PARENTAL KNOWLEDGE AND BELIEFS IN RELATION TO EARLY CHILD DEVELOPMENT: PERSPECTIVES FROM TANZANIA

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Abstract

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Advisor: Professor Helen Johnson

The study assessed mothers' knowledge and beliefs about child development and compared these results to their children's performance on a child outcome measure. It was conducted under the auspices of *Save the Children*, the non-profit agency. Data was gathered in both rural and urban areas of Tanzania, and included typically developing children, and children identified with developmental delays. The study also examined the relationship between the mothers' income and education levels and their knowledge and beliefs in respect to child development, the relationship between parenting style and self-efficacy beliefs, the development of the construct of self-efficacy in the Tanzanian context, and the effects of birth location and maternal age on child developmental outcome. Participants included 103 mothers and their children. Forty-nine resided in the urban location and 54 in the rural location. Parental knowledge and belief were assessed using the Health and Safety, Milestone and Parenting subscales from the Knowledge of Infant Development Inventory (MacPhee, 1981), the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991), the Parenting Tasks Checklist (Sanders & Wooley, 2005), and the Parent Modernity Scale (Schaefer & Edgerton, 1985). Child developmental outcome was assessed using the Battelle Developmental Inventory Screening Test (Newborg, 2005). All measures were translated into Kiswahili and piloted on a small sample. Results indicated that a combined measure of parent beliefs was more reliable than results from the individual measures, however no relationship was found between scores on this combined

measure and results on the child outcome measure. Significant differences were found in the scores of all the parent measures between mothers from urban versus rural areas of the country when controlling for other demographic variables. There was also a positive relationship between maternal education and scores on the combined belief measure. Item analyses on the measures highlighted parental beliefs about child-care and child development within the Tanzanian context. Findings from the study demonstrate the lack of intervention services for children with disabilities/developmental delays in rural areas of the country and highlighted the health and policy implications associated with this.

Dedication

To my parents, who continually inspire me to transform ideas into reality. Without your love and support none of this would have been possible.

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Table of Contents

List of Tables

List of Figures

Chapter I-Introduction

This study examines the constructs of parent knowledge and parent beliefs in relation to child development in mothers and children from rural and urban environments in Tanzania. The chapter begins with a discussion about the need for child development research in developing countries. It will include a brief description of the literature in the field of early child development, and will highlight the lack of published research in this area in some of the most economically deprived parts of the world, including sub-Saharan Africa, a region of focus for this research project.

Next, early child development is presented from a holistic perspective, followed then by literature outlining the importance of developing and sustaining programs in early child development in sub-Saharan Africa. Key concepts of this project are then introduced. These include parental knowledge and beliefs, constructs vital in research on parenting. These concepts are considered in relation to early child development, along with the differences in parenting typically developing children compared to children with developmental delays.

Next, a discussion is presented on the relevance of this topic to the field of school psychology. Finally, the rationale for this research project is discussed, with proposal of research questions that will explore the relationship between parental knowledge and beliefs regarding child development in a country which faces many challenges in supporting the healthy development of young children.

The Need for Early Child Development Research in Developing Countries

Providing for early child development is one of the most powerful investments for a country (Irwin, Siddiqi & Hertzman, 2007), with welfare for children under the age of eight coming under the United Nations Convention on the Rights of the Child. (Vaghri, Akadas,

Hertzman, & Hertzman, 2009). Of the eight United Nations Millennium Goals, two target children specifically, and three others relate directly to the newborn and under-five population. These include reduction in the prevalence of underweight children, improvement of conditions for maternal health, and the prevention of malaria in young children (United Nations Development Program, 2010). In the push to meet the Millennium Goal targets, countries started to focus on specific programs targeting early child development, such as the Maternal Newborn and Child Health Initiatives in all African countries (The Partnership for Maternal and Child Health (PMCH), 2006), along with international policy initiatives that are highlighted in a series of three articles on child development in developing countries (Engle et al. 2007; Grantham-McGregor et al., 2007, Walker et al. 2007).

The need for improvement in this area comes with good reason; 200 million children in developing countries are at risk of cognitive and social emotional delay due to issues related to poverty such as poor nutrition and lack of appropriate care (Grantham-McGregor et al., 2007). In low-income countries, children are at much greater risk of poor nutrition and poor health. In 2007, children coming from these countries had a one in four chance of living in extreme poverty, with 10.5 million a year dying before the age of five. (Siddiqi, Irwin, & Hertzman, 2007).

Outcomes such as these can be avoided through intervention programs that target the multiple negative effects of poverty on child development. However, many of the world's least developed nations do not invest in creating and sustaining such programs, or do so at a slower rate compared to more developed countries in the world (Engle et al., 2007). This is problematic as investing in early child development is a cost effective way of ensuring a healthier and more productive future for the population. The reduced costs for intervention programs results from

local wage structures, as programs typically are staffed by local caregivers who earn local salaries (Irwin, Siddiqi, & Hertzman, 2007).

Not only is the disparity between low-income and developed countries present in early child development programs, it also is prevalent in the research literature on child development (Tomilson & Swartz, 2003). In addition, there are relatively few published evaluation studies that have documented the effectiveness of early child development programs in developing countries (Engle et al. 2007). Those studies that have reviewed early child development programs report a multitude of positive effects on the subsequent development of children. Nutrition programs result in improvements in overall growth and motor development of young children. Cognitive development improves greatly through parenting programs, which focus on developing interaction patterns between caregivers and young children. Finally, preschool and early child education programs greatly improve children's cognitive development in many different countries (Engle et al., 2007).

In sub-Saharan Africa, the rates of child mortality are consistently higher than in other parts of the world (Pence, Evans, & Garcia, 2008; PMCH, 2006). It is an area of the world with "the highest rates of absolute child poverty" (Garcia, Virata & Dunkelberg, 2008, p. 11), with increasing disparity of rates in infant mortality between low-income and more affluent nations. Underfunded health care systems, poor nutrition, HIV infection, malaria, civil conflicts, and weak economic development are among the reasons for such high child mortality and poverty.

Almost all Sub-Saharan countries, however, have early child development policies, and benefit from support from multinational aid agencies such as UNICEF and the World Bank (Aidoo, 2008). The publication entitled "*Opportunities for Africa's Newborns"* (PMCH, 2006) outlines key strategies to alleviate the death toll of young children in sub-Saharan Africa and

attempts to improve the outcome of those who survive. A recent edited book by Garcia, Pence, and Evans (2008) "*Africa's Future, Africa's Challenge, Early Childhood Care and Development in Sub-Saharan Africa"* clearly documents the growing attention being placed on this area in recent years.

A Holistic Approach to Early Child Development

Documented throughout the literature is the need for a holistic approach towards child development in order to improve the outcome of young children. A specific focus on nutrition for example, is not sufficient. Engle et al. (2007) indicate that successful early child development programs need to integrate "health, nutrition, education, social and economic development, with the need for collaboration between government agencies and civil societies" (p. 234). Other recommendations for successful intervention programs include focusing specifically on the needs of disadvantaged children. Parents and teachers need to foster the development of their children from a very early age, and programs that target parents and teachers must factor in the cultural beliefs regarding child-rearing, along with established research-based practices. This holistic approach views early child development from the ecological perspective, starting from the closest environment of the family to the larger global context. A model for this approach, The Total Environmental Assessment Model of Early Child Development (TEAM-ECD), was developed by Siddiqi et al. (2007), and is a model which places attention on every aspect of environmental influence on a child's development. This includes biological mechanisms such as brain development in utero, influence of the family on the development of the child, influences of the wider community in which the child lives (physical impact of living in slums and lack of physical space in which to play), and social community influences in terms of the practices and beliefs.

In sub-Saharan Africa, there are numerous examples of early childhood intervention programs that adopt holistic approaches. Community-based approaches include outreach programs that help families gain access to necessary services in South Africa (Marfo, Biersteker, Sagnia, & Kabiru, 2008), parent support and education programs in Kenya (Engle, Dunkelberg, & Issa, 2008), and the Aga Khan Foundation's Madrasa Resource Centers (MRC) within Muslim communities in East Africa. These preschool programs are community-owned and adopt a child-centered curriculum within the cultural and religious context. Evaluation studies on the MRC clearly document their success compared to other preschools in the region in improving the cognitive development of children who attend these programs. (Mwaura & Mohamed 2008; Mwaura, Sylva, & Malmberg, 2008).

Parent Knowledge and Parent Beliefs

Any research that explores the role of early child development benefits from adopting this holistic perspective of early child development. The study proposed here will look at the relation between parent knowledge and beliefs about child development, and how this subsequently affects child development. It will consider the wider cultural impact by studying these constructs in the country of interest, so that the findings may assist in the planning of future intervention programs in this area.

As a construct, parental beliefs have been viewed as one overarching term that encompasses both knowledge and instrumental understanding about parenting (Sigel & McGillicuddy-De-Lisi, 2002). Two aspects of these beliefs, the knowledge of rules about health and safety in the care of a young child, and the norms and milestones of child development (MacPhee, 1983), have typically been viewed under the term "knowledge," and distinct from other aspects such as attitudes parents hold in terms of care-giving practices (Stevens, 1984), or

at least discussed separately (Okagaki & Bingham, 2005). Attitudes that parents can hold about parenting have been termed instrumental beliefs, (MacPhee, 1983) or the knowledge of "how" as opposed to "what" (Sigel, 1985, p. 349).

This study looks specifically at parental knowledge and explores the theoretical and empirical basis for the connection between parent knowledge and positive child developmental outcomes (Benasich & Brookes-Gunn, 1996; Dichtelmiller, Meisels, Plunkett, Bozynski, Clafin, & Mangelsdorf, 1992; Huang, O'Brien Caughy, Genevro, & Miller, 2004; McGillicuddy-De-Lisi, 1985; Seo, 2006). Alternative aspects of parental beliefs which can be seen as separate from terms such as knowledge reflect notions of parental self-efficacy, or "beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child" (Montigny & Lacharite, 2005). Beliefs defined in this way carry an affective quality, and include constructs such as parental confidence and competence, and parenting style. All these forms of parental beliefs have links to child development outcome measures, such as improved parenting behaviors (Leerkes & Crockenberg, 2002; Teti & Gelfand, 1991), and more positive parent-child relationships (Turner & Johnson, 2003). Research has also found that the combination of greater knowledge and greater confidence (Conrad, Gross, Fogg, & Ruchala, 1992), and self-efficacy (Hess, Teti, & Hussey-Gardner, 2004) leads to better child outcome. Subdivision of the different aspects of parental beliefs in studies such as these highlights the importance of seeing beliefs on the one hand as one all-encompassing construct, but also allows for the understanding of the different aspects that make up the overarching term.

While parent beliefs are important to study in relation to all children, there is a special need to study the knowledge and beliefs of parents of children with developmental delays. Mothers of children with developmental delays have been found to hold biased estimates

regarding the age of attainment of developmental milestones (Dinnebeil & Rule, 1994; MacPhee, 1984). These altered perceptions of a child's development can affect parents' referral of their children for evaluation (Spann, Kohler, & Soenksen, 2003). Parents also may believe themselves less efficacious in terms of their child rearing skills, especially if they feel guilty about the disability (Kuhn & Carter, 2006), or are caring for children with behavioral problems (Sanders & Wooley, 2005).

Relevance to Field of School Psychology

This research study is relevant to the work of school psychology especially for school psychologists working with early elementary or preschool children, and for clinicians who work in diverse and multi-cultural settings. The need for research within different countries in psychology is important, as there are significant limitations in generalizing research findings to populations living outside the countries in which the research was originally conducted (Greenfield, 1997). The American Psychological Association has released position papers and legal standards which emphasize the importance of both cross-cultural research and research from other countries (APA, 2003). In response, research on child development has in the last few years increasingly focused on working with different cultural groups within the United States (Harry, Kalyanpur, & Day, 1999; Harry, 1992; Lynch & Hanson, 1998; Miranda, 2002; Ortiz & Flanagan, 2002). The focus of this project, however, will be to extend research in early child development to families living outside of countries which feature more prominently in published research, and to a country that has many fewer early child development programs than the United States or other Western European countries. In addition, the focus placed on children with developmental delay in this study is directly in line with the work of school psychologists in

identifying, assessing and planning interventions for children with developmental delays in the educational setting.

This dissertation research is in response to the need for more studies in early child development in low-income countries (Tomilson & Swartz, 2003). It also reflects a call within the child developmental literature to ensure that both an ecological and cultural perspective are applied when considering that development (Weisner, 2002). This research will also provide information to guide intervention programs in early child development, and hopes to enhance the cultural competency and cultural understanding for practicing school psychologists who work with diverse populations within the US. This kind of research clearly addresses the guidelines on multicultural education, training, research and practice set out by the American Psychological Association (2003), and also provides information for improved competence in the provision of school psychological services to culturally diverse students (Jacob & Hartshorne, 2007).

The Rationale for the Proposed Study

As stated, this research comes out of a need for more empirical studies on parenting beliefs in relation to child developmental outcome within diverse cultural contexts. Studies within the United States and Canada have reported differences in parent knowledge and beliefs among different immigrant groups (Bornstein & Cote, 2004; Jambunathan, Burts, & Pierce, 2000; Pomerleau, Malcuit, & Sabatier, 1991), and cross-cultural research has highlighted fundamental differences in the knowledge held by parents coming from different countries (Joshi & MacLean, 1997; McGillicuddy-De Lisi & Subramanian, 1996).

This study incorporates aspects of anthropological work into child development in different cultures, by including the perspective of parental ethnotheories of Harkness and Super (2002; 1992). The research presented here, while being primarily from a developmental

psychology perspective, necessarily includes the cultural framework of parenting as part of the research. Other examples of anthropological work in the area of child development in similar geographic areas to the location of this research include research into understanding of child temperament in East African society (deVries & Sameroff, 1984), the perception or meaning of childhood among the Pare people of Northern Tanzania (Hollos, 2002) and the specific child rearing practices amongst the Gusii people of Kenya (LeVine et al., 1994).

Parental beliefs, particularly the study of parenting self-efficacy, is a concept which has received little research attention outside of the United States, and only recently among diverse communities within the U.S. (Hess et al., 2004; Huang et al., 2005; Keels, 2009). Three studies which led in part to the development of this current project examined knowledge and self-efficacy beliefs in a non-western context. These include Brazil (Surkan, Kawachi, Ryan, Berkman, Viera, & Peterson, 2008; Seidl de Moura et al. 2004), South Korea (Seo, 2006), and Cambodia (Naqvi, Johnson, Sophal, Vibol & Verkuilen, 2009*)*. The study in Cambodia was conducted as a preliminary or pilot study to this dissertation research.

This present study builds on the results from the project in Cambodia, by exploring the constructs of parenting beliefs in another context. It addresses the need to study parenting constructs in diverse cultural settings, in order to lay the foundation for intervention programs to improve child development outcomes.

Both Marfo et al. (2008) and Evans, Matola, and Nyeko (2008) describe intervention programs targeted towards children and families which rely on information about the beliefs and knowledge of the parents. This project will therefore provide opportunities for further work in this area in an African country facing significant challenges in addressing the health and well-being of its children by examining the constructs of parenting knowledge and beliefs within a

local context (as opposed to importing the research findings from other populations). This type of research is important within the framework of the United Nations Millennium Goals, specifically those which target the under-five population, and seek to increase outcomes for this population through intervention programs.

