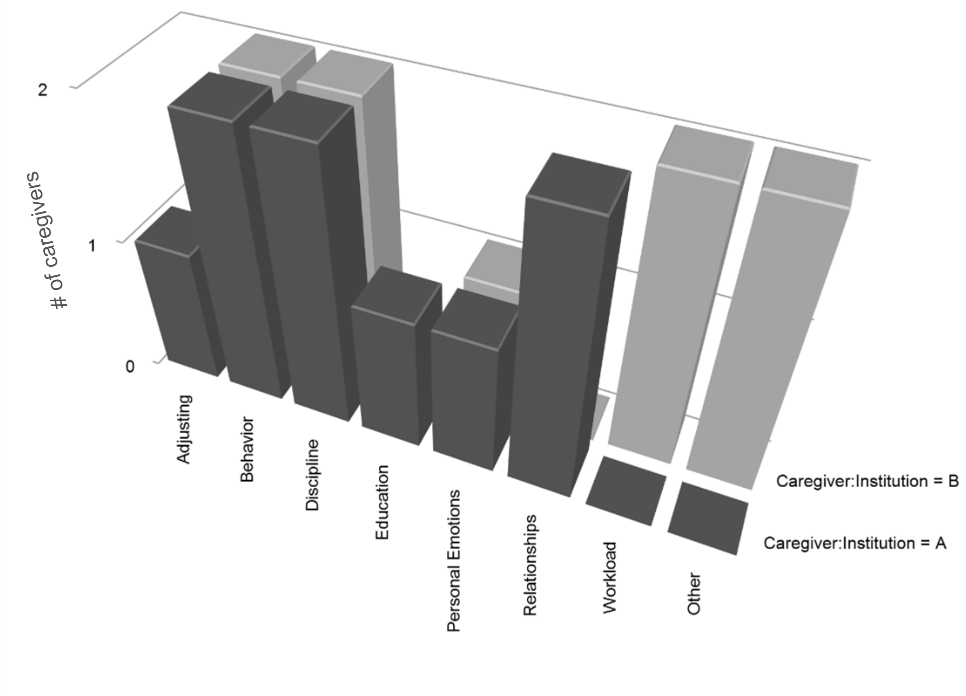

Figure 5.4: Challenges by Institution

5.2.2.1 Behavior and discipline

By far, the most frequently cited challenges had to do with child behavior and discipline. Although there was some overlap, most of the references to challenges with behavior or discipline were coded to only one of the two nodes.

Table 5.4: Number and Percentage of Coding References to Behavior and Discipline Challenges

	Behavior Challenges Only	Behavior and Discipline	Discipline Challenges Only
Coding References	6 (46.15%)	4 (30.77%)	3 (23.08%)

Four out of the eight interviewed caregivers mentioned difficulties with children's behavior. Caregivers stated that the children can be rude at times and not listen to what their caregiver is telling them. Some found that the children in their home frequently stayed out past curfew, even when repeatedly reminded to come home on time. Some of the caregivers mentioned that behavior was less of a problem with the younger children, or at least that failures to listen can be developmentally appropriate for these younger children. For example, one caregiver said, “I do understand that they are the small children,” and that they easily forget what they have been asked to do.

Two of the caregivers further explained that they felt unsupported by management in dealing with child behavior and discipline and that they felt constrained by the governmental regulations that they must work under. “You must be careful what you say or do to the children because they are supported by the Child[ren]’s Act. You must talk softly to the children, and even then they go to the social worker and complain about what you told them.” The caregivers did not specify what types of discipline were barred under the Children’s Act, but they likely included any behaviors that could be considered to fall under the Children’s Act’s broad definition of abuse[4]. These caregivers desired more support from social work staff. They often felt that social workers favored the children and would believe children’s stories over caregivers’ stories. However, this was not the case for all caregivers. One specifically felt supported by management. “I think they are flexible because if you have got a problem, you speak with them, and then they help you when they can.”

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[4] “‘abuse’, in relation to a child, means any form of harm or ill-treatment deliberately inflicted on a child, and include- (a) assaulting a child or inflicting any other form of deliberate injury to a child; (b) sexually abusing a child or allowing a child to be sexually abused; (c) bullying by another child; (d) a labour practice that exploits a child; or (e) exposing or subjecting a child to behaviour that may harm the child psychologically or emotionally” (Children’s Act 38 of 2005, 2006).

5.2.2.2 Relationships

Two of the caregivers mentioned difficulties in forming relationships with children, including new children assigned to their homes. One stated that the most challenging part of being a caregiver is that the children know that she is not their biological mother and that this affects their relationship with each other. Another spoke of more general relationship difficulties: “Sometimes [a child] is not happy and you don't know what you did wrong. You said something and you do not feel comfortable ... You try to [make] her feel welcome here, even though she is. Sometimes other kids, they don't like you [at first]. She [doesn't] like me.” This seemed to be particularly true with older children who understood they were not born into the family with whom they now live.

5.2.3 Spiritual support

Despite the many challenges the caregivers experienced, some of them found encouragement through their faith. Many of the interviewed caregivers explained how they felt led by God to work at their institution and planned to remain as long as God called them to stay:

> I would say before I when I initially got here, I had planned that ... I will stay here for a year or two. But eventually, as I got to love my kids as well, I surrendered my time of frame here to God, that "God, you know how long you want me in this place. So as long as you still need me in this place."

A sense of heaven-ordained purpose could itself motivate caregivers to continue through difficulties, but many also shared specific situations in which they felt encouraged by God.

One caregiver explained that when she first arrived at the institution she was terrified that she would not be able to do what the job required of her. At her caregiver training, the staff emphasized that no woman could do this work in her own strength, but that anything is possible with God. This gave her the peace she needed to continue. Another caregiver described the discouragement she experienced when a child was removed from her home. She felt as if she had failed as a caregiver until she prayed to God for an answer. She explained, “after I finished praying, I felt the Holy Spirit telling me that I mustn’t worry. God has brought me here to raise these children. That I should raise them. That he trusts me with them.” Finally, a few of the caregivers mentioned how they find hope in their beliefs that God cares for the children, has plans for their lives, and will intervene in their otherwise hopeless situations.

5.2.4 Desired resources

The final of the three qualitative research questions involved an exploration of what supports or resources caregivers desired. I was particularly interested in supports that the caregivers thought would assist them in providing more sensitive and appropriate care. Although it was easy to identify what resources the interviewed caregivers were requesting, these requests did not easily fit within the provisional coding scheme. Rather, a series of emergent codes were developed to more fully reflect the data. These include material resources (5/8), decreased workload (3/8), managerial support (3/8 caregivers), and regulatory support (3/8).

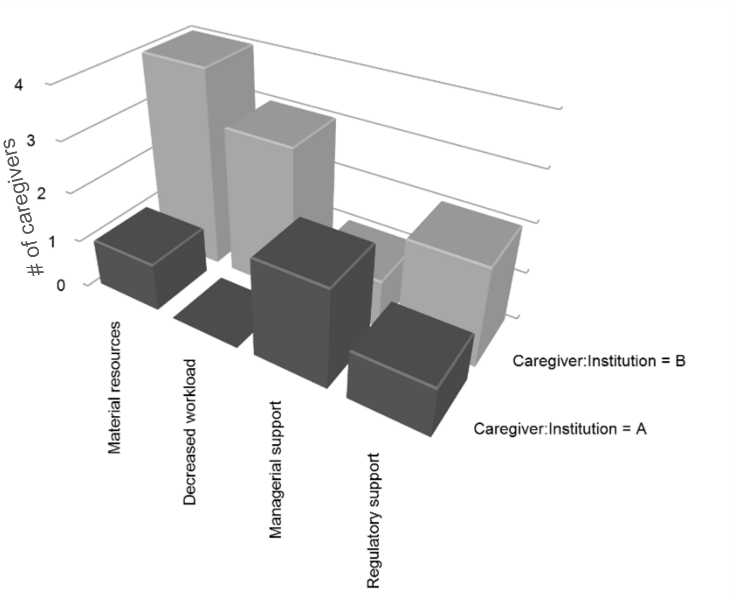

Figure 5.5: Desired Resources by Institution.