In addition, the parent interviews, individual screening of all children (as opposed relying only on parental or clinical input), and the inclusion of children with developmental delays and disabilities (throughout the rest of this study, the terms developmental delay and disability shall be used interchangeably) in the study, means that not only is it possible to examine understanding of disability, but also identify the types of disability that exist in the community, and identify children who appear at risk for developmental delay. Presently little is known about disabilities in children in the country especially in more remote areas (Manji, 2009), and screening procedures for developmental delays are vital in order to be able to refer children for intervention for available services (Olusanya, Luxon, & Wirtz, 2006; Omondi, Ogol, Otieno, & Macharia, 2007).

A secondary but equally important motivation for this research was to investigate the relationship between maternal age and birth location to child developmental outcome. Results from the pilot study in Cambodia were suggestive of children faring better on a developmental measure when they were born in a health facility and to younger mothers. Such a finding replicated in a country with similar health challenges as Cambodia would have important implications for health policy initiatives that target both maternal and child health. It would also add to the literature on the risks to the health and survival of children born to mothers who are not assisted by a skilled birth attendant. According to the World Health Organization (2009), the main causes of death for neonates are prematurity, low birth weight, asphyxia, and trauma at

birth. Such health risks are greatly increased when mothers give birth without appropriate medical care (PMCH, 2006). In addition, those children who are born with limited access to health care, who do survive still remain at risk of developmental delay in the first few months of life.

Tanzania is a country which faces many of the struggles of other countries in the region. It has very high rates of child poverty and maternal and newborn mortality (PMCH, 2006), and it is amongst the top five countries in sub-Saharan Africa with the greatest newborn deaths (approximately 51,000 a year) (Manji, 2009). In recent years, however, largely through maternal and child health campaigns throughout the country, neonatal and under five mortality rates have decreased (United Republic of Tanzania, 2006), especially since the year 2000 (Manji, 2009). Nevertheless Tanzania is one of the 10 countries in the world whose children are most at risk for delayed development and poor health (Siddiqi et al., 2007). There is a country-wide need for more health services for the entire population, especially mothers and children (Comprehensive Community Based Rehabilitation in Tanzania (CCBRT), 2009; Save the Children, 2008), and individuals with disabilities (CCBRT, 2008a). In addition, Manji (2009) reports that currently "very little is known about the long-term burden of neonatal illness and disability in Tanzania" (p. 14).

In sum, this research adds to the literature on parent beliefs in a country which faces numerous public health challenges, and builds on empirical research in understanding the relationship between child outcome and parental beliefs in a nonwestern and low-income setting. It provides information to help guide much needed parent intervention programs in a country that has some of the highest rates of maternal and child mortality in the world. This research project also examines the beliefs of Tanzanian mothers surrounding childhood disability, an area

in which there is little information currently in the country. The study aims to replicate the findings from the work in Cambodia regarding the relationship between home-births, increased parental age and lower child developmental outcome. The study includes Tanzanian mothers and children from both rural and urban settings with the recruitment of both typically developing children and those with developmental disabilities.

Chapter II-Literature Review

The following chapter is divided into five sections. The first section presents the theoretical background on the concept of parent beliefs, and an operational definition of the term used in this dissertation research. The second section reviews research relating parental beliefs and knowledge to child developmental outcome, and examining how this knowledge affects parents' access to services if their child presents with a developmental delay. The third section provides a review of beliefs surrounding parenting; affective attitudes towards the parenting role, especially self-efficacy; and how these beliefs change if a child presents with developmental delays. The following section will review literature on the effects of culture on parenting, and in particular, considers literature from diverse cultural settings in relation to these two concepts. Following this will be a review of the literature overall in Tanzania in the area of early child development. The issue of child disability will also be considered as this study will include both children who are typically developing and those with developmental delays.

Parent Beliefs

Since the publication of Sigel et al. (1985) work entitled "Parental Belief Systems," numerous research articles, position papers, chapter articles, and edited books have addressed this area of child development. The introduction to the second edition of the Sigel et al. (1985) highlights the semantic quagmire of attributing one name to a very complex construct, that can be studied in a multitude of ways.

> In this volume, as in the previous one, we continue to find considerable diversity in constructs used to identify parents' thoughts about their children. No one term is accepted by all the writers. Some refer to *beliefs,* others *to thoughts, constructs, theories, ideas* and

> *attributions.* Still others refer to *perceptions* and *goals*. (Sigel, McGillicuddy-DeLisi, & Goodnow, 1996, pp.xiii).

Such a statement highlights the issues encountered when trying to define constructs such as that of parental beliefs. Sigel and Kim (1996) raised a similar issue when developing a measure to assess parental beliefs.

> Over the years, researchers in this field have not offered precise definitions to allow for valid and reliable assessment. Rather, the term "belief" is often just stated, with the assumption that the term is consensual for all English speakers. Therefore the meaning is shared. (Sigel & Kim, 1996. p.84).

The belief model which they describe encompasses both cognition and affect as the two are "inexorably bound and cannot be disentangled" (Sigel & Kim, 1996, 85). From a methodological perspective this raises certain issues. Numerous measures which could be defined under the general umbrella term of parental beliefs isolate cognitive aspects from understanding, or ideas about skill in childrearing. Stevens (1984) separated the two terms by using one measure to record knowledge of milestones development, and another to consider parents' beliefs about their behavior on the child's development. Huang, O'Brien Caughy, Genevro and Miller (2005) used only a measure of developmental milestones to assess the child development knowledge in a sample of nearly 400 mothers. In their chapter on parents' social cognitions, Okagaki and Bingham (2005) note that researchers in the past have used the term "parental beliefs" synonymously with "attitudes or attributions" (p.4), and, while acknowledging

that these terms are interrelated, their chapter considers the different aspects of parents' beliefs separately "to the extent possible" (p.4).

Studies into other areas of parenting beliefs, such as self-efficacy, use measures which only assess the particular area, without much emphasis on the cognitive or knowledge aspects of child development. Examples of these measures include the Maternal Self-Efficacy scale (MSE) (Teti & Gelfand, 1991), and the Parenting Sense of Competence Scale, which has been used in research as recently as 2009. (Morawska, Winter & Sanders, 2009).

The issue that arises within the context of this dissertation research is both how beliefs are defined, but also how they are measured. The main measure used in this study is an adapted version of the Knowledge of Infant Development Inventory (KIDI), and was originally published by MacPhee (1981). This 75-item measure is made up of several subscales which assess different aspects of parenting beliefs, including, but not limited to, health and safety knowledge about child development, knowledge of developmental milestones, and a subsection related to the different ideas parents hold about caregiving practices. The scoring format for this measure is similar in design to other measures which assess knowledge of any given concept (i.e. there is a right or wrong answer), compared to questionnaires which measure attitudes or ideas, and use a Likert scoring format, as seen in the MSE.

The design of the study presented here is based on that of two previous studies, Seo (2006), and Teti and Gelfand (1991), both of which used a combination of different parent measures, and then looked at child outcome through analysis of parent child interactions. Seo (2006), in particular, used two different measures to assess parent beliefs, the KIDI and the Maternal Self-Efficacy Scale developed by Teti and Gelfand (1991). Seo's (2006) design was adapted for the pilot study conducted in Cambodia (Naqvi et al., 2009). The only difference was

in the child outcome measure; with the use of a screening measure in the Cambodian study, as opposed to behavioral observations of parent child interactions, and parent report of child functioning as noted in Seo's (2006) work. Results from the study in Cambodia led to improvements for this dissertation research, namely in the separation of the different subsections of the KIDI. Psychometrically this was more meaningful as the whole measure was not reliable (or valid) when administered to the Cambodian sample. In addition, the separation of different subscales meant that the analysis of knowledge and beliefs could be conducted separately in this study. The rationale for looking at beliefs and knowledge separately was supported by the fact that the MSE scale only assesses self-efficacy beliefs and was administered as a separate measure for both the Cambodian study and in previous research (Seo, 2006).

"Knowledge" and "beliefs" are defined separately in this dissertation, as this is how they are measured. Further discussion within the literature review refers to them separately. Nevertheless, the statement by Sigel and Kim (1996) has clear justification also, and analysis of a combined model of beliefs may still be warranted, however.

Research on Parent Knowledge of Child Development

Parent knowledge about child development can be defined and studied in multiple ways (Benasich & Brookes-Gunn, 1996). Goodnow (2002) defines parent knowledge as the unique ideas parents hold about the act of parenting. Sigel (1985) relates knowledge to beliefs, "the knowledge of what and knowledge of how" (p. 349). McGillicuddy-De-Lisi (1980) discusses the beliefs parents hold in regard to their child as a function of the family system where belief systems are influenced both within and outside the family unit. MacPhee (1983) divides the concept into three categories: descriptive knowledge about norms and milestones of development, instrumental or skill-based knowledge, and lastly, understanding of general and

abstract concepts related to development such as the influence of early experience on development. A clearer definition provided in the literature and one subsequently used by others (Huang et al., 2005), is "parents' understanding of developmental norms and milestones, processes of child development and familiarity with care-giving skills" (Benasich & Brookes-Gunn, 1996 p. 1187).

Knowledge of child development is related to age, income, and education level. McCune, Richardson, and Powell (1984) found significant associations using chi-square analysis among all three of these variables in a sample of 230 parents and grandparents (the majority of the sample was biological parents aged between 20 and 35 years), from a south-central area of the United States. The sample consisted mainly of mothers (only 13 percent were fathers), who were married and living with their partner. The majority of the sample had a least a high school diploma with some study participants holding post-graduate degrees. The children of the parents were aged between one week and 37 years (due to the inclusion of older parents in the study) and no mention was of the ethnic make-up of the sample. All participants were administered a three-section questionnaire which asked them about the source of their knowledge, some basic demographic questions, and 45 items from the "Rochester Parent Education Study Child Development questionnaire" (p. 184). The parents in this study rated pediatricians or other health professionals as the most useful source of information regarding child development. Other sources of information included relatives of the parents and media sources, especially printed material. Results found a positive correlation between knowledge about child development in parents and age, education and income. However, child care experience measured only by number of children in the household, was not associated with levels of knowledge in this sample.

In a more recent study, Reich (2005) found only education level predictive of knowledge scores. The sample for this study consisted of mothers living in the Southern United States. The ages of the participants in the sample were larger than those reported by McCune et al. (1984), ranging between 18 and 52 years. Fifty-two percent of the sample was Caucasian and all reported at least a high school level education, with the majority receiving some form of public assistance. The study used a 42- item criterion referenced instrument based on information most pediatricians would expect mothers to know about their children. The different findings between the two studies are likely to be related to the difference in statistical analyses and the measures used. The approach by Reich (2005) enabled control for correlation among the variables. In addition Reich (2005) used a questionnaire that measured knowledge in 11 different areas related to child care. This contrasted to only five areas in the child development questionnaire used by McCune et al. (1984). Both studies, however, found that pediatricians and public health programs were important resources in providing information to mothers.

Other studies in the area of parent knowledge consider not only the source of information, but also to the emotional status of parents. Among a sample of 30 postpartum first time Australian mothers with premature infants, Veddovi, Kenny, Gibson, Bowen, and Starte (2001) found that mothers with higher scores on a postnatal depression scale and an escape avoidance coping style performed less well on the parenting knowledge measure. These same mothers also had less direct experience in learning about child-care and infant development and relied mostly on the sources of information described previously by McCune et al. (1984) and Reich (2005). Veddovi et al. (2001) suggested that mothers who tend to withdraw from situations and endorse the escape-avoidance coping strategy should be provided with “formal support” (p.

322), presumably in areas such as care-giving strategies and understanding of infant development.

Parents cannot be assumed to have an accurate understanding of their child's development. A recent national study in the United States conducted with 3000 American adults (DYG, Inc, 2000), revealed significant gaps in knowledge of development of children aged zero to six. The authors cite gaps in knowledge in four key areas: the effects of environmental influences on young infants, appropriate forms of play to enhance learning in young children, development of moral and social learning in young children, and issues related to appropriate discipline. How does this knowledge then relate to child development? Research has shown some mixed findings about the effect of parental knowledge on the developmental outcome of children, due in part to the different definitions of knowledge and the variety of tools used to measure it.

McGillicuddy-De Lisi (1980) established a link between "parental beliefs" (p.317) about child development and child outcome. The way beliefs are described in the study however, appears more in line with the definition of parent knowledge previously cited by Huang et al. (2005). This includes statements about beliefs being "what the parent believes about the processes of development and the capabilities of their own child," and "child developmental states and processes" (p.318). In a later study in the area, McGillicuddy-De Lisi (1985) looked at the relationship between parent beliefs and child cognition with 120 families. Both parents participated in the study and the children were all of preschool age (under five years). The number of years of parental education of the sample participants was high, with mothers' attending school on average for a total of 13 years and fathers attending on average a total of 15. Child outcome was measured both in terms of cognitive development (memory, mental imagery,

conservation, and categorization), and also social emotional skills (knowledge of social rules and conventions, understanding of the meaning of interpersonal relationships).

These "beliefs" were assessed in an interview format in which parents were asked to respond to vignettes presented of children engaged in different activities (child playing with toys in the bath). Parents' responses to different probes were then coded as "experimentation" or children constructing their own reality (McGillicuddy-De-Lisi, 1985, p. 12), "cognitive reorganization," "stages," "direct instruction," and "observation" (p. 13). Parent-child interaction was assessed by independent ratings of parent interaction with their child during a variety of different tasks. These included a storytelling task with each parent and a paper-folding task, again with each parent (p. 13). Parent-child interaction was coded along the following dimensions:

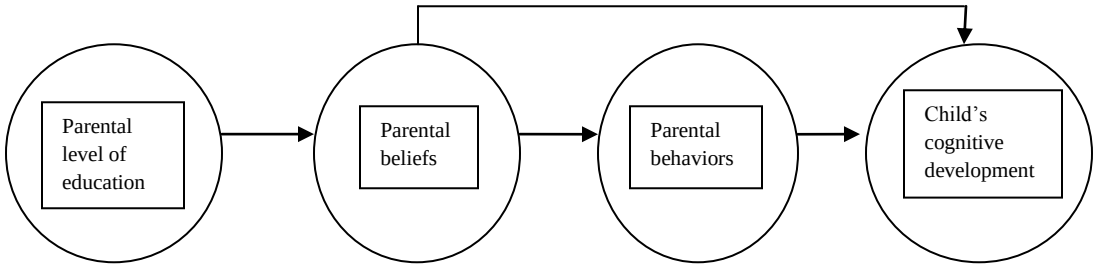
> (1) Parents' use of distancing strategies; (2) positive and negative (verbal and nonverbal) emotional supports; (3) child management behaviors; and (4) informational feedback to the child. Distancing strategies were coded in two ways in accordance with definitions of distancing [Sigel & Cocking, 1977]: (1) form of utterance (inquiry versus statement); and (2) mental operational demand placed on the child (e.g., low = observe, label, describe, etc.; intermediate = sequence, reproduce, etc.; high = propose alternative, infer cause and effect, plan, etc.) (McGillicuddy-De Lisi, 1985 p. 13)

Based on the comparison of the beliefs interview and the parent-child interactions, beliefs alone were more powerful in shaping the developmental outcome of their children on the child assessment tasks. However, observations of the parent-child interactions were limited, as they

occurred at one point in time within one situation without taking into consideration the developmental progress of the child (McGillicuddy-De Lisi, 1985). The author recommends that further assessment of parent-child interactions should account for the home environment, the kind of learning stimulation provided to the child over time (toys etc.), and other factors such as geographic locations of home and school. Based on assessments into the "history of the parent-child relations and the parents' own prior experience in learning about the child" (McGillicuddy-De Lisi, 1985, p. 22), it was possible to conclude that it was parents' knowledge of their own children rather than knowledge about children in general that was most relevant to the child's cognitive outcome.