5.2.4.1 Material resources and decreased workload

The desire for materials and decreased workload often coincided. For example, one caregiver explained that she does her household's laundry by hand, because the washing machine is too far away. If she could have a washing machine in her own home or within her cluster of houses, it would greatly reduce her workload. The same caregiver also thought a microwave would be a helpful tool for preparing food. Another caregiver requested a television for her home, believing that it would decrease her workload in managing her children's behaviors. She explained that her children frequently stay at other homes past curfew watching television. She would rather have them be entertained by the television within her home so that she could be the one to turn it off when it is time for homework.

In other cases, the desire for material resources was not directly related to decreased workload. One caregiver from institution A requested educational support, particularly in the form of educational toys for her home. She recognized that she and many of her fellow caregivers had limited education and may not be able to support children's academic growth as much she would like.

Two caregivers from institution B mentioned financial resources but in different ways. One requested access to financial resources so that she could purchase clothes for the children in her home. Another believed that a raise in pay would correspond better with the amount of work she completes each day.

All requests related to decreased workload and financial resources came from caregivers at institution B, whereas the only request for material resources from institution A involved educational toys. This is notable because institution B has greater financial support and higher quality material resources than institution A in general. Perhaps, caregivers at institution B have higher expectations of what could be available to them than caregivers at institution A.

5.2.4.2 Managerial and regulatory support

As explained above, a few caregivers mentioned challenges with dealing with difficult behavior and feeling unsupported by management in addressing those behavior problems. This is primarily where the desire for managerial and regulatory support applied. Caregivers felt that they were constrained in the types of discipline strategies they are legally allowed to use. Some of the caregivers wanted backing from social workers or other management in setting and enforcing rules. They thought it would be particularly helpful if the caregiving and social work staff could work together to come up with punishments that could be used under current regulations to guide children's behaviors.

Another example of a desire for regulatory support was in being able to provide for children as they would in a more typical family. One caregiver explained that she would like to go out and buy clothes for the children in her home but that she does not have the money to do so and clothing purchases are often made by other institution staff and volunteers. She requested that the institution give her the money allocated for children’s clothing so that she could respond to her youngest child’s request: “mommy, please buy me shoes.”

6.0 CONCLUSIONS AND IMPLICATIONS

6.1 FUTURE DIRECTIONS

Along with the findings from the present study come many additional possible directions for future research. These include opportunities for further exploration of social support in institutional care settings, scale development or refinement, longitudinal and comparative studies, and further analysis of the qualitative dataset.

6.1.1 Social support

As previously described, the differences in social support from friends and family and their association with caregiver-child interaction quality may indicate that such associations may be moderated by access to sources of social support. Additional research is needed to confirm whether that association depends on overall access to sources of social support in family-like orphan care settings. Future studies would also benefit from larger samples, clear definitions of the various sources of social support (i.e. who exactly constitutes “family” or “friends”), a differentiation between the availability and actual use of social supports, and a closer examination of types of social support (i.e. emotional support, instrumental, informational, etc.). Further exploration of this topic may help to identify potential areas for intervention to improve caregiver access to social supports and, in turn, better reinforce quality care for children.

6.1.2 Role as caregiver

Two of the research questions for this study involved caregivers' perceptions of their role. The first was a quantitative question, which involved the association between sense of role as "parent" and caregiver-child interactions could not be answered using the scale developed for this study, on which there was almost no variability of answers. The second question, which involved how caregivers qualitatively described their role and the various tasks involved in their role, was more clearly answered. Caregivers' discourse about the caregiving role fit well with Mowder's (2005) Parent Development Theory framework for parental role beliefs. Each of the six categories of role beliefs were present in caregivers' discourse regarding their role. Mowder and Sanders (2008) previously developed and validated a scale to assess parental role beliefs, and because it seems the theory does apply to the institutional care setting the scale may also be appropriate to this setting as well.

Future studies may involve the validation and possible revision of Mowder & Sanders' (2008) Parent Behavior Importance Questionnaire for use in the local culture and in institutional care settings, followed by testing the scale's ability to predict caregiver-child interaction quality and caregiving behaviors. Such a measure could eventually be used to identify areas for possible intervention and training in hopes of improving quality of care and children's subsequent development in institutional care settings

6.1.3 Longitudinal and experimental study

As stated previously, the cross-sectional nature of this study and the lack of experimental manipulation precludes causal inference. The current study establishes an association between variables (i.e. social support from friends and caregiver-child interaction quality), which is the first requirement for causal inference (Shadish, Cook, & Campbell, 2002). Longitudinal study, would permit the determination of one variable preceding the other variable, the second requirement for causal inference (Shadish et al., 2002). Without true experimental study, it is not possible to completely rule out other possible causes, the third requirement of causal inference. However, with careful measurement and controls it would be possible to rule out several plausible alternative causes (Shadish et al., 2002). Therefore, longitudinal and experimental or quasi-experimental research is needed to further test the causal mechanisms in the associations between social support and interaction quality and interaction quality and children's growth. To complete such research, it is first necessary to develop trainings and interventions that can be used to manipulate the potential "causal" variables.

6.1.4 Comparative research

There is a dearth of research on quality of care and children's development in family-like institutional care settings. To ensure that children are getting care that is best suited to their needs, well-designed studies comparing the care and development of children in traditional and family-like institutional care settings is necessary. Experimental studies involving the random assignment of children to traditional versus family-like care settings would likely not be feasible or ethical. However, a well-designed study that includes comprehensive measures of the caregiving environment (i.e. physical environment, caregiver characteristics, interaction quality, nutrition, etc.) and children's development (i.e. physical growth, attachment, developmental quotient, behavioral symptoms), could provide valuable insight into how children are faring in these types of care and the characteristics of care that may be associated with differences in children's progress.

6.1.5 Qualitative analysis

The interview transcripts provide much more data than was used for the qualitative portion of this report. In addition to information about their role, challenges, and desired resources, caregivers provided detailed descriptions of how they came to be a caregiver at their institution, what they enjoy most about their role, what their plans are for the future, and experiences they have had with specific children in their homes.

I plan to address several topics in future analysis that go beyond the answers to specific interview questions and probes. For example, I plan to carefully explore the language caregivers use when talking about children. How do they describe children? More specifically, are there characteristics that are associated with if, when, and how often they use possessive language (i.e "my son") when describing children in their care? In addition, I wish to triangulate quantitative, qualitative, and demographic data from this study, by examining whether certain caregiver characteristics are associated with how caregivers talk about their role. For example, do those who reported higher social support on the quantitative measure differ from those with lower support in how they talk about challenges or their role? Do those observed having higher quality interactions with children differ from those with lower ratings in their discourse, and in what ways?

6.2 SUMMARY OF FINDINGS

One aim of the study was to examine several caregiver characteristics and test their association with caregiver-child interaction quality. The results provided no evidence for an association between caregiver age, education, experience, social support from family, or depression symptoms and the quality of interactions caregivers have with the young children in their care. There was, however, evidence that caregivers who reported greater social support from friends had higher quality caregiver-child interactions.

A second aim of the study was to examine whether trends that have been found in typical institutional care settings apply to children in family-like institutional care. Specifically, previous research has linked quality of caregiver-child interactions to children's attachment and physical growth. Unfortunately, due to numerous concerns about the psychometric properties of the attachment measure, it was not possible to draw any conclusions regarding children's attachment. In future research, researchers should use full AQS with longer observation periods instead of the SASS measure used in this study.

There was evidence of a positive association between caregiver-child interaction quality and children's physical growth. Children who experienced higher quality interactions with their caregivers had healthier weights for their age than those who had experienced lower quality interactions. A similar pattern was true for height, but only for HIV+ children. These findings closely mirror what has been found in studies of institutional care elsewhere and supports the psychosocial short stature hypothesis.

A revised conceptual model representing the interpretation of results from the quantitative portion of this study is presented in Figure 6.1. The boxes with solid outlines and the arrows between them represent associations supported by the results (directions of effects are assumed). The box with a dashed outline represents a possible moderating variable, not officially confirmed by analysis.

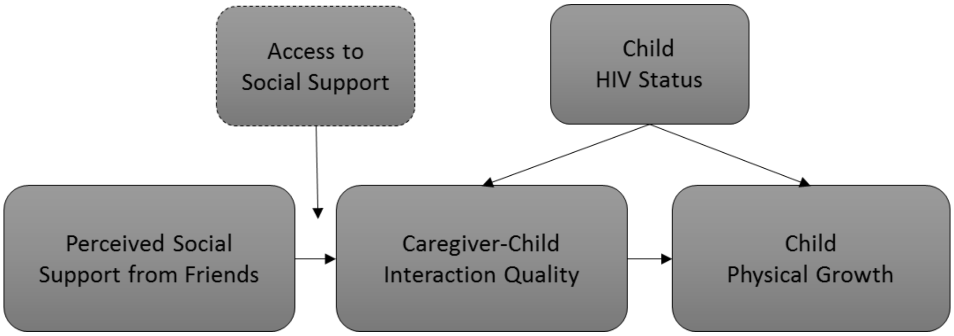

Figure 6.1. Revised Conceptual Model

A final aim of the study was to use qualitative methods to explore caregivers' perceptions of their roles, the challenges they experience as caregivers, and any resources they desire. Caregivers' descriptions of what their role entails closely matched the framework for parental role beliefs provided by Parent Development Theory (Mowder, 2005). Mowder (2005) previously theorized that the Parent Development Theory framework applies to anyone who fulfills a social parent role, regardless of their biological connection to a child, including professional caregivers. Indeed, Mowder's elements of bonding, discipline, education, general welfare and protection, sensitivity, and responsivity were all present within the sampled caregivers' discourse regarding their role. Data from traditional institutions is not available for comparison, but it is possible that the role beliefs of the sampled caregivers may more closely mirror those held by biological parents than those of caregivers at more traditional institutions because of the family-like nature of the institutions in the sample.

There was limited agreement between caregivers about the challenges they mentioned, suggesting that each caregiver had unique experiences. However, there were some patterns in difficulties and desired resources. The most common challenge mentioned by caregivers was dealing with children's misbehavior and disciplining children within the regulations of the Children's Act. Some caregivers felt that their workload was burdensome and that it was sometimes difficult to manage their emotions and build positive relationships with new children. The resources which the caregivers desired typically coincided with the challenges they had mentioned. They requested support from institutional administrators in managing children's behavior, appliances and materials that they believed would reduce their workload, and financial resources to compensate their work or purchase items for their children.

6.3 LIMITATIONS

There are several limitations of this study which are worth acknowledging and addressing. These include a small sample size, the study's cross-sectional nature, challenges with certain measures, language barriers, and sources of possible bias. However, some of these limitations were also associated with advantages.

6.3.1 Sample size

This study included a sample of 49 children and 28 caregivers. This sample size was quite small, limiting power for statistical analyses. Thus, I was unable to include several variables in statistical models that could have yielded valuable information. For example, I would have liked to have tested whether children's parent status (PKA = Parents Known to be Alive or PDU = Parents Deceased or Unknown) moderated the associations between caregiver-child interaction quality and children's attachment and growth outcomes. There were too few children in these groups to form reliable estimates when children were also separated by institution and HIV status.

In addition, generalizability was also limited by the small convenience sample. It is unknown whether findings from the present study would apply to children in other family-like institutions in other regions of the nation or world. Some cultural factors may enhance the family-like qualities of the institutions in this study, but may be absent in other cultures. For example, in Zulu culture, it is proper to refer to older women by the IsiZulu word for "mother" and to younger women by the term for "sister." This practice could make the formation of new family-like groups feel more natural than in cultures where similar practices do not exist. Despite possible limits to external validity, because the quantitative sample included almost all eligible children at the sampled institutions, it is logical to assume that the trends found accurately reflect the conditions and experiences of caregivers and young children in the two specific institutions.

6.3.2 Cross-sectional nature of the study

Because the study did not include longitudinal data or experimental manipulation with random assignment, it was not possible to infer causality from the tested associations. Although social support from friends may have indirectly impacted caregivers' interactions with children, likely through decreased caregiver stress, the data could not provide evidence for such a causal link. Rather, it is possible that more sociable caregivers naturally had greater social support from friends and higher quality interactions with children. Similarly, the results could not provide evidence that higher quality interactions with caregivers cause children to reach healthier heights and weights. It is possible, rather, that healthier children elicited better interactions. However, theory and past research in which changes in care quality have preceded improved growth support a likely causal link (Dobrova-Krol et al., 2008; Engle et al., 2007; Gunnar, 2001; Johnson et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2008; van IJzendoorn et al., 2007).

6.3.3 Measurement issues

There were several difficulties with the proposed measures, as described throughout this report. These included issues with the social support from a “special person” subscale, interaction quality during bathing, the observational attachment measure, and children’s head circumference. Such difficulties meant that it was inappropriate to analyze or draw conclusions from results with these specific measures.

6.3.4 Language barrier

Language barriers also may have impacted the data from this study. I know only rudimentary IsiZulu and therefore was unable to communicate directly with many of the participants in their primary language. Although all written materials were translated and back-translated by a certified translator, there was a risk that some meaning of survey items was lost in translation. In addition, I often completed surveys with IsiZulu-speaking caregivers without the use of an interpreter. In most cases, the use of the written pre-translated materials minimized the language barrier, but some caregivers had limited literacy or were not comfortable with either English or IsiZulu. When the interpreter was not present for interviews, caregivers may have been limited in their ability to communicate their thoughts and feelings, and even when the interpreter was present, information may still have been lost in translation. Of course, the extent of the impact on data quality is unknown, but my own training in rudimentary IsiZulu, the use of a certified translator, and the assistance of a skilled interpreter likely limited potential negative effects.

6.3.5 Sources of bias

Finally, it is important to acknowledge a few circumstances that aided in the research process but could also have introduced bias. First, during data collection, I lived at the two institutions and was very much included in daily life there. However, my experiences living at the research sites differed between the two institutions. For example, prior to receiving final approval to begin data collection, I lived for a full month at institution A. During that time, I attempted to limit bias by trying to restrict my interactions with the youngest children who would later be included in the sample, but to do so entirely was impossible. At institution A, the house that I lived in was in the main cluster of homes, and prior to beginning research, I was assigned duties overseeing older children on weekends and during caregivers' time off.

There were several potential benefits to my immersion at the research sites. Early in my stay at institution A, the caregivers were wary of my presence and were openly resistant to the idea of participating in the study. They expressed concerns that I had been hired to spy on them and report their misbehavior to administration. Fortunately, I was gradually able to gain the caregivers' trust and to build rapport. I did this by spending time with the children, demonstrating my investment by attempting to speak with the caregivers and children in IsiZulu, and listening to their concerns. After a month of living and participating in the institutional environment, caregivers were willing to invite me into their homes and share their experiences for the study. Many later thanked me for my interest in their experiences and were hopeful that the study could lead to improvements for them and the children they care for.

I also resided in a home at institution B while collecting data there and participated in institutional activities. However, there were many differences from my experience at institution A. The home where I stayed at institution B was in a cluster of homes for staff and volunteers that was separate from the clusters of homes where children resided. Therefore, there was less natural opportunity for interaction with caregivers and children than at institution A. Also, I began my research almost immediately after arriving at institution B and did not have the same chance to build rapport with the caregivers and children prior to data collection. My research assistant also accompanied me much more frequently for data collection at institution B. The research assistant had previously worked as administrative assistant at the institution, and thus, the caregivers generally knew and trusted her. This may have had both positive and negative impacts on the research study. Although I had little time to build rapport at institution B, it seemed that caregivers were more willing to participate in the study because of their comfort with the research assistant, . However, pre-existing relationships she had with some of the caregivers may have introduced some bias for data collection.

6.4 IMPLICATIONS

Although more research is necessary to confirm some of the findings of this study and to identify causal factors, several suggestions for practice and policy can still be made with some confidence. These include recommendations for hiring practices, building caregivers' access to supports via social networks and psychological resources, and providing continuing education and training for caregivers on child development and sensitive and responsive care for young children.