Parent education levels were related to the beliefs that parents hold about their child's development and were presented by the author in the following model:

Figure 1. Path model of hypothesized effects of parental beliefs on child outcomes.[1]



Parents with higher levels of education were thought to have greater understanding of the current theories about child development. The author concluded that "education level is associated with children's development because education affects beliefs and beliefs affect the child" (p. 21). The findings of education level are noted in other research in this field (McCune, Richardson & Powell, 1984; Reich, 2005).

[1] From *Parental Belief Systems. The psychological consequences for children* (p14), by I.E.Sigel (Ed.), 1985, New Jersey: Lawrence Erlbaum Associates. Copyright (2011) by Taylor and Francis. Adapted with permission.

In a longitudinal study, Benasich and Brookes-Gunn (1996) explored maternal knowledge about child development and its effects on the actual development of the child. They examined the relation between this knowledge, the child's cognitive skills, and quality of the home environment provided for the child in their second and third years of life in an initial sample of 608 low birth-weight premature infants and their mothers. There was an approximate even gender split in the sample, and varied representation of mothers from different ethnic backgrounds (52% African-American, 11% Hispanic, 37% Caucasian, Asian or other groups). Ages of mothers in the study ranged from 14 to 43 years. Education levels varied from some years of college to some years of high school (not graduating). As this was part of an intervention study, the infants were assigned randomly to the control and intervention groups based on the categories of birth-weight, gender, maternal age, maternal education, maternal race, and primary language at home. Knowledge was measured using the KIDI. Observation of the home environment was assessed using the Home Observation for Measurement of the Environment (HOME), a semi-structured observation and interview assessment which evaluates the type of stimulation provided to the young infant in the home environment by the parents. After controlling for socioeconomic variables, such as income, ethnic background, gender, and number of children in the family, Benasich and Brookes-Gunn (1996) found a positive relationship between maternal knowledge during infant's first year and the quality of the home environment provided for the child along with children's scores on a measure of cognitive functioning.

Similar findings were reported by Dichtelmiller et al. (1992) with a sample of low birth weight infants and their mothers. A significant relationship was found between accuracy scores on the KIDI and the infants' Bayley Scale scores for both mental and psychomotor development.

Mothers who performed above the sample mean in terms of knowledge scores had infants who scored one standard deviation higher than infants of mothers who scored below the knowledge mean. This finding was cited as being both "statistically significant and educationally important" (p. 218), leading the authors to recommend parent education programs to enhance the developmental outcome of low birth weight infants.

Stevens (1984) also looked at the relationship between mother's knowledge of child development and skill in the provision of a supportive environment for child development among 243 primarily African American mothers. Two different measures were used in this study. The first, the High Scope Knowledge of Early Infant Development (H/SED), was a parental knowledge measure which assessed knowledge of milestones development in infants and children up to the age of 24 months. The second, the Knowledge of Environmental Influences on Development (KEID), had less to do with knowledge and related more to parental awareness or beliefs about the effect of their behavior on the development of the child in areas such as cognition, language, and affect. Of the two measures, the KEID was the one most related to the provision of the supportive environment.

One further study by Huang et al. (2005) focused only on the concept of knowledge, and used parent behaviors as an outcome measure. They found that there was no relationship between levels of parent knowledge and their skill in creating a stimulating home environment for their children. Knowledge was defined as "maternal knowledge of developmental norms and milestones" (p. 152), and they used an adapted version of the KIDI to include only items related to norms and milestones in infant development. In their sample of 378 mothers from mixed ethnic backgrounds, after controlling for demographic variables such as ethnicity and education levels, Huang and colleagues found no relation between maternal knowledge and ratings of their

behaviors in creation of a nurturing and stimulating home environment. The result of this study is different from previous findings described by Benasich and Brookes-Gunn (1996), Dichtelmiller et al. (1992), and Stevens (1984). This may be because of the lack of emphasis on parent beliefs in addition to knowledge and the different ethnic background of the sample.

One important finding, however, was that mothers who underestimated developmental milestones of infants responded less sensitively to their infants on a measure of maternal behavior in this study. Underestimation was defined as "mother's incorrect estimation that the child is too young to be capable of an activity/task" (p. 154). The authors hypothesized that if parents have skewed expectations about child development this has an impact on the kind of learning environment that they provide for children.

This theory is based partly on the work by Hunt and Paraskevopoulos (1980) with a sample of 50 Greek mothers and their children. Hunt and Paraskevopoulos found that children performed worse on test items from standardized cognitive and language assessments, if their mothers had a greater number of misconceptions about how their children would perform on the test. This finding suggests that if mothers have an accurate understanding of their child's developmental level, they provide a more interesting and stimulating environment, as they are more in tune with their child's developmental needs. This in turn affects the developmental progress of their children.

Overall, the different studies presented all acknowledge the influential role of child development knowledge on child outcome. Knowledge of basic norms and developmental processes, as well as instrumental knowledge of how to appropriately care for children, both influence developmental outcomes. The effects of both basic and instrumental parent knowledge on child development appear to be mediated through the provision of a supportive learning

environment for the child to then develop within normal limits. However, in future research greater clarity is needed in terms of the type of parental knowledge being measured.

Role of Parental Knowledge with children with developmental delays

Parental understanding of child development is especially important when children present with developmental delays. Parents are an important source of information regarding their child's development. This information is vital to provide services for children who do present with delays as early as possible in their development. Glascoe and Dworkin (1995) reviewed the different kinds of knowledge parents have about their child's development. These included opinions, age estimations of skill level, concerns about overall development, nonjudgmental descriptions, recall of past skill development, and reporting of current skill levels in the child. Overall, the authors concluded that information based on parental concern and reports of child's current skill level provided the most accurate assessment of the child's level of functioning. Screening assessments that rely on parental reporting of current skill level were recommended as valuable tools as young child may not present their full skill set when in an unfamiliar setting. In addition, Glascoe and Dworkin (1995) recommend that parental concerns about their children's development and behavior which may not necessarily appear atypical at the time of assessment, should be carefully monitored as parents may be noticing more subtle indications of a disorder that might later develop into something more serious. This same rationale was reported by Diamond (1993) as a reason for explaining why 30 percent of children in her study sample did not perform in the at-risk range on the screening inventory despite parental concern of developmental delay. Diamond (1993) also endorsed the importance of parental concerns in early identification of developmental problems in young children.

In other instances, parents can sometimes delay identification due to issues associated with denial or a lack of understanding of normal development. This has been noted in childhood disorders such as autism, in which parents may not refer their children for assessment until they are at least three years of age (De Giacomo & Fombonne, 1998). However children with more severe delays, especially in terms of cognitive development or medical problems, were identified earlier. In addition, parents with older children were more sensitive to possible delays in their younger child's development and were therefore more likely to refer their children earlier to their health care provider for further assessment.

Spann, Kohler, and Soenksen (2003) investigated parents' access to special education services for their children. They found that greater knowledge and comprehension about the extent of their child's delays led parents to be able to access more services for their children. Parents who are unaware of the typical norms of development may find it harder to recognize that their child is having difficulty, and this in turn may delay the child's access to services.

Referral for assessment of a possible developmental delay can also be affected if parents hold different expectations of their child's skill. Parents with children with disabilities may have a different understanding of what the development of the child is supposed to look like. MacPhee (1984) found significant differences in mothers' perceptions of child development depending on whether or not they had a child who presented with delays. Mothers of infants with delays had reduced expectations of what an average infant could accomplish and indicated more progress in their child's development than there actually was, based on a belief that children develop at a slower pace than the norm. Dinnebeil and Rule (1994) corroborated this finding through a review of the literature. They found that overall; parents of children with disabilities estimate their child's development to be about three months higher than assessments made by

professionals. The authors recommend involving parents fully in the assessment of their children to enable them to gain a more realistic view of their child's strengths and weaknesses.

Recommended practice for accurate early identification of developmental delay is a combination of parental reporting of current skill level, parental reporting of developmental concerns, and developmental screening conducted by qualified medical or developmental specialists using appropriate screening tools (Henderson & Meisels, 1994). Accurate parental knowledge of child development is important so that parents can address these concerns with their primary health care provider in a timely manner, in turn leading to developmental screening and possible early intervention services.

Beliefs about Parenting

In this section the concept of parental beliefs about their own skill and behaviors, or "instrumental beliefs" (MacPhee, 1983, p.1) will be discussed. "Parental beliefs" is defined not as knowledge of child development, but rather as beliefs parents hold in terms of their "childrearing practices and goals for their children" (Sigel & McGillicuddy-De Lisi, 2002, p.485).

As previously stated, the separation of knowledge and beliefs can be difficult. The KIDI measure used by Benasich and Brookes-Gunn (1996) and Dichtelmiller et al. (1992) does not distinguish between child development knowledge and parenting beliefs about behavior, incorporating both concepts in the same scale. Parent beliefs measured by the KEID can also be referred to as "instrumental beliefs" (MacPhee, 1983, p.1) and can be seen conceptually differently from the knowledge of milestones or "descriptive beliefs" (MacPhee, 1983, p.1). Although many studies do not make this distinction, it may in fact be warranted; Stevens (1984)

found that it was the parenting skills alone which were more closely associated with the creation of a safe and supportive learning environment for children.

This distinction between the two different kinds of parent knowledge was further highlighted by Parks and Smeriglio (1986), who investigated the relationship between practices of care-giving and child outcome in mother and child dyads of mixed socioeconomic status. The study used the Infant Caregiving Inventory (ICS), which measures "perceptions about the influences of infant care-giving practices on infants' present and future well-being" (p 413). Significant correlations between scores on this measure and the kind of learning stimulation provided for children in the home was found only in mothers in the low-income group. The lack of relationship among mothers in the higher income groups was attributed to difficulties in application of the outcome measure, the HOME, to higher income groups, and the large amount of variability of knowledge scores among mothers in higher income groups. What follows in this section is a discussion of parent beliefs from parent knowledge.

Parental self-efficacy.

Self-efficacy is a central notion in the study into parental beliefs. Parental self-efficacy is based on the work of Bandura (1997), who defined self-efficacy as personal beliefs about one's own ability to perform to a certain standard, and one's capability about performing a particular task or behaving in a certain way. The notion of parental self-efficacy is broader than the term used by Bandura (1997), however, as it includes numerous different behaviors which vary across contexts and the developmental capabilities of the child. Coleman and Karraker (1998) in their literature review on the concept of parental self-efficacy acknowledged that at the time, research in the area was "relatively sparse" (p.55), due in part to the difficulty of studying the concept in a natural setting. According to Sigel and McGillicuddy-De Lisi (2002), parental self-efficacy is

linked to the wider definition of parental beliefs through the idea of competency. If parents feel more competent in their role, they will subsequently behave in more effective ways with their children. Greater self-efficacy ratings among parents result in more positive behavior by parents towards their children, creation of a healthy and nurturing child-rearing environment, and improved developmental outcome of their children (Coleman & Karraker, 1998).

Development of self-efficacy among parents is based in part on previous experience, notably previous child care experience (Gross, Rocissano, & Roncoli, 1989), the feedback parents receive regarding their care-giving practices, and parents' wider beliefs about socially relating to others (Grusec, Hastings, & Mammone (1994). Numerous studies in the parenting literature discuss concepts of self-efficacy in conjunction with parent knowledge and parent effectiveness in child-care.

As with the literature on parent knowledge, parent self-efficacy is a term used in conjunction with concepts such as parent confidence (Conrad, Gross, Fogg, & Ruchala, 1992), and sense of competence (Ohan, Leung, & Johnston, 2000). More recently, however, self-efficacy has been defined separately from terms such as parental confidence and parental competence (Montigny & Lacharite, 2005), though still falling under the wider umbrella term of parental beliefs (Coleman & Karraker, 1998). This does raise some issues, as previously self-efficacy has been used interchangeably with terms such as confidence (Conrad, Gross, Fogg, & Ruchala, 1992), or seen as highly related to confidence (Goto et al., 2008). Similarly, the Parenting Sense of Competence Scale developed by Gibaud-Wallston and Wanderman (1978) has been used in numerous studies on parental self-efficacy (Coleman & Karraker, 1998; Morawska, Winter, & Sanders, 2009; Sanders & Woolley, 2005; Teti & Gelfand, 1991). For the purposes of this review, parental self-efficacy is viewed as conceptually distinct from terms such

as confidence and competence, and is defined as "beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child" (Montigny & Lacharite, 2005, p.395). The distinctions between confidence and self-efficacy relate to confidence being "a stable state of certainty that is not situation-dependent or –specific" (p. 390). Self-efficacy is situation- or context- specific rather than being a global trait one sees in oneself. Furthermore, confidence has been related only to "one's certainty or uncertainty about success" (p. 390), whereas self-efficacy relates to both "affirmation of capability and strength of that belief" (Bandura, 1997, p. 382). Montigny and Lacharite (2005) note that parental competence is an "embryonic concept" of "perceived parental efficacy," with competence being the perceptions of one's skill, whereas self-efficacy is knowledge about this skill that is then used to carry out specific tasks.

Teti and Gelfand (1991) were among the first to investigate the role of self-efficacy in relation to care-giving behaviors. In their study, maternal self-efficacy was compared to care-giving behavior of both depressed and non-depressed Caucasian mothers when interacting with their children. Self-efficacy was measured using a tool developed during the study, the Maternal Self-efficacy scale (MSE). Results indicated that self-efficacy beliefs mediated the relationship between the ratings of mother and child interactions (or maternal behavioral competence) and variables such as mother's perception of their infant's temperament, their affective status, and the current social supports in their life. Depressed mothers were noted to have lower self-efficacy scores than non-depressed mothers. Levels of depression related to the behavioral competence of the mother only if she presented with low self-efficacy on the self-report measure. Similarly those mothers who rated their babies as having difficult temperaments had subsequent poorer ratings on behavioral competence only if their self-efficacy ratings were also low. Moreover,

greater social supports were significantly associated with higher self-efficacy ratings and greater behavioral competence.

The impact of affect and emotions on self-efficacy ratings was also reported by Kuhn and Carter (2006). In this study, 170 mothers of children with autism responded to questionnaires about their self-efficacy in child-care (using the MSE scale), the frequency with which they engaged in specific child-care activities, and the level of guilt they felt about the disorder. The majority of mothers in the sample were Caucasian, living in a two- parent household. The authors note that the sample "was biased towards high socioeconomic status" (p. 566). In the study, feelings of guilt moderated self-efficacy ratings as the mothers who reported less feelings of guilt surrounding the disorder reported higher levels of self-efficacy. Guilt was the single most stable predictor of self-efficacy ratings even after controlling for variables such as stress, parenting another child with a disability, and length of time since the diagnosis.

Leerkes and Crockenberg (2002) explored how the concept of self-efficacy develops among a sample of first time predominately Caucasian mothers. By interviewing mothers prior to the birth of their child they were able to control for the effects of infant temperament on maternal self-efficacy beliefs. Self-efficacy ratings, using the MSE scale, were related to both self-esteem of the mothers and the care the mothers had received themselves as children. Leerkes and Crockenberg (2002), varied the context of the care-giving of the mothers by setting up situations in which the infant was presented with a new and potentially fear-inducing toy. In another situation they instructed the mother to remove the toy or to prevent the infant from playing with it, thus potentially causing the infant to become distressed. This variation of context was designed to assess "the impact of maternal self-efficacy on maternal sensitivity in contexts that varied in task difficulty, as defined by the probability of infant distress" (p. 231). Even though

there was no main effect of maternal self-efficacy on maternal behavior, there was an interaction between the two during tasks that caused infant distress. The authors note "infant distress to limits impacted maternal behavior negatively primarily for mothers with low self-efficacy' (p. 244). This was reflective of the previous findings regarding emotional status of mothers and the interaction between infant temperament and maternal behavior. Furthermore, the authors argue that this finding is in keeping with Bandurian notions of self-efficacy in that "low self-efficacy individuals are less likely to persist during a difficult task" (p. 244). In this situation, the difficult task is the mother attempting to soothe the infant when he/she becomes distressed.

The relationship between self-efficacy and specific tasks in child-care was further considered in a study by Sanders and Wooley (2005). These authors explored both global parenting self-efficacy and self-efficacy related to specific parenting tasks, such as dealing with a child who is having a tantrum or behavioral outburst. Self-efficacy ratings were compared to parent's reported discipline styles and level of stress when faced with a challenging parenting task. The sample included both mothers of typically developing children, and children with diagnosed disruptive behavior problems, aged between two and eight years of age. It was only on measures of task specific self-efficacy that significant lower ratings of self-efficacy were found especially among mothers of children with behavioral difficulties. The more global measure, the efficacy subscale on the Parenting Sense of Competence Scale (PSOC), did not yield significant differences between the two groups of mothers.

The importance of this distinction between the different types of self-efficacy is further highlighted by Coleman and Karraker (2003). While measures of self-efficacy most frequently used in the literature adopt a "domain general" approach in which parents rate their general levels of estimated competence separate from actual parenting tasks, measures which adopt a

domain-specific approach are “likely to garner more precision in terms of the associations between self-appraisals and actual behavior” (p. 130), and are more in line with the definition of self-efficacy outlined by Montigny & Lacharite (2005). The use of a domain-specific measure of self-efficacy is strongly recommended as these were the only measures which had any relationship to outcome variables such as children’s performance on a cognitive measure and mother and child behavior during certain set tasks (free play, clean up, mother and child separation).

Other measures of self-efficacy, while not necessarily making the distinction between domain-specific and domain-general, use both task- specific and domain- specific measures. The British- based measure, the Tool to Measure Parenting Self-Efficacy (TOPSE), divides the construct of parenting self-efficacy into nine different areas. These include play, empathy, boundary setting, self-acceptance, and learning. The measure also includes both task-specific questions such as “I find it difficult to say “no” to my child,” as well as more general statements within the domain of discipline “setting limits and boundaries is easy for me” (Kendall & Bloomfield, 2005, p 178).

Sixty-three parents in the study completed the TOPSE. The majority of the parents in the sample were women, Caucasian and living in two parent-households. The mean age of the sample was 35 years, with a range of 22 to 52 years. Overall the parents had between one to five children in their family (mean of two). Preliminary results indicated that parents who were either attending or waiting to attend a parenting program performed significantly lower on the self-efficacy measure than parents who were not attending (or waiting to attend) parenting programs.

In a later study, Bloomfield and Kendall (2007) used the TOPSE to assess changes to parental self-efficacy in a sample of 171 parents attending parenting programs. The ages of

children of the participants of the sample varied from 6 months to 10 years, and as with the previous study, the majority of the parents were Caucasian, female, and living in two-parent households. Results indicated that self-efficacy scores increased for all participants at the end of the parenting program, a finding that was stable after four months. The authors concluded that the TOPSE is sensitive to changes in parental self-efficacy as a result of parenting programs and that the effects are seen for several months after the termination of the program.

This section has outlined the construct of self-efficacy as a form of parental belief and has explained how recent conceptualization has set it apart from terms such as parental competence and confidence. Unfortunately, much of the research continues to use the terms interchangeably. Ratings on parental self-efficacy measures such as the MSE scale and the TOPSE are related to the emotional state of the parents. Results on the measures are also associated with the behavioral competence in parents and maternal sensitivity. Changes in self-efficacy ratings have also been used to show effectiveness of parenting programs.

Different approaches to measuring parental beliefs.

Many studies explore the constructs of parental knowledge in conjunction with parental beliefs (most commonly self-efficacy beliefs), and then assess parent-child interaction as an outcome measure, using observation tools to measure the impact of these constructs on the parenting role (Coleman & Karraker, 2003; Hess et al., 2004; Leerkes & Crockenberg, 2002; Teti & Gelfand, 1991). This is largely because self-efficacy beliefs have been found to have a subsequent effect on parenting behavior, which in turn affects the environment the parent provides for the child (Coleman & Karraker, 2003). However, some studies have explored the relationship of self-efficacy and child outcome using questionnaires alone (Kuhn & Carter, 2006; Sanders & Wooley, 2005), or have examined parental beliefs in relation to child outcome on

academic achievement measures (Turner & Johnson, 2003). Nevertheless, the correlational design of all the studies reviewed on parental beliefs precludes identifying a causal relation between parental knowledge, parental self-efficacy, and child outcomes. This limitation applies to studies regardless of whether they used parent and child questionnaires or direct observations of parenting behavior as outcome measures.

The dissertation is concerned with parental beliefs, and in addition to the construct of self-efficacy, these include beliefs also include ideas about parenting style. Parental beliefs surrounding authority and discipline are important constructs in examining the parental belief system (Smetana, 1994). Baumrind's (1967) original study on the different profiles of parent control came from a need to understand the effects of parent behavior on child developmental outcome. Sigel and McGillicuddy-De Lisi (2002) discuss the use of parental strategies for discipline in their article on parental beliefs, and highlight how this construct incorporates variables such as culture and parental history, as well as cognitive and affective influences on the parent's subsequent behavior with their child.

Two studies (Sanders & Wooley, 2005; Turner & Johnson, 2003) examine the role of parental discipline styles while also considering the construct of parental self-efficacy. The results of Sanders and Wooley (2004) as previously discussed, illustrate how assessment of parent discipline practices relate to constructs of self-efficacy, notably task specific self-efficacy.

In a study by Turner and Johnson (2003), 169 African-American parents (the majority of whom were mothers) responded to questions about their self-efficacy, parental beliefs, and their relationship with their child. The parents' self-efficacy ratings were more predictive of parental beliefs than age or income level of the parent. The parental belief measure in this study, a modified version of the Adolescent-Adult Parenting Inventory, primarily considered parenting

style. Both these studies highlight the importance of incorporating measures of parenting style into research on parental beliefs and the relationship that parenting styles has with parental self-efficacy beliefs.

The Parental Modernity Scale developed by Schaefer and Edgerton (1985) measures the level of parents' authoritarian beliefs compared to progressive or democratic beliefs. It also explores the "interpersonal processes between parent and child" (p. 291) and how these relate to child academic outcome. The authors argue that this type of "parent ideology scale" (p. 309) may be superior to observational tools of parent behavior as it can apply to parents of children of different age groups, tapping into the cognitive processes associated with beliefs that observations cannot. Keels (2009) examined the differences in parenting beliefs among ethnic groups using the Parental Modernity Scale. Outcome data included cognitive results from child assessments and behavioral observations of mother-child interactions. The inclusion of the Parental Modernity Scale in the study allowed for a broader understanding of the parenting strategies of the mothers rather than just their understanding of child development alone.

The research presented in this section highlights the importance of considering parenting style when examining parental beliefs. While work on self-efficacy predominates the literature on parental beliefs, the construct of parenting style has important implications for child outcome because of its significant relationship to both child outcome and parental self-efficacy. This section highlights the variation in outcome measures used in research on parental beliefs, and notes more importantly, that all the studies reviewed on parental beliefs use correlational study designs. Such types of designs do not allow for causal hypotheses about the relation between parent beliefs and child developmental outcome.

Parental beliefs and knowledge of child development.

The link between parent beliefs in regard to child rearing and the developmental outcome of their children frequently appears to be mediated by parent knowledge. In fact, Conrad et al. (1992) argue that it is not just the confidence that mothers have regarding their child rearing that is important, but the knowledge that they possess about child rearing and infant development. These authors looked at the effect of infant knowledge and maternal confidence amongst 50 mothers and toddlers. They found that while knowledge and confidence were related, they did not individually have an effect on the mother and toddler interaction. Instead maternal confidence only related to quality of interactions in combination with knowledge. Specifically, mothers who reported high levels of confidence but who had low knowledge scores had the least positive interactions with their children. Conrad et al. (1992) described these mothers as "naively confident" in their abilities as parents.

These findings were further supported by the work of Hess et al. (2004) with mothers of high-risk infants. The study also identified a group of naively confident mothers who were the least competent in their interactions with their infants, and the least knowledgeable about child development, but who reported high levels of self-efficacy in parenting skills. The work of Hess et al. (2004) demonstrates that self-efficacious parents who have sound knowledge of infant development will have more influential effects on their child's development as opposed to those parents who are just knowledgeable but do not believe themselves efficacious. The work of Conrad et al. (1992) and Hess et al (2004) argue for combining knowledge measures and beliefs measures when trying to understand parental factors in parent-child interactions.

The Cultural Domain

Missing in the literature presented thus far is consideration of how cultural context affects the constructs discussed. The next section will discuss how parent knowledge and parent beliefs about child rearing are impacted by cultural context. The notion of culture is vital in the discussion of parenting. Parenting is a concept that is culturally constructed (Harkness & Super, 2002), and only meaningfully understood within its own cultural context. This thinking has been based on the work of Bronfenbrenner (1979) among others, in which individuals are understood in relation to each other, but also within the ever- increasing spheres of cultural and social systems that surround them, each sphere nested within another. This inter-relation between the individual, the culture and the social system is reflected in the work of Harkness and Super (2002; 1992), in respect to both their notion of "developmental niche" and "parental ethnotheories" (1992, p.373). Developmental niche has three main elements "(a) the physical and social settings in which the child lives; (b) culturally regulated customs of child care and child rearing; and (c) the psychology of the caretakers." (1992, pp. 373-374). Parental ethnotheories are synonymous with parents' cultural belief systems (Harkness & Super, 2002), and can be seen as the psychological thinking of the caregiver (the third element of the developmental niche). Furthermore, "ethnotheories are embedded in the experiences of daily life that parents have with their own children at particular ages, as well as being derived from the accumulated cultural experience of the community" (Harkness & Super, 1992, p. 374).

Harkness and Super's (1992) research amongst the Kipsigi people in the area of Western Kenya drew attention to the very different focus of these parents' beliefs about children when compared to the beliefs of European-American parents. Through the use of ethnographic inquiry methods, Harkness and Super (1992) identified six distinct developmental attributes parents

ascribed to their children. These included concepts such as "a child's helpfulness and obedience." (p. 377); intelligence or responsibility; honesty and trustworthiness; good-natured; "talkative" or "playful;" (p. 378) and "bravery." (p. 378). In addition to describing these different attitudes, the researchers recorded the amount of time that the children were observed engaging in different activities. Analysis of the time spent in these different activities "reflects many aspects of the social ecology of childhood in this cultural setting" (p. 383). Engagement in different types of activities at different ages by the children of Kipsigi parents, and European American parents from Boston "related to the larger ecology of their families including the structure of parents' work, the nature of household tasks, the availability of both money to spend and things to spend it on" (p. 386). Parental ethnotheories are also shaped by the goals that parents hold for their children. Harkness and Super (1992) inferred that the increasing frequency of assignment of household chores to children starting at the age of 2 years amongst the Kipsigi has to do with shaping the children's behavior to the parents' belief concepts of both obedience and responsibility. Parental beliefs, or parental ethnotheories, in tandem with the social setting and cultural customs, "together function as the 'developmental niche' to mediate the individual's developmental experience within the larger culture" (p. 389).

Further evidence for the importance of the role of parental ethnotheories comes out of research in the area of temperament and culture. In their chapter on the subject, Thomas and Chess (1996) describe how amongst the Masai tribes in Kenya and Northern Tanzania, those babies who were perceived as having difficult temperaments (p. 186) were more likely to survive than children with easy temperaments. The type of cry the baby exhibited, either "long or loud" (p. 186) or a whine, triggered different responses in parents. Longitudinal research showed that babies who had stronger cries were more likely to survive, leading the researchers to hypothesize

that babies with stronger cries were preferentially given food sources, as they were thought more likely to survive. Those with weaker or more whining cries were perceived as less strong and therefore less likely to survive. In this example, Chess and Thomas (1996), illustrate the way in which the ecology of tribal setting, scarcity of food, the behavior of the infant, and the parents' cultural belief system, all interact together in a way that directly affects the survival of the child.

The importance of seeing parental beliefs within a cultural context is vital in being able to understand children's behavior. Gaskins (2000) noted, in her work with Yucatec Mayan families that a failure to understand the way that parents perceive their children's development can lead to incorrect interpretations of behavior. In her work, for example, she notes that parent beliefs "influence the kinds of interactions the parents have with their children and the kinds of environments and experiences they construct for them" (p, 380). Parents within the Mayan culture for example, do not attend to developmental milestones, or create learning opportunities to develop different milestones as they believe that development is "pre-programmed" (p. 380). Examination of these types of parental beliefs allows researchers to understand the context for child development within that culture, and provides a lens through which to interpret the development of the child.

In their study of children across six different cultures, Whiting and Whiting (1975) highlighted what can be learnt by comparing families within cultures to each other rather than comparing the cultures themselves. Rogoff (2003) provides numerous examples of the differences in child development related to culture in an anthropological, descriptive review. More recently, in their work on the differences in parental knowledge among African-American, Hispanic, and Caucasian mothers, Huang et al. (2005) note "results suggest that other parental cognitive factors, such as cultural values, parental goals about educational practices, or beliefs

about the parental role in child development, may underlie or interact with parental knowledge" (p. 166). Keels (2009) found differences in the association between parental beliefs and child outcome depending on ethnic identity, noting "particularly for Hispanic/Spanish families, it will be important to understand the culturally specific parenting practices that are associated with both maternal cognitive skills and child cognitive development" (p. 394). Uunfortunately, he does not elaborate on what these parenting practices might look like.

This section highlighted the importance of the cultural context on research on parenting. What follows next is a review of the literature that examines parenting constructs among different cultural groups both in the United States and in other countries.

Cultural variations in parent knowledge about child development in North America.

Among the studies reviewed that examined parent knowledge and child development, the study by Benasich and Brookes-Gunn (1996) makes brief mention of the effects of ethnicity or race, while other studies did not (Culp et al, 1998; Stevens, 1984), or had samples too racially homogenous to be able to discuss differences (Dichtelmiller et al., 1992; Veddovi, 2001; MacPhee 1984).

Reich (2005) highlighted the cultural differences in child-rearing practices among the different ethnic groups in her sample. She noted, for example, the difference in perception of corporal punishment amongst the African American participants in her sample compared to the Caucasian mothers. Such differences in perceptions may have affected these mothers' responses on a questionnaire that was based on standard pediatric guidelines that discouraged this type of discipline strategy with young children.

Huang et al. (2005), as described above compared scores on a child development measure and parenting behaviors among Caucasian, Black, and Hispanic mothers. The authors pinpointed

the differences in scores between the cultural groups on the knowledge measure, and reported how these then affected the mothers' behavioral interactions with their children among the different cultural groups. The primary difference was hypothesized to be the manner in which mothers teach and instruct children in different areas of development. The authors, however, raised concerns regarding the appropriateness of applying observational tools designed for use with largely Caucasian middle class populations to the sample population in their study.