The findings of this study included no significant associations between caregiver background characteristics, such as age, education, and experience and caregiver-child interaction quality. Therefore, the results may indicate that screening for these characteristics when selecting new caregivers would not be a particularly useful process. Some previous early education literature in the USA does suggest, however, that it may be prudent to prioritize hiring caregivers with greater amounts of education specific to early childhood development and education (Gerber et al., 2007). It may also be beneficial to provide access to such training for current caregivers either through offering professional development trainings at the institution or supporting caregivers access to continuing education outside of the institution.

The results did not indicate a high level of depression symptoms among caregivers or that depression was associated with the quality of caregivers' interactions with young children. However, a few of the caregivers at each institution had scores above the clinical cut-off for the depression scale and may benefit from treatment if they are not already receiving it. During the study, any caregiver who met the clinical cut-off was provided with a one-page document explaining what depression is, that they may be showing signs of depression, and where they can get help if they wish. Institutional administration should consider regularly providing all staff with information regarding where they can receive confidential assistance if they are experiencing emotional or mental health difficulties. Some caregivers may not feel comfortable seeking help from resources at the institution, even with the promise of confidentiality, out of fear that disclosure of depression could affect their employment. Therefore, available resources should include those outside of the institution in addition to any resources available at the institution (i.e. medical practitioners, psychologists).

In regards to social support, findings indicated a positive association between social support from friends and caregiver-child interaction quality. Although the correlational nature of the data precludes a conclusion that social support is causing interaction quality, it is possible. Therefore, attempting to increase caregivers' access to social support could improve the quality of care that children receive in addition to enhancing caregiver wellbeing. For example, institutions could provide formal and informal opportunities for caregivers to bond with one another, such as structured social activities, support groups, and more time to spend with other caregivers with or without children present.

There are potential barriers to coworkers being strong sources of social support. Caregivers may be hesitant to share difficulties they are having at home in fear of be judged or even reported to management. Therefore, it is important to increase caregivers' access to social opportunities outside of the institution as well. For example, it may be valuable to give caregivers time off to attend social groups or activities in the local community or spend more time with their families outside of the institution.

In this study, physical growth was used as a simple indicator of children's general development and evidence of the potential impact of social-emotional deprivation on children's development. While improving children's height and weight may be a worthy goal on its own, the focus should be on improving and maintaining caregiver-child interaction quality, which can impact children's cognitive and social-emotional development in addition to their growth. Researchers and interventionists have implemented trainings in several institutional care environments and found improvements in quality of care and children's development in multiple domains (Groark et al., 2013; McCall et al., 2010; The St. Petersburg-USA Orphanage Research Team, 2008; Warner et al., n.d.). Packaged trainings also exist, such as the Fairstart training program and the Pikler Approach (Pikler/Loczy USA, n.d.; The Fairstart Foundation, n.d.). These trainings emphasize routine care activities, such as feeding, changing, and bathing, as opportunities for sensitive and responsive interactions and bonding with young children. These interventions may be beneficial in family-like institutional care environments as well, but may need to be adapted to fit the family-like model and the local culture.

Analyses indicated that HIV+ children in institution A were experiencing lower quality interactions with caregivers than HIV- children, but exceeding HIV- children in physical growth. One possible explanation for lower quality interactions is that caregivers may be reacting to some level of stigma regarding HIV. Another is that they may be focusing more on those children's physical needs above their social-emotional needs, because of their medical condition. More research is necessary before forming solid conclusions, but the caregiver trainings suggested above could lead to improved caregiver-child interactions and relationships regardless of child HIV status.

Finally, in addition to implications for policy and practice, this study has valuable theoretical implications. Specifically, the results of the qualitative portion of the study provide evidence for an important assumption of Parent Development Theory. By demonstrating that the parental role beliefs that comprise Parent Development Theory are relevant to family-like institutional care settings (Mowder, 2005), the study confirms Mowder's claim that individuals in parental roles may hold sets of role beliefs, regardless of their biological connection to a child. This sets the foundation for further theory development in regards to the characteristics and conditions that lead non-biological caregivers to apply these parental role beliefs to children in their care, despite clear differences from a more traditional parenting roles.

6.5 CONCLUSION

The present study applied past research and theory from parenting, child care, and traditional institutional care to family-like OVC care in KwaZulu-Natal, South Africa. There was evidence of positive associations between caregivers' perceived social support from friends and caregiver-child interaction quality and interaction quality and children's physical growth, as well as evidence that traditional parental role beliefs may apply within family-like care settings. Additional research is necessary to assess causal mechanisms in these associations and determine proper intervention techniques to improve conditions for caregivers and children in family-like care settings. In the meantime, institutional administration should consider prioritizing training specifically in child development for caregivers and opportunities for caregivers to build their social networks.

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

	Caregiver ID:	Child ID(s):	
D_1.	Gender	☐ Male	☐ Female
D_2.	How would you describe yourself in terms of population group?	☐ Black ☐ Coloured ☐ Indian or Asian	☐ White ☐ Other
D_3.	How old are you (age in years)?		
D_4.	What is your marital status?	☐ Married ☐ Living together like married partners ☐ Never married	☐ Widow ☐ Separated ☐ Divorced
D_5a.	Which two languages do you speak most often in this household? (First)	☐ Afrikaans ☐ English ☐ IsiNdebele ☐ IsiXhosa ☐ IsiZulu ☐ Sepedi	☐ Setswana ☐ Sign language ☐ SiSwati ☐ Tshivenda ☐ Xitsonga ☐ Other _______________

		☐ Sesotho
D_5b.	Which two languages do you speak most often in the household? (Second)	☐ Afrikaans ☐ English ☐ IsiNdebele ☐ IsiXhosa ☐ IsiZulu ☐ Sepedi ☐ Sesotho ☐ Setswana ☐ Sign language ☐ SiSwati ☐ Tshivenda ☐ Xitsonga ☐ Other _______________
D_6.	How well do you speak English?	☐ Not well at all ☐ Not well ☐ Well ☐ Very well
D_7.	How well do you speak IsiZulu?	☐ Not well at all ☐ Not well ☐ Well ☐ Very well
D_8.	What is the highest level of education that you have completed?	☐ Less than grade 1 ☐ Grade 1/Sub A ☐ Grade 2/Sub B ☐ Grade 3/Std 1/ ABET 1 ☐ Grade 4/Std 2 ☐ Grade 5/Std 3/ABET 2 ☐ Grade 6/Std 4 ☐ Grade 7/Std 5/ABET 3 ☐ Grade 8/Std 6/Form 1 ☐ Grade 9/Std 7/Form 2 ☐ Grade 10/Std 8/Form 3 ☐ Grade 11/Std 9/Form 4 ☐ Grade 12/Std 10/For 5 ☐ Certificate or Diploma ☐ Bachelors' Degree ☐ Honor's Degree ☐ Master's Degree ☐ Doctorate
D_9.	How many years have you worked at _____ (site)?	_______________________________________
D_10a.	Have you worked in institutional or foster care prior to working at _____ (site)?	☐ Yes ☐ No

D_10b.	If "yes", how many years did you work in the following before working at ______ (site)	☐ Children's home/orphanage ________ yrs ☐ Site ________ yrs	☐ Foster care ________ yrs

Child ID: _________			
DC_1.	Gender	☐ Male	☐ Female
DC_2.	How would you describe ____ (child) in terms of population group?	☐ Black ☐ Coloured ☐ Indian or Asian	☐ White ☐ Other
DC_3.	_____'s (child) Date of birth? (if unknown please enter approximate age)	Day_______ Month______	Year______ Unknown (approx. age) _____ years
DC_4.	Is _____'s (child) biological mother still alive?	☐ Yes ☐ No	☐ Do not know
DC_5.	Is _____'s (child) biological father still alive?	☐ Yes ☐ No	☐ Do not know
DC_6.	How many years has _____ (child) resided at ______ (site)?	☐ Less than 1 year, # months ______ ☐ 1 year ☐ 2 years	☐ 3 years ☐ 4 years ☐ 5 years
DC_7.	How many years has ______ (child) resided in your home?	☐ Less than 1 year (______# months) ☐ 1 year ☐ 2 years	☐ 3 years ☐ 4 years ☐ 5 years
DC_8.	In general, would you say _____'s (child) health is?	☐ Excellent ☐ Very good	☐ Fair ☐ Poor