Research on parental knowledge about child development among different cultural groups within the United States was conducted by Bornstein and Cote (2004). First or second generation Japanese and South American mothers living in the United States were compared to a control group of fifth generation European American mothers. Mothers who were, or whose parents were, recent immigrants had the most difficulty responding to questions about normative aspects of children's development, but not to questions relating to health and safety. The differences in knowledge about normative development were thought to be related to the sources of information sought out by the mothers. Mothers from different cultures can hold different beliefs about infant developmental knowledge, which may or may not be in line with "contemporary scientific knowledge" (p. 562). Such findings challenge the notion of a "universal" "knowledge base" of parenting beliefs and knowledge.

Pomerleau et al. (1991) also report similar findings on variations in perceptions of norms of development in their sample of Canadian mothers. These authors examined responses from mothers of Quebecois descent compared to mothers who had recently immigrated from Vietnam and Haiti. The significant differences in the mothers' responses on 16 out of 19 questions about infant skill acquisition is an indicator of the different value different cultures place on developmental norms. Quebecois mothers for example, expected perceptual and cognitive skills

to develop at an earlier age compared to the two other groups. In contrast, Haitian mothers expected earlier development of motor skills and language, and mothers from Vietnam underestimated overall the age of emergence of infant abilities. In contrast, however, to the findings of Huang et al (2005), this variation in expectation did not have an impact on the type of activities that the mothers would introduce to their children. Despite underestimating the age of onset of typical milestones, Vietnamese mothers still introduced stimulating activities to their children at the same time as the mothers originally from Quebec.

Parental belief studies and cultural differences, studies within the United States.

As discussed previously, parental beliefs are considered separately from parent knowledge in this review. Beliefs concern attitudes and self-appraisals parents hold in regard to care-giving, as opposed to their understanding and knowledge of child development. This next section considers the constructs of parental beliefs, which include self-efficacy beliefs and parenting styles, from a cultural perspective.

Not surprisingly, differences have also been noted in regard to parental beliefs between cultural groups living in the United States (Jambunathan, Burts & Pierce, 2000), these include developmental expectations and discipline strategies among European American, African American, Hispanic, and Asian American families. These variations in attitude have also been found to have differential effects on the self-competence of young Asian-American children (Jambunathan, 2006).

Research linking parental self-efficacy and parent-child interaction in both typically developing children and children with disabilities or behavioral problems is limited to primarily Caucasian samples (Coleman & Karraker, 2003; Gross et al. 1992; Kuhn & Carter, 2006; Leerkes & Crockenberg, 2002; Morawska et al. 2009; Sanders & Wooley, 2005). One exception

is a study by Hess et al. (2004), which looked at the self-efficacy ratings in a sample of 65 Caucasian and African American mothers and children. The authors compared scores on a measure of child development to self-efficacy ratings and parent behavior during a mother-child interaction task. Higher scores were reported on the knowledge measure among the Caucasian mothers compared to the African American mothers. Caucasian mothers in the sample, however, tended to be from dual income households and to have comparatively higher levels of education. Higher knowledge scores among the Caucasian sample were related to their higher education levels. The finding that self-efficacy beliefs alone are not sufficient in predicting positive parent-child interactions supported results by Conrad et al. (1992) regarding parental confidence and parenting behavior. Despite the sample being of mixed ethnic background, no mention is made regarding the differences in parent responses on either the knowledge or the self-efficacy measure. The study does not discuss cultural differences or expectations between the two ethnic groups when interacting with their children.

Jackson (2000) provides more information about the self-efficacy beliefs of the 188 low-income African- American mothers in her study. Results indicate that in situations in which mothers are coping with few financial resources and have have less social support from family and friends, self-efficacy can act as a buffer against the strain of parenting and managing child behavioral problems. Education level and employment status (employed or not) were found to be important factors in predicting the levels of self-efficacy amongst the mothers. These two variables also served as a buffer towards managing stress in the parenting role and coping with children with behavioural difficulties. Results indicated that “maternal self-efficacy appears to moderate the relationship between children’s behavior and maternal parenting” (p. 12). These

results extend the findings of Teti and Gelfand (1991) to an exclusively African-American and low-income sample.

Cultural bias was also noted in some of the measurements used in the Jackson (2000) study, in particular the use of the HOME observation tool. The author noted that "its moderate but adequate reliability may be due to the composition of the sample, and truncated range on some of the factors; that is all the mothers were single, Black and relatively poor" (p. 8). Observational tools that rely on independent ratings of behavior have inherent limitations when applied to culturally diverse samples. This is due to variations in beliefs about expectations about maternal behavior for example. As previously discussed, mothers from different cultural backgrounds will engage in different kinds of parenting tasks depending on their understanding of child development (Gaskins, 2000; Huang et al. 2005; Chess & Thomas, 1996; Pomerleau et al., 1991), with engagement in these tasks being a manifestation of their ethnotheories about child development (Harkness & Super, 2002; 1992).

Keels (2009) used measures of both parental knowledge and parental beliefs to explore the differing views of mothers from a variety of cultural backgrounds. In his study, longitudinal data from The National Early Head Start Research and Evaluation Project" (p. 385) was analyzed. The sample consisted of 163 Hispanic/English, 132 Hispanic/Spanish, 521 European-American, and 382 African-American families. Children were assessed using the Bayley Scales of Infant Development, a measure of child cognitive development. Mothers' cognitive skill was also measure using a test of "lexical knowledge" (p. 387). Results from this test replaced parental education level because of the difficulties in comparing the varied education of mothers from different countries in the sample. Parenting beliefs were assessed using the Parental Modernity

Scale (Schaefer & Edgerton, 1985), and parenting behaviors considered "mothers' level of supportiveness in interactions with their children" (p. 387).

Results from the study noted that the children's cognitive development was affected by parenting beliefs, behaviors, and maternal cognitive skill amongst all ethnic groups in the sample. However, the way the constructs were related varied depending on ethnicity and level of acculturation amongst the sample. Maternal cognitive skill was the only factor that was related to parental beliefs, parent behavior, and child cognitive development, both within and between the ethnic groups. Differences were found in relation to parental beliefs. Higher traditional beliefs were reported amongst those populations less acculturated to U.S. culture, leading the author to question the appropriateness of viewing progressive beliefs as the more positive approach (Schaefer & Edgerton, 1985). Such a view warrants further examination especially when working with populations who may only have been living in the U.S for a few years. However, even for families who consider themselves American and have been living in the country for a long time, the view that progressive is better may not be appropriate. Keels (2009) emphasizes, for example, that African-American families may see progressive parenting as less adaptive or beneficial due to strains of financial hardship, lack of social support, and perception of a culture that is fundamentally less welcoming.

The research findings relating to parental beliefs in diverse ethnic groups in the United States highlight that while constructs such as self-efficacy may be more stable among these diverse groups, parenting styles are likely to differ greatly. In addition, the measures used to assess parental beliefs may be biased towards the mainstream U.S. culture, which views progressive parenting as the most positive for child outcome. However, this view may not be

applicable for populations who are new to the country or who perceive themselves to be outside the boundaries of the mainstream culture.

The Study of Parental Knowledge and Beliefs from a Global Perspective

Less research into child development is generated in countries that have fewer economic resources (Tomlinson & Swartz, 2003), despite the fact that many more children are born in these countries. The presence of research into parental beliefs in different cultural contexts is evident from edited works such as that of Harkness and Super (1996) about the cultural belief systems of parents in many different parts of the world, and extensive descriptions regarding different perceptions of child development in different cultures (Rogoff, 2003). Other cross-cultural studies consider areas such as parent perceptions of infant temperament in the U.S., Spain and China (Gartsein, Gonzalez, Carranza, Ahadi, Ye, Rothbart & Yang 2006), the social context of parents goals in their children's development in the United States and Taiwan (Suizzo & Cheng, 2007), and mother to infant attachment styles in South Africa (Tomlinson, Cooper & Murray, 2005). In addition, numerous intervention studies have been conducted in the area of early child development in countries such as Bangladesh, Burma, Vietnam, Guinea, and Bolivia (Engle et al. 2007).

Despite the work on understanding parental beliefs in different cultures, there is still a tendency to generalize results from research in a few countries to the rest of the world (Tomilson & Swartz, 2003). This generalization becomes difficult when looking at culturally-bound concepts such as parenting knowledge and beliefs, and makes their potential correlation to child developmental outcome difficult to verify in a meaningful way.

Rogoff (2003) highlights fundamental cultural differences that are present in people's perception of human development. These differences include basic assumptions about a child's

age, emphasis on autonomy development, fostering literacy skills, and encouraging development based on perception of the sequence of developmental milestones. Even among immigrant groups to the United States, there are fundamental differences regarding understanding of developmental milestones (Bornstein & Cote, 2004; Pomerleau et al., 1991).

When comparing mothers who live in different countries, Joshi and MacLean (1997), found differences in developmental expectations between mothers in India, Japan, and England in areas such as education, self-care, compliance, peer interaction, communication, emotional control, and independence in the environment. They found that some developmental expectations were similar across cultures, namely, "knowledge of numbers and the alphabet as well as basic skills related to bodily maintenance and cleanliness" (p. 227). Other skills developed at different ages depending on the culture. One example of this was communication skills, which English and Japanese mothers viewed as developing to a level of competence by the age of four to six years. Most Indian mothers estimated that competence in communication was achieved at a later age, however, between the ages of six to 10 years. The similarities between the developmental expectations of Japanese and English mothers, compared to the differences between Japanese and Indian mothers, suggest that economic development of the society can have a greater effect on the parents' developmental expectations in their children than their adherence to an individualistic or a collectivistic belief system.

Another study looked at parent knowledge in a different cultural context using a Portuguese translation of the KIDI. Seidl de Moura et al. (2004) found that among a sample of 405 mothers from six different parts of Brazil, maternal education level was related to the knowledge mothers held. Although not directly studied, the level of parental child development knowledge measured by the KIDI was hypothesized to help foster more positive development in

the infant, which in turn could lead to mothers' greater understanding about child development. The authors concluded that the strength of the relationship between maternal education and knowledge scores "contribute towards understanding important aspects of the developmental context of Brazilian children…[and] have implications for planning health promotion intervention programs" (p. 421).

Further studies in the area of parent knowledge include findings in the area of infant hearing loss in two different parts of Africa. In Nigeria, high levels of knowledge about the causes of childhood hearing loss, and the importance of early screening for hearing were found among a sample of mothers reporting to community hospitals in an urban environment. Mothers who were older were reported to have more knowledge than those who were younger. Overall, mothers indicated a positive attitude towards the use of adaptive devices for their children if they presented with hearing loss (Olusanya, Luxon & Wirz, 2006). In Kenya, a hearing screening study that identified 35 students with hearing impairments found that over half the parents were aware that their child presented with a hearing impairment prior to the screening test. This study supports the need for screening with parents in order to identify children who present with hearing loss as well as other childhood disabilities (Omondi, Ogol, Otieno & Macharia, 2007).

The findings from different countries on the relation between parental self-efficacy and child developmental outcome have been mixed. In Brazil, Surkan et al, (2008), found a significant relationship between maternal depression levels and child health status (short stature), but did not find any association between self-efficacy, using the MSE, and child health status. Self-efficacy also did not play a role in mediating the depressive feelings of the mothers about their child's poor health. This finding contrasts with the mediating relationship reported for self-efficacy in middle class Caucasian American mothers using the same scale (Teti & Gelfand,

1991) and to the work of Goto et al. (2008) on the relation between confidence levels of Japanese and Vietnamese mothers and interaction with their infants. In this latter research, those mothers from both countries who rated themselves as lacking in confidence "were less happy and had little relaxed time with their babies in comparison to confident mothers" (p. 616). Direct comparisons between studies that measure self-efficacy and confidence have their limitations, however, as the terms cannot necessarily be used interchangeably (Montigny &Lacharite, 2005).

Despite this limitation, the work of Seo (2006) in Korea adapted the work of Conrad et al. (1992) on parental confidence and replaced it with the construct of self-efficacy. The author used the MSE developed by Teti & Gelfand (1991) and administered it to a sample of 42 mothers. The study examined the premise of Conrad et al. (1992) regarding the interaction effects between parental confidence (or self-efficacy in Seo's study), parent knowledge (using the KIDI) on positive parenting behaviors, and child developmental outcome. Findings supported the hypothesis that mothers with higher knowledge provided a more stimulating environment for their infants and had infants with higher developmental outcome (as measured on a parental rating scale). Maternal knowledge was the only significant predictor of positive parent-child interaction and child outcome. Higher ratings on the MSE did not lead to provision of a more stimulating environment for the infant nor greater developmental outcomes. In fact, mothers who had higher self-efficacy scores had overall lower scores on the KIDI. "Also, mothers with higher maternal self-efficacy were found to have infants who scored lower on the infant developmental measures than their counterparts with lower maternal self-efficacy" (p. 257). This phenomenon, known as "naive confidence," was previously discussed with North American mothers described by both Conrad et al. (1992) and Hess et al.(2004).

In a further attempt to replicate these findings with a sample of mothers who face numerous challenges in terms of access to health care, and education for young children, this author conducted a pilot study in Cambodia which considered parent knowledge and beliefs with a sample of 50 caregivers and their children, some of whom presented with developmental delays. Significant in this study was the low rate of reliability of the Khmer version of the KIDI. Reasons for this finding speak to the difficulty in transferring a tool that measures parent beliefs in one culture to another, and provide evidence of the importance of understanding parent ethnotheories when analyzing these beliefs. In addition, there may have been issues with the accuracy of translation of the measure, and familiarity of the sample in responding to the questionnaires, and a "yea-saying" bias in the sample.

Higher reliability ratings were found with the self-efficacy measure, and years of parental education was found to be a significant predictor of self-efficacy ratings (Naqvi, et al., 2009). This latter finding is supported by results from other studies about the links between education levels and self-efficacy ratings (Teti & Gelfand, 1991). There were no differences in self-efficacy scores amongst caregivers of children with typically developing children compared to those who presented with developmental delays. Further studies are needed to understand how populations with reduced or limited exposure to formal education will respond to questionnaires about their parental belief system. In addition, further study into parenting beliefs in contexts in which maternal and child health are often significantly compromised are likely to be very different than those reported in contexts in which good health of both the mother and the child is taken for granted. This exact point was illustrated by Chess and Thomas (1996) in their example of the reaction of Masai mothers to the type of cry of their infant.

This section has highlighted the different findings about parent knowledge and parent beliefs in different countries in the world. Clear differences exist in regards to understanding of developmental milestones in different cultures, with some research supporting the notion that higher education levels result in greater knowledge levels overall about child development which in turn predicts greater developmental success. Studies relating to parent beliefs such as self-efficacy and confidence have found mixed results in relation to child outcome, perhaps due to the limitations of using these terms synonymously. The pilot study for this research in Cambodia highlighted the difficulties in using some parent belief measures in a different cultural context, but also how other measures were able to be used with success.

Research on Parenting in sub-Saharan Africa and Tanzania

Research on early child development and parenting within the African context is highly warranted at this point in time, especially from a public health perspective. According to Grantham-McGregor et al. (2007), the percentage of children with developmental stunting and living in poverty is highest in sub-Saharan Africa. Garcia, Virata, and Dunkelberg (2008) also note that this region has the highest rates of child poverty in the world. Tanzania in particular faces many challenges in the area of early child development, and is an area that has only received attention very recently (Mtahabwa, 2009a; Mtahabwa, 2009b). Public health literature has established the necessity for programs to improve the outcome of young children in the country, especially newborns and children under the age of five (CCBRT, 2009; Save the Children, 2008). Presented here is a review of the research literature in regard to parenting within the country and its relation to early child development. Also presented are research studies that review the status of preschool programs and address government as well as non-governmental organizations initiatives to development programs in the area of early child development.

Evans, Matola, and Nyeko (2008) describe several key points that are necessary when developing intervention parenting programs with sub-Saharan African families. These points are applicable to work in Tanzania, since it is a country within sub-Saharan Africa. The first point relates to the family status. It needs to be established whether the child is being raised in a multigenerational family, by both parents, or by a single parents. The second point emphasizes the delegation of many early child-care responsibilities for young children and how this might affect the biological mother's parenting style. Thirdly, there can be differences in perception of maternal responsiveness to the child's needs. For example, many African children are carried strapped to their mother's backs for many hours at a time and breast-feeding is provided on demand as opposed to on a schedule. However, parents may not directly provide the early cognitive stimulation to children to foster development even when materials are available. This is attributed to differences in perception of their role in this aspect of their child's development.

In 1994 LeVine et al. co-authored an extensive work on different approaches to childcare amongst the Gusii people of Kenya, a country directly to the north of Tanzania. The book documents all aspects of child care from the concept of parenthood, marriage and fertility, the birth process, to development through to the different stages of childhood. As noted by the authors, work into understanding infant care in sub-Saharan African countries is extensive and dates as far back as the early 20th century. Through their work LeVine et al. (1994) highlight the different goals expected in children by different ages and the cultural scripts or norms of cultural behavior that are used to ensure that these goals are attained. For example at the age of 15 to 17 months, prior to the child being weaned from his/her mother, infants are expected to be healthy and to develop physical and motorically within normal limits. In order to attain this goal mothers "feed, hold, monitor growth and distress, respond to negative signals, (and) promote motor

development" (p. 89). In contrast, by the time that the child enters their third year, and has finished weaning from the mother, the goal for the child's behavior is that s/he should be compliant and be safe, the child should understand demands placed on him/her by the mother and, in turn, make few demands to the mother. These goals are attained by the mother maintaining "expectation for maternal attention low," (p.89) and instructing the child in how to follow commands. Fundamental differences in mother child interaction compared to American samples are noted throughout the book, in respect to concepts such as praise (it rarely given among the Gusii), the use of verbal interaction (less amongst the Gusii), and the quality of attention provided to infants by their mothers (amongst the Gusii it tends to be soothing rather than stimulating). The findings by LeVine et al. (1994) gathered over a period of 2 years, which involved not only data collection, but also the setting up a pediatric clinic and running an ambulance service to care for adults in the community, illustrates the complexity and depth of information that can be gleaned from a parental ethnotheoretical perspective. This type of research perspective guides the interpretation of findings from the different parent measures in this dissertation research.

Differences in parenting strategies amongst mothers in sub-Saharan Africa were documented well before the work of LeVine et al (1994), however. In an article on the motor development of African infants, Super (1976) highlights the interaction between parental beliefs and child development in the motor skill development of young Kispsigi children in Western Kenya. Differences are reported in the acquisition timelines across the different motor skills, dispelling the myth that all African children develop motor skills at faster rate than their American and European counterparts. Super (1976) found that mothers deliberately encouraged the early infant reflexes of walking and standing so that they did not disappear around the age of

2 months has been documented among European and American babies. Infants are also directly taught to sit at approximately 5 to 6 months of age. Instruction in other motor movements such as crawling or rolling over, however was seen much less amongst the Kipsigi mothers. Conclusions noted from this work are two-fold. Firstly, this research suggests that even motor movements typically seen as innate can emerge differently in different cultural contexts. Secondly, it is unclear what the neurological impact is on all areas of development, when certain reflexes in infants from one culture are actively developed, but in others they are allowed to disappear.

In research with a different focus, Hollos (2008) interviewed over 2000 mothers from an urban center in Northern Tanzania and was able to highlight the importance of having a child to mothers within this culture. Being a mother in and of itself is described as being an "absolute necessity" (p. 170) within this culture, irrespective of the number of children that the mother has. This was found to be true of women living in both affluent conditions, and those reported by LeVine et al. (1994) amongst the Gusii tribe, for example, where childbirth has important economic implications. Such a strong cultural focus on the importance of bearing children and manifestation of fertility within the culture may also play a role in how the parent then views the child, especially since mothers do not perceive childbearing as a choice, but rather a necessity for their self-identity. It remains to be seen what the ramifications of this belief might be if the child does not survive, or does survive, or is disabled. As noted by Manji (2009), currently there is very little information about the long-term impact of disability in Tanzania, and even scarcer information on parents' beliefs about this disability, and themselves as parents of a disabled child.

In another study conducted in Tanzania, McGillicuddy-De Lisi and Subramanian (1996), found that affluent mothers residing in the capital of the country placed a high emphasis on

learning through direct instruction as opposed to other processes such as observation or experimentation. Overall the mothers placed the most emphasis on children developing cognitive skills through "biological processes" (p. 155), which include such factors as genetics and maturation (p. 152). Mothers also believed that their children learn through "absorption from the environment" (p. 153). The findings about mothers' beliefs regarding direct instruction and children's learning were reportedly consistent with work they cite by Whiting and Edward in 1988 with mothers from Kenya. McGillicuddy-De Lisi and Subramanian (1996) argue that the variability in the types of learning processes emphasized by the mothers may be related to the type of skill the child is learning. "Kenyan mothers who believed training was important for motor development did not see direct instruction as necessary for language acquisition" (p. 156). The differences in maternal beliefs about children's cognitive processes highlight how beliefs about children's learning can vary depending on the skill.

Child developmental outcome in sub-Saharan Africa and Tanzania.

Overall in Sub-Saharan Africa young children are at great risk for delayed development for reasons such as poverty, disease, malnutrition, civil unrest, and significantly reduced access to education. "One third of Africa's children under age five are stunted from malnutrition. More than 95 percent of the continent's five to six year olds do not have access to preschools, early stimulation, or good child development facilities" (Young & Mustard, 2008, p. 73).

Recently in Tanzania there has been a big policy initiative to increase the chances of newborn and under-five survival rates. A recent publication from the Ministry of Health and Save the Children (Manji, 2009) details different strategies that the government is implementing in order to increase the chances of survival of its most vulnerable child population. One way in which it is possible to understand the status of child development is through results from

preschool programs. At present, there is no published research on the quality of preschool services provided for children in the country of Tanzania as a whole (Mtahabwa, 2009a). There is also little published information about the developmental status of the children attending education centers compared to those who remain at home. The developmental status of children in the country is poor, with more than 30 percent prevalence of stunting in the under-five population. Tanzania's human development index is amongst the lowest third of all countries in Africa (Garcia et al., 2008). The under-five reported mortality rate in 2006 was 118 for every 1000 live births (World Health Organization, 2007).

There is currently no consensus within the country on implementation of education services for the very young (Mtahabwa, 2009a). This may soon change, however, as the Tanzanian government has recently adopted an Early Years Strategy, which includes the development of a country-wide curriculum to be used by professionals working with young children (Landsdown & Damstead, 2009). Despite this, parents do not know what the existing preschool programs offer for young children (Mtahabwa, 2009b). The lack of regulation or consistency in provision of education leads also to very varied teacher to child ratios in pre-primary schools throughout the country, fluctuating from a ratio of 1:118 to 1:31. Furthermore, "it is unknown how teachers engage children in learning activities under such unregulated teacher-child ratios" (Mtahabwa, 2009a p. 63).

One exception to this was a recent research study that evaluated the developmental outcome of young children from the region and looked at the effectiveness of the Madrasa Resource Center (MRC), early childhood development programs funded by the Aga Khan Foundation (Mtahabwa, 2009a). These programs are in operation in Kenya, Uganda and on the island of Zanzibar in Tanzania. They focus on educating young children in the foundations of

literacy, numeracy, and reasoning skills along with the tenets of religious education. In addition, the MRC works closely with community members to ensure that they share ownership of the schools and have an active voice in the instructional policies (Aga Khan Developmental Network, 2008). In a research study (Mwaura, Sylva, & Malmberg, 2008) found that children attending MRC preschools performed better on two adapted cognitive measures compared to children attending regular government run preschools. Both of these groups, however, fared better compared to children who remained at home. The finding of the best outcome for children attending MRC preschools was attributed to the superior quality of instruction compared to other preschools in the region.

The studies reviewed thus far highlight the lack of research into child development in Tanzania, despite the challenges to healthy development for young children in the country. As noted by Tomilson and Swartz (2003), little published research in the area of child development occurs within developing countries, despite the fact that the majority of the world's children live in these countries. In addition Engle et al. (2007) highlight the need for a greater number of early child development programs in these countries.

Child development and developmental disability in Tanzania.

This chapter would not be complete without a discussion regarding the issue of developmental disability in the country. As previously discussed, the lack of maternal and neonatal healthcare greatly elevates the risk of death and poor health in newborns (CCBRT, 2009). In addition, poverty, poor health, and nutrition after the child's first year of life affect subsequent development, placing children at risk for developmental delay (Grantham-McGregor et al. (2007). The scarcity of preschools programs in rural areas of Africa (Mtahabwa, 2009a; Mwaura et al., 2008) means that fewer child intervention services are available for children with

disabilities. According to statistics reported by CCBRT (2009), approximately 1.25 million children in Tanzania have a disability. For these 10 percent of the population who do have a disability, there is very little access to even the most basic services. According to CCBRT's annual report, 28 percent of the disabilities within the country are due to a physical impairment, 27 to a visual impairment, 20 percent to a hearing impairment, 8 percent to intellectual impairments, and 4 percent to multiple impairments. However, because of the difficulties with access to health services, the needs of many individuals with disabilities cannot be accurately assessed. This means that figures such as these are likely to be an underestimate of the true incidence of disability in the population. Manji (2009) notes that "the scarce information available indicates that anemia, cerebral palsy, rickets and kernicterus (brain damage caused by jaundice) are widely prevalent among neonates who survive illness and injury during the neonatal period" (p. 14). Actual prevalence rates are not available as information from the community is not readily available and most data comes on from hospitals, most of which are located in the urban centers.

However, a study which describes the validation process of a Standard Capability Assessment (SCA), a health, related quality of life assessment for children with disabilities (Ward, *n.d.*), indicates improvements in this area of health care. This tool was developed for use with Tanzanian children. It was normed on a population of 54 children with different disabilities who lived in Dar es Salaam and were receiving services through CCBRT. Age ranges of the children were less than one year to 18 years with a mean age of six. The majority of the children in the sample were diagnosed with cerebral palsy although other forms of disability included mental retardation, epilepsy, hydrocephalus, unspecified developmental delay, spina bifida, muscular dystrophy, and speech delay. Results of the measure indicated positive psychometric

properties with this small sample. There were expected differences in age and level of functioning related to type of disability and results of the measure were not affected by gender or the area of the city the children lived. The author notes, however, that the content of the measure should be reviewed by a wider panel of experts, and that it should be piloted on a larger sample in different areas of the country.

The development of this measure is a starting point for assessment and subsequent service provision for children with disabilities in the country. However as a screening tool to assess developmental delay, it does not differentiate clearly between the five core areas of child development. These include assessments of skills in the areas of cognition, speech, social-emotional, adaptive skills, and fine and gross motor abilities (Newborg, 2005). In addition, the SCA focused mainly on physical disabilities but lacked assessment in the area of mental health. In fact, assessment and services in the area of mental health is poorly addressed in this area of the world. In sub-Saharan Africa as a whole, for example, there is less than one psychiatrist per one million people in most areas of the region (Omigbodun, 2008). This is not assisted by the fact that conducting developmental assessments across cultures poses difficulties within itself. Harkness and Super (2008) document that children in African countries respond very differently to testing situations than children in the United States for example. Confounding factors include the decreased emphasis placed on the use of language, the presence of the authority figure, and the emphasis on "obedience and respect" (p. 150) which can lead children to being perceived as passive or even avoidant. They note, however, that children fared better on tasks in which they were required to point, rather than respond verbally. The child outcome measure in this study is only able to address part of this issue, incorporating parental report as a large part of the assessment, and decreasing the verbal demands placed on the children. However it is far from

perfect. The issue of valid child assessment continues to be an issue with other researchers. This was evident by the number of different child development measures used to assess different functioning skills of children in sub-Saharan Africa in recent research literature in the area (Abai & Morris, 2011; Abubakar, Van de Vijver, & Holding, 2011; Mwaura & Marfo, 2011).

The difficulties associated with effective screening for disabilities, and the lack of access to government or private health services means that there can be an overreliance on traditional healers (Omigbodun, 2008), some of whom may not be equipped to handle the treatment of disabilities which could best be served at a health clinic. In addition, traditional community beliefs can also affect whether children are referred for treatment at all. For example, congenital conditions such as "club foot" can be considered as a curse for which there is no remedy, and therefore the families do not seek treatment (CCBRT, 2009). Similar beliefs regarding epilepsy have led to children being kept at home and out of sight of the community. This is relevant in this context, as epilepsy rates are higher in countries with fewer early childhood health care resources (Omigbodun, 2008).

It is important to understand that disability is "a socially constructed phenomenon" (Harry, 1992, p. 144). Families and cultural groups have their own interpretation of the cause and the manifestation of a disability and these beliefs can often come into conflict with the society in which families are living (Fadiman, 1997). For effective assessment and intervention it is vital to incorporate and accept the family belief system (Danesco, 1997; Hanson & Lynch, 2004; Lynch & Hanson, 1998). However, this does not always occur, and when the family system is ignored effects can reverberate within the family extending to the larger community (Harry, 1992, Fadiman, 1997). While it is vital to work with beliefs of the community surrounding disability, and understand the meaning of a particular disability for the family and community (Kleinman,

Eisenberg & Good, 1978), more services for individuals with disabilities also need to be made available (CCBRT, 2009).

One research study has highlighted the status of a very small sample of children with autism in Tanzania and indicated one school within the capital that provides services for children with autism (Mankoski, Collins, Ndosi, Mgalla, Sarwatt & Folstein, 2006). In their assessment of the 14 children in the study who met criteria for autism, three of the children developed the condition after a case of severe malarial infection. The authors suggest the need for further research into the link between developmental delay and malaria. This is all the more pressing as malaria is an illness that is endemic in Tanzania and accounts for at least 30 percent of child mortality under the age of five (Ahmed et al. 2001). Overall, child disability in Tanzania is a greatly under-explored area in the research literature. This project, with its inclusion of children with developmental delays, will highlight the need for more services in this area in the country as well as provide more information as to the possible nature of these developmental disabilities.

Despite the fact that the the SCA adapted by Ward (*n.d.*) has been normed on Tanzanian children it was not deemed to provide sufficient information about the child's development in the different areas, nor is it a measure that has previously been used in conjunction with parent knowledge and belief questionnaires. The child outcome measure proposed for this study is explained in more detail in Chapter three of this proposal. This study will also include an additional outcome measure to assess the level of mother-child interaction.