		☐ Good	
DC_9.	Has _____ (child) been diagnosed with any chronic health conditions?	☐ Yes (if comfortable please describe) ______________________ ______________________	☐ No ☐ Unknown/Prefer not to answer
DC_10.	Has _____ (child) been diagnosed with any developmental disabilities?	☐ Yes (if comfortable please describe) ______________________ ______________________	☐ No ☐ Unknown/Prefer not to answer

APPENDIX B

CAREGIVER ROLE QUESTIONNAIRE

Caregiver ID:						
Child ID:						
Date:						
CR_1.	How would you describe your relationships with _______ (child)? (Please select only one answer; if you feel there is a better way to describe your relationship, please explain).	☐ I treat him/her as I would treat my own child ☐ I treat him/her as I would treat my sister's or brother's child ☐ I treat him/her as I would treat my friends' child ☐ I treat him/her as I would treat a child of people I don't know ☐ Other ____ ____ ____				
CR_2	How strongly do you agree that the following word describes your relationship with the _______ (child):					
CR_2.a	Motherly	☐ Strongly disagree	☐ Disagree	☐ Neither disagree or agree	☐ Agree	☐ Strongly Agree

CR_2.b	Professional	☐ Strongly disagree	☐ Disagree	☐ Neither disagree or agree	☐ Agree	☐ Strongly Agree
CR_2.c	Warm	☐ Strongly disagree	☐ Disagree	☐ Neither disagree or agree	☐ Agree	☐ Strongly Agree
CR_2.d	Distant	☐ Strongly disagree	☐ Disagree	☐ Neither disagree or agree	☐ Agree	☐ Strongly Agree
CR_3	How much do you agree with the following statement? “I hope that ______(child) cares for me as if I were his/her mother”	☐ Strongly disagree	☐ Disagree	☐ Neither disagree or agree	☐ Agree	☐ Strongly Agree

APPENDIX C

CENTER FOR EPIDEMIOLOGICAL STUDIES-DEPRESSION SCALE- REVISED

These items are about how you may have felt or behaved recently. For each item, please circle the number that best describes your feelings or behavior over the last week/Lezi zinto ezikulolu hla zimayelana nesimo okungenzeka ukuthi uzizwe ukusona noma indlela oziphathe ngayo muva nje. Kuleyo naleyo nto esohlwini, ngicela ukikilizele inombolo echaza kangcono imizwa yakho noma indlela oziphathe ngayo kuleli sonto eledlule.

0 Rarely or none of the time (less than 1 day)/ Akujwayelekile noma akukaze kwenzeke nakanye (ngaphansi kosuku olulodwa)
1 Some or a little of the time (1-2 days)/ Kuke kwenzeke kancane kwesinye isikhathi (usuku kuya ezinsukwini ezimbili)
2 Occasionally or a moderate amount of time (3-4 days)/ Kuvamile ngezikhathi ezithile (kungaba izinsuku ezintathu kuya kwezine)
3 Most or all of the time (5-7 days)/ Kwenzeka isikhathi esiningi noma ngaso sonke isikhathi (izinsuku ezinhlanu kuya kweziyisikhombisa)

DEP_1	I was bothered by things that usually don't bother me./ Ngikhathazwe izinto ezingavamile ukungikhathaza.	0	1	2	3
DEP_2	I did not feel like eating; my appetite was poor./ Ngizwe ngingakuthandi ukudla ; inhliziyo yami ibimnyama.	0	1	2	3
DEP_3	I felt that I could not shake off the blues even with help from my family or friends./ Ngizwe ngehluleka ukuqeda ukuphelelwa umdlandla kuyo yonke into noma sengisizwa umndeni nabangani.	0	1	2	3

DEP_4	I felt that I was just as good as other people./ Ngizizwe ngifana nabanye abantu.	0	1	2	3
DEP_5	I had trouble keeping my mind on what I was doing./ Ngibe nenkinga yokugxilisa umqondo entweni ebengiyenza.	0	1	2	3
DEP_6	I felt depressed./ Ngizwe umoya wami ushona phansi	0	1	2	3
DEP_7	I felt that everything I did was an effort./ Ngizwe konke ebengikwenza kungumzabalazo	0	1	2	3
DEP_8	I felt hopeful about the future./ Ngizwe nginethemba ngekusasa	0	1	2	3
DEP_9	I thought my life had been a failure./ Ngicabange ukuthi impilo yami ibingeyinhle	0	1	2	3
DEP_10	I felt fearful./ Ngizizwe nginokwesaba	0	1	2	3
DEP_11	My sleep was restless./ Bekungalaleki kahle	0	1	2	3
DEP_12	I was happy./ Bengijabule	0	1	2	3
DEP_13	I talked less than usual./ Bengingakhulumi njalo njengokujwayelekile	0	1	2	3
DEP_14	I felt lonely./ Ngizizwe nginesizungu	0	1	2	3
DEP_15	People were unfriendly./ Abantu bebengenabungani	0	1	2	3
DEP_16	I enjoyed life./ Ngiphile impilo emnandi	0	1	2	3
DEP_17	I had crying spells./ Ngezikhathi ezithile bengifikelwa wukukhala	0	1	2	3
DEP_18	I felt sad./ Ngizizwe ngiphatheke kabi	0	1	2	3
DEP_19	I felt that people disliked me. /Ngizwe sengathi abantu abangithandi	0	1	2	3
DEP_20	I could not get “going.”/ Ngiphelelwe amandla ngaphelelwa umdlandla	0	1	2	3

Sources:

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APPENDIX D

SOCIAL SUPPORT QUESTIONNAIRE

Read out: **Now I want to learn about the people who support you when you face challenges.** / *Funda kuzwakale:* **Manje ngicela ukuzwa ngabantu abakwelekelelayo uma ubhekene nezinkinga.**

	I am going to read you several statements and I am going to ask how much you disagree or agree with them. (*Read out statements below.)/* Ngizokufundela imisho embalwa engizocela ukuthi usho ukuthi uyavumela noma uyaphikisana yini nayo. (*Funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*	Would you say you . . . *(read out statements below)/* Ungasho yini ukuthi . . . (*funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*						
		Very strongly disagree? / Ngiyaphika kakhulu impela?	Strongly disagree? / Ngiyaphika kakhulu?	Mildly disagree? / Ngiyaphika nje?	Neutral? / Angiphiki futhi angivumi?	Mildly agree? / Ngiyavuma nje?	Strongly agree? / Ngivuma kakhulu?	Very strongly agree? / Ngivuma kakhulu impela?
SS_1	There is a special person who is around when I am in need. / Nginaye umuntu omqoka kimina oba kanye nami uma ngimdinga.	☐	☐	☐	☐	☐	☐	☐

	I am going to read you several statements and I am going to ask how much you disagree or agree with them. (*Read out statements below.)***/ Ngizokufundela imisho embalwa engizocela ukuthi usho ukuthi uyavumela noma uyaphikisana yini nayo.** (*Funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*	**Would you say you . . .** *(read out statements below)***/ Ungasho yini ukuthi . . .** (*funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*						
		Very strongly disagree? / Ngiyaphika kakhulu impela?	**Strongly disagree? / Ngiyaphika kakhulu?**	**Mildly disagree? / Ngiyaphika nje?**	**Neutral? / Angiphiki futhi angivumi?**	**Mildly agree? / Ngiyavuma nje?**	**Strongly agree? / Ngivuma kakhulu?**	**Very strongly agree? / Ngivuma kakhulu impela?**
SS_2	There is a special person with whom I can share my joys and sorrows. / Nginaye umuntu engingakhuluma naye ngobuhlungu nokujabula engikuzwayo.	☐	☐	☐	☐	☐	☐	☐
SS_3	My family really tries to help me. / Umndeni uyazama ngempela ukungilekelela.	☐	☐	☐	☐	☐	☐	☐
SS_4	I get the emotional help and support I need from my family./ Ngiyakuthola ukuqiniswa idolo engikudingayo emndenini wami.	☐	☐	☐	☐	☐	☐	☐
SS_5	I have a special person who is a real source of comfort to me. / Nginaye umuntu omqoka ongiduduza ngempela.	☐	☐	☐	☐	☐	☐	☐
SS_6	My friends really try to help me. / Abangani bayazama ngempela ukungisiza.	☐	☐	☐	☐	☐	☐	☐
SS_7	I can count on my friends when things go wrong. / Ngiyazi ukuthi ngingathembela kubangani bami uma izinto sezibheda.	☐	☐	☐	☐	☐	☐	☐
SS_8	I can talk about my problems with my family. / Ngiyakwazi ukuxoxa ngezinkinga zami nomndeni wami.	☐	☐	☐	☐	☐	☐	☐
SS_9	I have friends with whom I can share my joys and sorrows. / Nginabangani engikwaziyo ukuxoxa nabo ngenjabulo nosizi lwami.	☐	☐	☐	☐	☐	☐	☐
SS_10	There is a special person in my life who cares about my feelings. / Ukhona umuntu omqoka empilweni yami owaziyo ukuthi imizwa yami injani.	☐	☐	☐	☐	☐	☐	☐