The literature presented here has outlined the differences among the main constructs of this study. Parental knowledge, defined as norms about health and safety of child care and knowledge of milestones of child development, is differentiated in this study from parent beliefs. The two however are frequently viewed as being interrelated (Sigel & Kim, 1996). Parent beliefs

can be viewed as distinct from parent knowledge and relate to the how-to of child rearing, along with self-image about parenting. Literature both within the United States and in developing countries has highlighted how parental education levels are linked to parental knowledge of child development and in turn improved child outcome. Specifically, parent self-efficacy beliefs and greater knowledge about child development lead to greater positive parenting behaviors and greater developmental outcome. Research amongst culturally diverse populations has established differences in parental knowledge in respect to milestone development, and how learning occurs, affecting in turn the emphasis that parents place on developing different skills in their children.

Parental beliefs have been most frequently explored in terms of parental self-efficacy. This construct recently has been differentiated from terms such as parental confidence and competence, although the literature continues to use the terms interchangeably. Self-efficacy is a construct that has been linked to affective feelings such as guilt and depression in parents (Teti & Gelfand, 1991), and is likely to be mediated by parent knowledge to predict positive child outcomes. Both Hess et al. (2004) and Seo (2006) note this interaction in the phenomenon of naïve confidence, for example, in which parents with higher self-efficacy ratings but with lower knowledge scores have children with the least positive developmental outcome.

The study considers parent knowledge and beliefs about child development and their relation to child developmental outcome in a sub-Saharan country that faces some of the greatest challenges in early child development. Central to this study will be the use of parent ethnotheories or the parental cultural belief systems as a way of understanding some the implications of the findings (Harkness & Super, 2002; 1992).

Among a sample of Tanzanian mothers, living in both urban and rural locations, the main hypotheses for the study are:

H01) Higher levels of maternal education independently predict higher scores on all knowledge and belief measures.

H02) Scores on the traditional subscale of the Parent Modernity Scale are correlated with scores on all self-efficacy belief measures.

H03) Higher scores on a measure of child-care experience, the COPE correlate to higher scores on all self-efficacy measures (Gross, Rocissano, & Roncoli, 1989).

H04) Mothers with low scores on the Health and Safety KIDI, high scores on the MSE scale, and high scores on the traditional subscale of the Parent Modernity Scale have children with lower scores on the developmental measure, and seek fewer support services.

H05) Mothers with low scores on the Milestone KIDI, high scores on the MSE scale, and high scores on the traditional subscale of the Parent Modernity Scale, have children with lower scores on the developmental measure, and seek fewer support services.

H06) A combined parent belief measure has greater reliability that the reliability of the individual belief/knowledge measures.

H07) Home birth location and greater parental age predicts lower scores on the child developmental measure.

H08) Higher scores on the combined parent belief measure predict higher scores on the child developmental measure.

H09) A yea-saying bias is present in the responses on the Health and Safety KIDI, Parenting KIDI, and Milestone KIDI.

Descriptive results about milestones of child development from the Milestone KIDI and beliefs about child disability based on responses about a patient explanatory model (Fadiman, 1997) will also be explored and discussed.

Chapter 3- Methodology

This chapter describes the methodology of this study which investigated the parental knowledge and parental beliefs of Tanzanian mothers in relation to their children's developmental outcome. The participants are described firstly, followed by a description of the different measures, and the specific procedures used when conducting this study.

This study was conducted on-site in two locations in Tanzania and was conducted under the auspices of *Save the Children*, an international non-profit humanitarian organization. Staff from *Save the Children* provided logistical support in all phases of the data collection process in both Dar es Salaam and in the southern town of Lindi and surrounding villages. Permission to conduct research in Tanzania was obtained through the Commission of Science and Technology (COSTECH) and through the Tanzanian immigration authorities. In addition, approval was sought and granted through the City University of New York Graduate School and University Center Institutional Review Board.

Participants

According to staff at *Save the Children* in Tanzania the bulk of care-giving responsibility for young children is held by mothers. Fathers were not included in the study due to the likely differences in child-care practices between mothers and fathers in Tanzanian culture. Accordingly, only mothers or direct female caregivers of children were invited to participate. For the purposes of this write-up, adult participants will be referred to as either "participants" or "mothers."

Table 1

Maternal Characteristics

	Urban					Rural					Total				
Characteristics	M	SD	Range	%	N	M	SD	Range	%	N	M	SD	Range	%	N
Sample				47.57	49				52.43	54					103
Age	27.34	6.57	18-46			29.72	7.24	18-49			28.60	6.99	18-49		
Income (in 1000)	57.38	58.89	0-300			16.33	37.16	7-200			35.86	52.67	0-300		
Education	7.02	2.91	0-13			4.94	3.58	0-12			5.93	3.42	0-13		
Biological				42.72	44				50.48	52				93.20	96
No in Household	4.67	1.68	2-8			4.70	1.22	3-7			4.69	1.45	2-8		

Table 2

Child Characteristics

	Urban					Rural					Total				
Characteristics	M	SD	Range	%	N	M	SD	Range	%	N	M	SD	Range	%	N
Sample				47.57	49				52.43	54					103
Age (months)	37.16	20.32	11-81			36.98	17.39	12-83			37.06	18.75	11-83		
Male				27.18	28				22.33	23				50.49	52
≥1 year education				6.8	7				4.85	5				11.65	12
Home birth				1.94	2				9.71	10				11.65	12
Cesarean delivery				5.82	6				1.94	2				7.77	8
No of siblings	1.04	1.32	0-6			1.57	1.72	0-10			1.32	1.56	0-10		
Identified disability				18.45	19				5.83	6				24.27	25

One hundred and three female participants and their children formed the sample of this study. The mean age of the women in the study was 28.60 (SD=6.99) with a range of 18 to 49 years. The mean age in the child sample was 37.06 months (SD=18.75) with a range of 11 months to 83 months (six years, 11 months). Both biological and adoptive mothers participated in the study. Ninety-five of the women reported being the biological parent of their children, three of the women were the maternal grandparents, three reported being the child's aunt, one, the adopted mother (no blood relation) and one was an employed female babysitter who had brought the child she was looking after to the assessment site. Forty-nine of 103 mother/child dyads resided within the geographic confines of the commercial capital, Dar es Salaam. The remaining 54 mother/child dyads lived in one of twelve rural villages in Linda and Kilwa provinces in the south of the country, with the exception of one participant who lived in the town of Lindi itself.

Employment categories for the mothers in this study were categorized using employment data reported from the Kagera region of Tanzania (The World Bank, 2004). The majority of the mothers in this study reported farming as a profession. This was the predominate employment of mothers living in the rural areas. The second largest category was the trade/merchant category. Almost all the mothers reporting this employment resided in the urban area. The four categories which could not be coded included "unemployed", "guard", and "casual employment." There was overall a greater range of employment reported by mothers in the urban sector compared to those coming from a rural background. The types of employment of mothers in the sample are presented in Table 3.

Table 3

Types of Employment Reported by Participants

Employment Category	N	%
Farming/Livestock	45	41.3
Fishing	2	1.8
Trader/merchant/sales	28	25.7
Transport	6	5.5
Construction	2	1.8
Education professional/admin	2	1.8
Health professional/admin	1	.9
Other professional/admin	5	4.6
Secretary/clerical	1	.9
Restaurant, bar, or hotel	3	2.7
Skilled trades	10	9.2
Other	4	3.7

Note. The total of 109 is due to some participants reporting employment categories for both themselves and their husbands/partners.

It was possible to report approximate monthly income by comparing the specific occupations reported by the mothers in this study and translating them to equivalent occupations in the Kagera data set. The Kagera data set reported income by either, month, day or week for each reported occupation. Incomes for mothers in this data set were calculated by using the same value reported from the Kagera data set for each corresponding occupation and converted where necessary to monthly incomes. Where there were varying incomes reported for categories (such as farmer or teacher), an average of five reported incomes was calculated and used as the

expected income for mothers in this study. Monthly income values reported here are estimates, however as participants from the two samples live in different regions of the country and reported incomes from the Kagera data set date from 2004. Overall the mean reported monthly income by study participants was 35,864 (SD=52,672) Tanzanian schillings or approximately $23.90 (1 dollar is equal to approximately 1,500 Tanzanian schillings). The monthly range of income among the participants was between 0 and 300,000 Tanzanian schillings. Below, Table 4 presents the distribution of income among the sample. In order to best understand the value, incomes in Tanzanian schillings are translated into their dollar amounts using the conversion rate cited above.

Table 4

Monthly Household Income of Participants in Dollars

	N	%
Less than $10	54	52.9
$10-$19	14	13.7
$20-$49	22	21.6
$50-$99	8	7.8
$100 or more	4	3.9

The mean years of education reported amongst the mothers in the sample was 5.93 (SD=3.42) with a range of 0 to 13 years. Seventeen percent of the mothers indicated they had never attended school, 85.4% of the sample had at least seven years of education. Results are presented below in Table 5.

Table 5

Frequencies and Percentages of Participants' Education Levels.

Years	N	%
0	18	17.5
2	5	4.9
3	1	1
4	4	3.9
5	1	1
7	59	57.3
8	1	1
9	1	1
10	1	1
11	8	7.8
12	3	2.9
13	1	1

Children below the age of twelve months were not recruited for this study due to the difficulty of accurate identification of developmental delay in children below the age of 12 months (Zwaigenbaum et al., 2007). However one child in the sample was 11 months because the parent reported that the child was 12 months, and the true age was only discovered after the parent had agreed to participate, signed consent and the interview had started. Children older than eight years were not included in the study for two reasons: firstly, the developmental assessment used in this study is only appropriate for children up till the age of 7 years, 11

months; and secondly, early child development is considered to encompass the period from prenatal development to eight years of age (Irwin et al.,2007). A total of 52 girls and 51 boys participated in the study with slightly more girls represented from the rural location (29) than the urban (23). Conversely more boys were represented in the urban location (28) as opposed to the rural (23). Ninety of the 103 children had no schooling, 12 were reported to have attended one year of school and one child had attended two years. Only 14 of the children were born at home, the remaining 89 were born in a hospital or health facility. Eight out of the 103 mothers reported that they gave birth via caesarian section delivery; six of these mothers were from urban location. Both typically developing children and children with developmental delays were recruited for this study. Of the 103 children who participated in the study, 25 were identified by their mothers as being children with developmental disabilities. Nineteen of these 25 children lived in an urban location and the remaining six in rural areas. This difference in number was due in large part to the assistance of CCBRT in recruitment of these children. In addition, the assistance provided by CCBRT meant that overall, more children identified with disabilities were recruited than initially predicted (25 as opposed to 18).

Only children whose mothers reported them healthy on the day of the assessment were included in the study. Children who presented with an autoimmune condition such HIV were excluded from the study. Limited information was available as to the nature of the disability of the children who had been identified with developmental delays. The majority of these 25 children assessed exhibited gross motor impairments relating to cerebral palsy. At least three of the children were assessed informally by the principal investigator (a certified school psychologist) as presenting with an Autism Spectrum Disorder; other developmental disorders

included Down's syndrome, epilepsy, suspected fetal alcohol syndrome, and developmental delay associated with macrocephaly and congenital cataracts.

Measures

A total of seven measures were completed by the adult participants in this study. In addition, mothers answered demographic questions along with questions pertaining to the child's developmental history. Mothers of children with identified developmental delays also responded to questions about their understanding of the disability. All of the measures used in this study were originally developed in the United States. Three of these measures were used in Cambodia (Naqvi et al., 2009). In preparation for their use for this study, all measures were translated into Kiswahili by a local translator and verified by *Save the Children* staff fluent in both languages for accuracy of translation. In addition all measures were piloted on 16 mothers at a health center in Dar es Salaam in April 2010.

As noted, a greater number of children with identified developmental delays were recruited from the urban areas. For the purposes of data analysis two separate samples were created from the main sample, a sample of children who were not identified as developmentally delayed (n= 78) and a sample of children whose mothers did identify them as such (n=25). In the following section, where applicable, means, standard deviations and reliability ratings are reported for the whole sample, urban samples, rural samples, the non-identified delay sample and the identified delay sample.

Parent Measures

Demographic information.

Mothers were asked to provide information about their age, occupation, location of residence, family size, number of children, years of education, and years of child's schooling. Please refer to Appendix K for an example of the questions asked.

Child developmental history.

In order to obtain more information regarding birth history, mothers responded to questions about the birth of their child, in addition to questions about the child's health and developmental status. If mothers had concerns about their child's development, they were asked what if any, follow-up they had sought to address these concerns. Based on the information provided by the mothers, they could indicate one or more from the following list; visit to doctor at local health center, visit to local traditional healer, visit to hospital, visit to medical specialist (pediatrician/occupational therapist), or other. This information was used to highlight mothers' awareness of the child's possible delay and whether they had attempted to access services for their child. The list is based on information about possible referral sources for parents provided to the author by different health professionals in Tanzania. The item regarding the use of traditional healers provides information about the frequency of this form of intervention in addition to western-based medical services.

Catalog of previous experience with infants (COPE).

One of the limitations of the study conducted in Cambodia was that there was little information about the caregiving experience of the study participants. This information is important to understanding constructs such as self-efficacy (Coleman & Karraker, 1998; Gross, Rocissano, & Roncoli, 1989) and child developmental knowledge (MacPhee, 1983). The COPE

was developed by MacPhee (1983) together with the original KIDI and is "a 17-item survey of a person's exposure to information about infancy. Sixteen of the questions pertain to formal and informal experiences, and information gained through direct observation or social means" (MacPhee, 1983, p.11). Two questions were removed from the original measure due to the fact all of the Tanzanian mothers from the pilot sample responded "none" and "never have" to these questions and the local translator questioned the relevance of these items for use with a Tanzanian sample. The questions removed are presented below in Table 6.

Table 6

Questions Removed from the COPE Translation

	Question	Answer choices
4.	How many college level classes in child psychology or development have you taken	None/ 1/More than 1
6.	If you have ever worked in a professional setting that brought you into contact with infants, how much time did you spend with them? This would include areas such as medicine, social work, public health, or psychology	Never have/ rarely saw any babies/ once a week or so/ part-time (10-20 hours/week)/ Full-time (30/40 hours/week)

In order to use results from the COPE in further analysis, a total score was developed for the measure that was comprised of the responses to questions 1 through 11 and questions 20 and 21. Items 12 to 19 asked how mothers had learnt information about infants (from mass-media, talking to family, talking to husband/wife etc.) Information gathered here was not used in this

analysis. Coding for questions 1, 2, 3, and the second part of question 11 consisted of assigning a code 1 to 4 for each of the possible answer choices, with "never" being assigned a value of 1, and regularly a value of 4. Questions 4 to 10 were assigned the values already present in the measure (0 for never and 3 for regularly). For question 11, the responses of mothers in the sample to the question "how many hours a day are you around your infant when he is awake?" ranged from values of 0.5 to 24. An ordinal range was created for the numbers, due to missing values between 0.5 and 24 with a resulting range was of values from 1 to 16. Since questions 20 and 21 related to absolute numbers of infants, the number that the mothers provided were entered directly into the total score. The total score was entitled child care experience score with a range of 6 to 73 for the whole sample. Table 7 presents summary reliability statistics for the whole sample and the study subsamples.

Table 7

Summary Statistics and Reliability Results for the derived COPE Child-Care Experience

	M	SD	α	N
Whole sample	36.26	9.03	.54	103
Urban	41.37	7.14	.33	49
Rural	27.08	6.13	.44	54
Non-id	32.11	9.22	.60	78
Id	38.65	8.00	.34	25

Note. Only questions 1 to 10 and the second part of 11 were used in the α calculation.