Source: Zimet, G.D., Dahlem, N.W., Zimet, S.G., & Farley, G.K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*(1), 30-41. doi:10.1207/s15327752jpa5201_2

	I am going to read you several statements and I am going to ask how much you disagree or agree with them. (*Read out statements below.)/* **Ngizokufundela imisho embalwa engizocela ukuthi usho ukuthi uyavumela noma uyaphikisana yini nayo.** (*Funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*	**Would you say you . . .** *(read out statements below)/* **Ungasho yini ukuthi . . .** (*funda izimpendulo okungakhethwa kuzo kulezi ezingezansi)*						
		Very strongly disagree? / Ngiyaphika kakhulu impela?	**Strongly disagree? / Ngiyaphika kakhulu?**	**Mildly disagree? / Ngiyaphika nje?**	**Neutral? / Angiphiki futhi angivumi?**	**Mildly agree? / Ngiyavuma nje?**	**Strongly agree? / Ngivuma kakhulu?**	**Very strongly agree? / Ngivuma kakhulu impela?**
SS_11	My family is willing to help me make decisions. / Umndeni wami uzimisele ukungisiza ukuze ngithathe izinqumo.	☐	☐	☐	☐	☐	☐	☐
SS_12	I can talk about my problems with my friends. / Ngiyakwazi ukuxoxa ngezinkinga zami nabangani bami.	☐	☐	☐	☐	☐	☐	☐

APPENDIX E

CAREGIVER-CHILD SOCIAL-EMOTIONAL RELATIONSHIP RATING SCALE

Caregiver ID:___________________________ **Child ID:**____________________________________ **Observer:**________________________

		Episode						
	Behavior	**Feeding 5 min.**	**Feeding 5 min.**	**CDB 5 min.**	**CDB 5 min.**	**Play 5 min.**	**Play 5 min.**	**Average Score**
	Caregiver Engagement							
INT_1	Detached, unaware, distant unavailable, disengaged, non-interactive Available, receptive, engaged, interactive with children 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Caregiver Responds to Children							
INT_2	Fails to respond to children's acts Responds contingently to children, reciprocal interactions 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Caregiver vs. Child Directed Behaviors							
INT_3	Caregiver directed, no expectation of child participation, tells/shows children what to do Child directed, let's children lead or do what they want and supports them 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

		Episode						
	Behavior	**Feeding 5 min.**	**Feeding 5 min.**	**CDB 5 min.**	**CDB 5 min.**	**Play 5 min.**	**Play 5 min.**	**Average Score**
	Caregiver Disciplinary Control							
INT_4	Intrusive, behavioral control, demand Caregiver supportive, empathetic; for obedience/discipline, punishes a child encouragement, provides guidance 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Caregiver Affect							
INT_5	Negative or flat affect; Positive, warm, affection; harsh, hostile, punitive appropriate emotional lability 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Child Engagement							
INT_6	Detached, unresponsive, withdrawn, Engaged in activities or social interaction; no social anticipation responsive, social anticipation 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Child Responds to Caregiver							
INT_7	Fails to respond Responds contingently to caregiver, to caregiver's acts reciprocal interactions 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Child Affect							
INT_8	Negative or flat affect, upset/angry, sad/flat, Positive, happy, alive, animated, no affect when it would be appropriate appropriately modulated affect 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	Child-Caregiver Relationship							
INT_9	No relationship, no special Secure, help-seeking relationship, social interaction with caregivers mutual engagement 0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

CCSERRS Definitions

Behavior	**0**	**1**	**2**	**3**
Caregiver Engagement				
1. Detachment vs. availability, receptivity, and engagement	Extreme engagement; caregiver is physically distant or generally unaware of children's activities; ignores children when they are eating, dressing, playing; does other tasks during free time, such as talks to other caregivers, takes a break to smoke or groom herself; may be physically present but is not behaviorally present; caregiver does not make eye contact; does not talk to children; does not engage children when that would be possible.			Availability/Receptivity/Engagement. Caregiver is present and engaged with children. Caregiver looks children in the eye and holds children face-to-face while feeding or in play; caregiver listens attentively when children speak (e.g., looks at them, responds by nodding); caregiver gets at the level of the child (kneels, sits on floor with children) to have better eye contact, to hear a child, to talk or play with children; caregiver attends to and engages appropriately a child who is constructively engaged (she goes with the child's flow). Caregiver plays with, converses with children .
Caregiver Responds to Children				
2. Fails to respond vs. responds to children	Caregiver does not respond to children's vocalizations, smiles, other social initiatives, distress (crying, frustration). If no child stimulus, score 0.			Responds contingently to children. Caregiver paces caregiving, responds to child's behavior, signals, and communication; empathetic verbalizations or facial expressions; shares joy and excitement. Encourages, rewards, modulates response to child's style and /or ability to handle stimulation; responds to not at children. Caregiver is sympathetic or empathetic with a child having difficulty or one who is hurt and crying.

Behavior	0	1	2	3
Caregiver vs. Child Directed Behaviors				
3. Caregivers' behavioral style in following children's cues	No expectation or interest in children's participation, completely caregiver directed. Caregiver directs child physically or verbally in a non-disciplinary activity; talks at children and teaches or engages in activity (reading, dressing, learning new concept) with no expectation of child's participation, feedback, questions/discussion. Caregiver models use of an object for child to imitate in play or shows the child what to do; caregiver labels objects, parts of body, food, and expects imitation or no response. Performs a caregiving action (feeding, bathing, changing) without engaging the child; she catches the child by surprise; hurries caregiving without waiting for child to adjust. Directs children individually or in group behavior (stand in line, sit against the wall, hold onto another child) and expects conformity to caregiver intentions.			Caregiver actively supports children's leads and she follows children's leads; caregiver responds in playful or positive way; engages in reciprocal conversation and play; asks what the child wants to do and how; promotes peer interaction; facilitates/supports children doing own things. Caregiver does not interfere with children's stream of behavior.
Caregiver Disciplinary Control				
4. Caregiver behavioral control/ obedience/ discipline, punishment vs. Caregiver support, empathy, guidance	Intrusive, controlling/ disciplining. Intrudes on children who are appropriately engaged and prohibits what they want to do or redirects the child when it is unnecessary, she interrupts child activity to get the child to do something else. Caregiver physically and negatively grabs a child to move him or her; hits or spanks a child. Verbally abuses, yells, or talks down to children in a disrespectful manner.			Supportive, empathetic, guidance in controlling child behavior. Caregiver changes child behavior in a positive and supportive way by providing "guidance" or "suggestions. Caregiver explains a rule or consequences and calmly redirects behavior all in a positive and supportive way.

Behavior	**0**	**1**	**2**	**3**
Caregiver Affect				
5. Caregiver negative affect vs. Caregiver display of positive affect/affection	Negative or no/flat affect. Harsh, hostile, critical, blaming behavior. Caregiver displays negative affect to a child (frowns, scowls); speaks negatively, harshly, with sarcasm or annoyance, hostility, and scolds or shouts at the child; is critical of children, puts them down, uses sarcasm, blames child, says “bad boy”. Caregiver is expressionless, mechanical, uses monotone speech.			Positive affect/ affection. Nurturing, warm, loving, expressive, enthusiastic. Caregiver smiles at children; talks to children in a positive, warm, affectionate, supportive way; she hugs, kisses, and warmly holds children. Caregiver is animated or expressive when engaged with children; changes emotional expression to fit moment-to-moment activity both positive and negative (e.g., winces in animated pain when child falls, makes empathetic smiles or frowns to the child’s actions); expresses positive emotion and enthusiasm to a child’s accomplishments (praises and smiles to child’s drawing or stack of blocks).
Child Engagement				
6. Detachment and failure to respond vs. engagement, responsiveness, and anticipation	Children are not engaged in activities, detached, fail to respond, withdrawn. Child is unresponsive to positive caregiver behavior and caregiver attempts to engage the child; child seems unresponsive emotionally to caregiver behavior either positive or negative (discipline or harsh words). Children do not smile or “brighten,” get “excited,” wiggle with anticipation, or raise arms to be picked up when a caregiver comes over to attend to them or pick them up. If child responds in a forced, non-social, mechanical manner score zero or one.			Responsive/anticipation. Engaged in activities. Child makes eye contact, attempts to engage, asks questions or talks to caregiver; requests or anticipates caregiver engagement by smiling, “brightening,” shows excitement or wiggles, raises arms to be picked up; responds back to caregiver by cooing, babbling, talking, playing peek-a-boo, etc.; requests or anticipates caregiver’s comfort or help when crying, frustrated, assaulted by other children or having toy taken away; child initiates interaction/talks to caregiver and clearly expects caregiver to talk back.
Child Affect				
7. Children’s flat or negative affect vs. appropriately positive, labile affect	Flat or inappropriate affect. Child cries or, shows anger or other negative affect. When child whimpers, has sad affect. Children have no affect when it would be appropriate to do so; do not match emotions to caregiver’s emotions.			Children display appropriate positive affect (smile, laugh) during routine caregiving or play; are “alive” and emotionally labile, matching emotions to caregiver’s emotions or peer situation; Child is happy, smiling, laughing on own or with peers; child smiles or laughs when tickled. Child is appropriately angry or negative but modulates and is in control of affect.

Behavior	0	1	2	3
Child Responds to Caregiver				
8. Failure to respond vs. Responsiveness and anticipation of Caregiver-initiated activity	Children fail to respond to adult-initiated activities. Unresponsive to positive caregiver behavior and caregiver attempts to engage the child; child seems unresponsive emotionally to caregiver behavior either positive or negative (discipline or harsh words). Children do not smile or "brighten," get "excited," wiggle with anticipation, or respond with raised arms when adult attempts to pick up child. If there is no caregiver stimulus, score 0.			Child responds contingently to caregiver or engages in reciprocal activities (games or conversations). Responsive/anticipation. Child makes eye or physical contact when engaged with caregiver, asks questions or talks with caregiver; anticipates caregiver engagement by smiling, "brightening," shows excitement or wiggles, raises arms to be picked up; responds back to caregiver by cooing, babbling, talking, playing peek-a-boo, etc.; anticipates caregiver's comfort or help when crying, frustrated, assaulted by other children or having toy taken away; child converses with caregiver. If child responds to harsh discipline with fear or avoidance or if child rejects an intrusive/inappropriate caregiver interruption, it could count as some level of responsiveness.
Child Relationship				
9. Child relationship with caregivers	No relationship. Child doesn't watch or attempt to engage caregiver; doesn't make eye contact; child shows no separation anxiety or distress when caregiver leaves or turns head away; to child caregiver is another object in the room – no special social behaviors directed at caregiver. Rarely watches or attempts to engage caregiver; rarely makes eye contact (unless child is engaged in peer or other play situations or participating in appropriate activities by his/herself).			Secure, help-seeking relationship. Child watches caregiver; follows with eyes caregivers movements; uses caregiver as a "secure base" by sharing a toy with her, asking a question; looks at the caregiver to share a positive or negative experience; child seeks caregiver when experiencing stress or is upset; child checks in with caregiver from a distance while playing (e.g., makes eye contact or vocal or verbal contact with caregiver); child shows separation anxiety or distress when caregiver leaves or turns head away, child attempts to re-engage caregiver; child shows weariness of strangers and may cling to caregiver or hold on to skirt.

APPENDIX F

SHORT ATTACHMENT SECURITY SCALE

Observer:							
Caregiver ID:							
Child ID:							
		ITEM	Very unlike	Unlike	Neither like nor unlike	Like	Very like
	SASS_1	The child readily shares with caregiver or lets caregiver hold things if he/she is asked to. (Very unlike: Means that child refuses to share)	1	2	3	4	5
R	SASS_2	When child returns to caregiver after playing, he/she is often fussy for no clear reason (Very unlike: Child is happy or affectionate when he/she returns to caregiver between or after play times)	1	2	3	4	5
	SASS_3	Child follows caregiver’s suggestions readily even when they are clearly suggestions rather than orders. (Very unlike: Child ignores or refuses suggestions unless ordered)	1	2	3	4	5

	SASS_4	Child keeps track of caregiver’s location when he/she is playing around the house. For example, he/she calls now and then or he/she take notice if caregiver changes rooms or activities. (Very unlike: Doesn’t keep track. Neither like nor unlike: If child isn’t allowed or doesn’t have room to play away from caregiver)	1	2	3	4	5
R	SASS_5	Child sometimes gives impression that he/she wants to be put down, and then fuses or wants to be picked right back up.	1	2	3	4	5
	SASS_6	Child clearly shows a pattern of using caregiver as a base from which to explore, that is, he/she moves out to play, returns, and then moves out to play again. (Very unlike: Child is away unless retrieved, or always stays near)	1	2	3	4	5
R	SASS_7	Child is demanding and impatient with you. He/she fusses and persists unless the caregiver does what he/she wants right away.	1	2	3	4	5
	SASS_8	Child follows you when he/she is asked to do so. Refusals or delays which are playful don’t count unless they are clearly disobedient.	1	2	3	4	5
	SASS_9	Child recognizes when caregiver is upset. He/she becomes quiet or upset or he/she tries to comfort you, or even asks what is wrong. (Very unlike: Doesn’t recognize; continues to play; behaves as if caregiver were OK)	1	2	3	4	5
	SASS_10	When caregiver picks child up, child put his/her arms around caregiver or puts his/her arms on caregiver’s shoulder.	1	2	3	4	5
R	SASS_11	Child acts like he/she expects caregiver to interfere with his/her activities when caregiver is simply trying to help him/her with something. (Very unlike: Accepts caregiver’s help readily, unless she is in fact interfering)	1	2	3	4	5
	SASS_12	If caregiver reassures child by saying something like “It’s OK” or “It won’t hurt you” he/she will approach or play with things that initially made him/her cautious or afraid. (Neither like nor unlike: If never cautious or afraid)	1	2	3	4	5
R	SASS_13	When child plays with caregiver, he/she plays roughly. For example he/she bumps, scratches, or bite even though he/she does not necessarily mean to hurt you. (Very unlike: Plays active games without injuring you. Neither like nor unlike: If play is never active)	1	2	3	4	5
R	SASS_14	Child is easily upset if caregiver makes him/her change activities, even if the new activity is something he/she often enjoys.	1	2	3	4	5

	SASS_15	When caregiver enters a room that child is in, child quickly greets caregiver, without caregiver having to greet him/her first. For example, he/she smiles, shows a toy, gestures or says "Hi." (Very unlike: doesn't greet caregiver unless caregiver greets him/her first.)	1	2	3	4	5
	SASS_16	If child is frightened or upset, he/she stops crying and quickly recovers if caregiver holds him/her. (Very unlike: Not easily comforted)	1	2	3	4	5
R	SASS_17	When caregiver doesn't do what child wants right away, child acts as if caregiver were not going to do it at all. For example, he/she fusses, gets angry, walks off to do other activities, etc. (Very unlike: Waits reasonable time, as if expecting you to shortly do what is asked).	1	2	3	4	5
R	SASS_18	At home, child gets upset or cries when caregiver walks out of the room.	1	2	3	4	5
R	SASS_19	Child easily becomes angry at caregiver. (Very unlike: This doesn't get angry unless he/she is very tired or if caregiver is very intrusive)	1	2	3	4	5
	SASS_20	Child uses caregiver's facial expressions as a good source of information when something looks risky or threatening. (Very unlike: Makes up own mind without checking caregiver's expressions first).	1	2	3	4	5
R	SASS_21	Child cries as a way of getting caregiver to do what he/she wants. (Very unlike: Mainly crise because of genuine discomfort (tired, sad, afraid, etc.)	1	2	3	4	5
R	SASS_22	When something upsets child, he/she tends to stay where he/she is and cries. (Very unlike: Goes to caregiver when upset doesn't wait for caregiver to come to him/her)	1	2	3	4	5
	SASS_23	If caregiver moves very far when child is playing, child follows along and continue to play in the area caregiver has moved to. He/she doesn't stop playing, doesn't get upset and doesn't have to be called or carried along. (Neither like nor unlike: If child is not allowed or doesn't have room to be far away)	1	2	3	4	5

APPENDIX G

PHYSICAL GROWTH RECORD SHEET

Caregiver ID:			
Child ID:			
Child Date of Birth:			
	Measure #1	Measures #2	Measure #3
Height:			
Weight:			----------------------------
Head Circumference:			

APPENDIX H

CAREGIVER INTERVIEW PROTOCOL

1. Please tell me about how and why you came to be a caregiver (housemother, mother) at ______ site? (motivation and history)
2. What do you do in your role as caregiver? Please name as many things as possible. (Which of these do you think is the most important or least important to you? To your supervisors? To the children?)
3. What do you enjoy most about your role as caregiver?
4. What challenges do you experience in your role as caregiver? (in caring for children, in completing your job responsibilities, etc.?)
5. What resources or supports do you wish you had that might help you with these challenges?
6. How long do you expect to remain as a caregiver at ______ site? (why do you expect to stay or leave?
7. Tell me about the children you have or have had in your care while being a caregiver at _____ site? (What brought them here, how long did they stay or do you expect them to stay, describe your relationship with them)

APPENDIX I

ADMINISTRATOR INTERVIEW PROTOCOL

1. Do you have any eligibility requirements for being a caregiver here? What are they?
   (education, training, experience with children, being a parent)?
2. How do you recruit your caregivers?
3. What kinds of training do caregivers get?
   (before starting, while they are there)?
4. Are the caregivers paid? How?
   (foster care grants, salary from village, etc)?
5. What are the caregivers' schedules?
   (specific number of hours off, days off, what happens with the children during those times, are there stable/consistent caregivers for time off)?
6. What is your philosophy for forming a children's village rather than a typical orphanage or institution?

7. Was this always a children’s village set-up?

   If not, what changes did you make? Why?

   What differences did you see with the changes you made (children, caregivers)?
8. What do you call your caregivers? Why?

   What do the children call their primary caregiver?
9. How do children come to your village?

   (how old are they typically, reasons for admission)?
10. How do you decide where to place certain children?

    (sibling groups, age, developmental level, medical conditions, disabilities)?
11. When a child comes, do you have a long term plan for that child?

    How many children will eventually leave for another placement?
12. What is the average length of stay for a child?

    (range: shortest, longest)
13. How often do children move between homes/caregivers?

    Why do those moves happen?
14. What kinds of shared activities do the caregivers or families do together?
15. How frequently do you have volunteers/visitors?

    What do those visitors or volunteers do?

APPENDIX J

INTERVIEW CODING SCHEME

Name (Bolded text indicates presence in provisional coding scheme)	**Description**
Bond	Experienced bond with specific child(ren)
Challenges	Condition or situation that makes position difficult in any way
Adjusting	Challenge of adjusting to changes/moves/new children/etc.
Behaviour	Challenge with child(ren)'s behaviour
Discipline	Challenge with disciplining children
Lack of support from management	Challenge of lack of support from management
Regulations	Challenges of regulations
Education	Challenge having to do with education
Personal emotions	challenge with dealing with own emotions regarding children
Relationships	Challenges with relationships with children

Workload	Challenge of workload to difficult
Effective	Felt as if made a difference
Ineffective	Felt as if made no difference
Joys	Element of position that brings pleasure, contentment, or joy
Benefits	Joy of employee benefits
Children	joy of children
Domestic tasks	Enjoys domestic tasks
Learning about people	learning about people... whether children, co-workers, etc.
Spiritual	Joys in spiritual realm
Long-term Plans	Plans for future involvement in site
As Needed (as long as needed or useful)	Plans to stay as long as feels needed or useful in position
Immediate Stay (0-5 yr)	Planning to leave in the next 0-5 years
Indefinite Stay (forever)	Plans to stay indefinitely (forever)
Limited Stay (plans to leave eventually)	Plans to leave village eventually
No plans	Has not considered future plans
Reasons for leaving or staying	Reasons for potentially leaving the institution. Emergent codes.
For the children	reason for staying certain time is based on children and feelings towards children
Green pastures	NVivo code- referring to until something else comes along
It depends on God	idea of being here until God calls them elsewhere or as long as they are needed (by God)
It is hard	NVivo code- referring to job is difficult
My heart is in this for a long time.	NVivo code- referring to being committed
Numbered plan	At some point (in past or now) had a number of years in mind for working
Motivation	Reason for beginning or maintaining caregiver position
Available	Position was open and offered
Finances	Needed finances
General helping	Wanting to help children/others

Need for a job	Needed a job (or job benefits)
Passion for OVC or children in need	Having passion for OVC or children in need
Personal experience	Had someone act as caregiver for them in the past
Past experiences	Experiences with children in past as caregiver
Care Change (external)	Child moved to different caregiver out of village
Care Change (internal)	Child moved to different caregiver within village
Death	child died
Family reunite	Child reunited with biological family
Loss	Lost child from care
Resources	Any source of support available or needed to assist with challenges
Emergent	Themes not covered under provisional coding scheme
Decreased workload	Human or physical resources to decrease workload on caregiver
Material resources	Physical materials
Educational	Resources to support children's educational growth
Financial	Support in increased pay or money to use for children
Physical	Support in-kind
Managerial support	resources and support from management
Regulatory support	Support in terms of changing or working within regulations
Emotional	Support for dealing with emotions
Financial	Support in monetary form
Physical	Support in-kind
Social	Support from other people
Specialist	Support from specialist (such as PT, OT, medical doctor, counselling)
Role beliefs	Expectation of behaviour in caregiver role
Bonding	Affectionate, trusting, loving displays; behaviours or activities that supported the creation or maintenance of relationships
Discipline	Sense of moral values and training or teaching
Education	Provision of guidance, role models, and enrichment through teaching

Academic	Focus on academic education
Life skills	Education involving teaching life skills.
Interpersonal	how to interact with others
Property	how to take care of physical items or places
Self-care	feeding, dressing, hygiene
Morality	Education about right/wrong
Spiritual	Education about spiritual issues (prayer, God, etc.)
Emergent	
Home	taking care of the physical home
General Welfare and Protection	Provision of physical support
Dressing	having to do with putting on clothes
Health	having to do with physical health
Hygiene	having to do with being clean
Nutrition	having to do with food, eating, etc.
Sleep	having to do with waking up or putting to bed
Vague	vague mention of taking care of children
Responsivity	Response to children's specified needs
To effects of the past	attention to understanding, listening to, and helping based on children's past experiences
To emotional needs	attention paid to listening to, understanding, and responding to emotional needs
To physical condition	attention to listening to, understanding, and helping with physical needs
Sensitivity	Awareness of children's emotional, social, communicative, and physical needs
To communicative	Awareness of children's need to communicate
To emotional	Awareness of children's emotional states and needs
To social	Awareness of children's needs for social interaction and support
To physical	Awareness of children's physical needs or conditions
ROLE most important	what is the most important part of your role answers
To caregiver	answers to caregiver

To children	answers to children
To supervisors	answers to supervisors

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