Health and safety knowledge of infant development inventory (KIDI).

The items relating to health and safety knowledge from the original 75 item KIDI were used to create a separate 14-item measure in this study. The rationale for this was based on the low reliability results from the responses of the Cambodian sample to the 75-item measure

(Naqvi et al., 2009). One of the reasons hypothesized was that the full measure combines descriptive beliefs about child development and instrumental or skill based knowledge into one measure (MacPhee, 1981). Tanzanian mothers' understanding of health and safety knowledge of child development was measured in this study by using only items from the KIDI that related exclusively to the construct "health and safety" described in the KIDI manual. Participants were asked to indicate either "agree" "disagree" or "not sure" for each statement. Scoring was either (1) for correct or (0) for incorrect or "not sure" with the scores ranging from a possible 0 to a maximum total of 14.

Wording of the items was changed from the original based on adaptations made to the measure when used in Cambodia. In addition, the wording of question 12 was changed as Tylenol is not a drug common to Tanzania. The question relating to the use of formula milk was removed from all analysis as the Tanzanian government upholds a country-wide breast milk only health policy. Word changes to the measure are presented below in Table 8.

Table 8

Word Changes on the Health and Safety KIDI

	Original wording	Kiswahili translation
2.	If a nine- month- old wants a snack, give it nuts, popcorn or raisins	It's ok to feed nine month old babies small foods like nuts or popcorn.
3.	You must stay in the bathroom when your baby is in the tub	You must be close to your baby when they are in the water or when you are washing them.
6.	Putting a soft pillow in the crib is a good way to help the baby sleep better.	Putting a soft pillow where the baby sleeps is a good, safe way to help the baby sleep better.
8.	If a baby is fed formula milk, he/she needs extra vitamins and iron.	Question removed from analysis.
12.	The best way to bring down a baby's fever is by giving Tylenol drops.	The best way to bring down a baby's fever is by giving paracetemol drops.

In January 2010, 33 U.S mothers responded to questions on this measure with a relatively low reliability rating of .591. However, modification of the scale to a Likert coding (Hess et al., 2004) to avoid a yea-saying bias as noted from the study in Cambodia (Naqvi et al., 2009) resulted in an even lower reliability rating (α=.496). The dichotomous coding system was kept because of the greater reliability result (albeit with a small sample). Moreover, it made clinical sense to do so; clear yes/no information about mothers' knowledge in this area as opposed to a range of possible choices seen in adaptations of the KIDI using a Likert scale (Donovan et al., 2007) was thought to be more useful for organizations such as *Save the Children* and CCBRT in developing parent education programs.

Results from the pilot sample of 16 mothers in Tanzania indicated a reliability of =.266. However the measure was still used for the main study as the reliability was projected to increase with the sample size. In addition, the findings have descriptive importance to the health partners of this study. Summary reliability statistics for the whole sample and study sub-samples are presented in Table 9 below.

Table 9

Summary Statistics and Reliability Results for the Health and Safety KIDI

	M	SD	α	N
Whole sample	8.11	2.12	.55	103
Urban	9.14	1.88	.53	49
Rural	7.18	1.89	.38	54
Non-id	8.02	2.11	.55	78
Id	8.40	2.14	.57	25

Milestone KIDI.

As a way of measuring parent's knowledge and understanding of milestone development, the milestone section of the KIDI was used as a separate measure. This is similar to the approach used by Huang et al. (2005). The Milestone KIDI includes 20 items measuring knowledge of developmental milestones. Respondents are asked to agree to a statement about a particular milestone of development. If parents do not agree, they can indicate whether they believe the child should be younger before evidencing a skill, or older. The coding for this measure is similar to the Health and Safety KIDI, with (1) for a correct response and (0) for an incorrect response. The maximum total score on this measure was 20. Word changes were made to

question 19 due to difficulties with translation, and to question 6 (based on analysis of results from the Tanzanian pilot data) are presented in Table 10.

Table 10

Word Changes to the Milestone KIDI

	Original wording	Kiswahili translation
6.	A baby is about 7 months old before he/she can reach for and grab things	Seven months old babies can reach and hold onto things
19.	Infants have depth perception by 6 months of age (can tell that they are on a high place)	Infants can tell they are on a high place by 6 months of age.

The internal consistency reliability of .60 from a sample of 33 U.S. mothers was lower than the reliability of .70 reported by Huang et al. (2005). This result was thought to be due to the small sample size of the U.S. pilot sample. Internal consistency from the pilot sample of 16 Tanzanian mothers was .590 again relatively low, possibly because of the small sample size Reliability results from the main sample were also low however. Table 11 presents reliability results for the whole sample and the study sub-samples. List-wise deletion was employed on all missing data.

Table 11

Summary Statistics and Reliability Results for the Milestone KIDI

	M	SD	α	N
Whole sample	8.26	1.94	.18	103
Urban	8.82	2.05	.24	49
Rural	7.76	1.69	.08	54
Non-id	8.17	1.88	.14	78
Id	8.56	2.10	.29	25

Parental Belief Measures

Parenting KIDI.

Similar to the Health and Safety KIDI, the questions from the scale referring to "Parenting" were treated as a separate measure for the purposes of this study. Items from this scale reflect cultural parenting beliefs about child rearing, and are considered distinct from factual statements about the health and safety of a young child. The reason for this being that parenting beliefs are more subjective and culturally bound, whereas health and safety constructs are more factually or medically based and have less cultural bias.

The parenting scale has a total of 15 items and included questions such as "baby girls are more fragile and sick more often, so they should be treated more carefully than boys" and "if you comfort your baby when they are crying you are spoiling them." Since there was more potential cultural bias in these questions and also less of a clear right versus wrong answer, the scale was changed from the original dichotomous coding to a Likert Scale as used by Hess et al. (2004). Such a modification would also avoid a possible 'yea-saying' bias seen in the Cambodian study (Naqvi et al., 2009). Participants were asked to rate their beliefs about a statement as either

"strongly disagree," "slightly disagree," "slightly agree" "strongly agree" which were assigned point values from (1) to (4). There were a total of 15 questions, with a possible total score of 60. Initial analysis using 33 U.S. mothers resulted in an internal consistency rating of .697. Based on low reliability result of .063 from the Tanzanian pilot sample it was hypothesized that this measure would not be reliable with this sample either, largely because of the cultural bias in the questions and the large number of items which were reverse coded. As expected, reliability results for the main sample were low overall. The questionnaire was only administered to 100 participants due to time constraints of the three participants who did not respond. List wise deletion methods were employed for missing data in the reliability analysis procedure. Table 12 summarizes the reliability results with the whole sample and study sub-samples.

Table 12

Summary Statistics and Reliability Results for the Parenting KIDI

	M	SD	α	N
Whole sample	27.62	3.80	.08	100
Urban	27.73	3.92	.18	46
Rural	39.00	4.30	-.09	54
Non-id	27.69	3.91	.14	76
Id	38.25	4.19	-.12	24

Maternal self-efficacy (MSE) scale.

This 10-item scale was developed by Teti and Gelfand (1991) to measure parenting self-efficacy in accordance with the definition by Bandura (1997). All items were measured on a 4-point Likert scale ranging from strongly disagree (1) to strongly agree (4). The first nine items are task specific and address self-efficacy in terms of infant care, addressing the infant's needs,

wants, and engagement in daily routines of infant care. The last item is a global self-efficacy rating of overall parenting. The total possible score on this measure is 40. Results from use of the measure with a Cambodian sample yielded relatively good internal consistency (.731). Results from the pilot data of 16 participants in Tanzania indicated internal consistency of .688 and similar rates were seen in the main sample. Again, list wise deletion was employed on missing data and Table 13 summarizes the reliability results.

Table 13

Summary Statistics and Reliability Results for the Maternal-Self Efficacy Scale

	M	SD	α	N
Whole sample	30.78	5.35	.76	103
Urban	33.57	3.59	.65	49
Rural	28.26	5.45	.71	54
Non-id	30.69	5.21	.74	78
Id	31.08	5.87	.83	24

Parenting tasks checklist.

The need to measure self-efficacy in terms of specific tasks in addition to more general approaches is highlighted in the literature (Coleman & Karraker, 2003; Sanders & Woolley, 2005). The parenting tasks checklist was used in this study as it focuses on parenting skills beyond those related to just caring for an infant, as is the case with the MSE (Coleman & Karraker, 2003), and is skill specific. According to Sanders & Wooley (2005), this measure looks at task-specific parenting self-efficacy, with two separate subscales. The first, behavioral self-efficacy, relates to how effective parents feel about controlling a child's difficult behavior. The second, setting self-efficacy, relates to caring for the child in normal routines (waking the

child, getting the child ready to go out). Participants are asked to rate their relative feelings of self-efficacy on a scale of 0-100. Total possible scores for each subscale were 140. Reliability reported for both subscales is high and above .90. Results from the pilot data were positive with ratings at .983 for the behavioral subscale and .922 for the setting subscale. For the main study sample reliability ratings were slightly lower but still within acceptable limits. List wise deletion methods were again employed for missing data values and Table 14 summarizes the reliability results for the whole sample and study sub-samples for both parts of the measure.

Table 14

Summary Statistics and Reliability Results for the Parenting Tasks Checklist

	M	SD	α	N
Whole sample				
Behavioral	91.21	29.21	.89	103
Setting	93.69	19.24	.70	103
Urban				
Behavioral	103.20	31.46	.92	49
Setting	101.45	19.69	.77	49
Rural				
Behavioral	80.33	22.14	.78	54
Setting	86.63	15.96	.56	54
Non-id				
Behavioral	90.65	27.30	.87	78
Setting	92.80	18.74	.68	78
Id				
Behavioral	93.96	35.08	.93	25
Setting	96.44	20.89	.76	25

Parent modernity scale.

This scale was developed by Schaefer and Edgerton (1985) and measures parental beliefs as either traditional or progressive. It has been used both by the National Institute of Child Health and Development (U.S. Department of Health and Human Services,

National Institutes of Health, National Institute of Child Health and Human Development, 2006), and by Keels (2009). It is a 30-item measure of different parental beliefs, defined as either progressive (democratic) or traditional (authoritarian). According to Keels (2009), "the progressive subscale measures the extent to which parents believe that children learn actively and should be treated as individuals" (p. 387). This includes items such as "children should have the right to express their own point of view and should be allowed to express it." The second construct in the measure, traditional beliefs, "measures the extent to which parents believe that children should follow adult directives rather than be self-directed" (p. 387). An example from the traditional subscale includes "the most important thing to teach children is absolute obedience to whoever is in authority." Participants rate their beliefs on a Likert scale ranging from "strongly disagree" to "strongly agree." The Progressive beliefs index contains eight items and the traditional beliefs index contains 22. Totals in each area are calculated by adding up the responses with values ranging from (1) "strongly disagree" to (5) "strongly agree." A greater number of items in the traditional authoritarian scale had higher correlation to parent behavioral competence in the validation study. This resulted in the uneven number of items in the two subscales of the measure (Schaefer and Edgerton, 1985). Results from the pilot data indicated adequate internal consistency results, with reliability for the progressive beliefs index being .589, and .851 for the traditional scale. Scale means from the pilot data also suggested that Tanzanian mothers tended to endorse more traditional beliefs than were reported by mothers from the U.S. Department of Health and Human Services et al. (2006) sample. The sample mean for respondents from the pilot sample was 91.06 compared to 56.12 for the American sample.

Data from respondents from this study indicated a low internal consistency result on the progressive scale for the whole sample and sub-samples. Reliability results for the traditional

beliefs scale were higher in all the samples and sub-samples so only this scale was used in further statistical analysis. Table 15 presents the summary statistics for both the traditional and progressive scales of the measure for the whole study sample and sub-samples.

Table 15

Summary Statistics and Reliability Results for the Parent Modernity Scale

	M	SD	α	N
Whole sample				
Progressive	23.73	3.72	.14	103
Traditional	86.60	9.76	.62	103
Urban				
Progressive	24.75	3.62	.31	49
Traditional	89.08	9.21	.62	49
Rural				
Progressive	22.81	3.61	-.08	54
Traditional	84.35	9.75	.61	54
Non-id				
Progressive	23.33	3.97	.21	78
Traditional	86.28	9.89	.63	78
Id				
Progressive	24.96	2.47	-.62	25
Traditional	87.60	9.40	.61	25

Explanatory questions regarding illness/disability.

In order to further understand the beliefs of mothers with children with a developmental delay, the 25 mothers of children with identified delays were asked questions about their understanding of the disability. These questions are based on work by Kleinman, (as cited in Fadiman, 1997). Examples of these questions included "what do you call the problem?" "What do you fear most about the sickness?" and "What kinds of treatments should your child receive?"

Child Outcome Measure

The Battelle developmental inventory-second edition (BDI-2).

The BDI-2 is an individually administered assessment tool which can be used with children from birth to seven years, 11 months (Newborg, 2005). The full battery includes 450 items which measure child development in the five key domain areas of adaptive functioning, personal/social development, communication, motor skills, and cognitive development. The screening test used for this study is comprised of 100 of the 450 items and is divided into the same five category areas. The screening measures provides an overall age equivalent as well as at-risk scores in each of the domains based on one, one and a half, or two standard deviations below the mean. Questions are both in an interview format for parents and test items for direct child assessment.

The BDI-2 was used in the study in Cambodia with good results. It highlighted the strengths and weaknesses of children in the different developmental areas and highlighted areas which may require more in depth assessment. The combination of both parent interview and child assessment allowed for parent input if the child was not cooperative.

The screening measure was piloted on seven children in Tanzania aged between 18 months and six years, four months. All children presented as typically developing, based on

informal assessment by the author. Results from the initial screening indicated potential limitations in the items assessing cognitive skills. All of the children scored one standard deviation below the standardization mean. One of the main reasons for this was because none of the children were able to name their colors. Informal testing indicated that they were able to count three and five colored blocks. Consequently, the test in the main study substituted a counting item for the color naming. Skills in the cognitive domain assess pre-academic readiness (Newborg, 2005), so replacement of color recognition with counting was still expected to capture skills in this area, and was thought to be more reflective of the knowledge level of children below the age of seven years in Tanzania.

Changes were also made in the communication items because of differences encountered during translation of items. One item asks children to look at a picture of one box and then two boxes, to assess knowledge of plural terms. In Kiswahili, however, the word for box, "chombo," does not have a plural term. This item was replaced with a picture of a cup, which does have a plural term (one cup is "kikome," two cups are "vikombe.") Changes were also made to pictures of houses and food to make these items more culturally appropriate. The measure was not translated ahead of time and instead, the author read each item, which was then translated. This ensured that the author could present each item at a pace that was understandable to the parent, or the child, and ensured that the research assistant translated exactly what the evaluator said. Since the author had technical understanding of the skill area being assessed for each question she was qualified to make wording changes where appropriate, without affecting the skill being measured on the test.

For this study, an age difference score in months was obtained for each child. This was calculated by subtracting the chronological age of the child from the child's calculated age

equivalence on the test. The age equivalence was obtained from converting the sum of the raw scores in each of the five domain areas into the age equivalence value from the published norms. The age difference scores could range theoretically between +95 months (child is 0 months in age, but scores an age equivalence of seven years, 11 months on the test) to -95 months (child is seven years, 11 months and has an age equivalence score of 0). Children with age difference values of -12 months were considered as at-risk for developmental delay based on the results of this test alone. This 12 month cut-off is based on the cut-off currently used by New York State in determining eligibility for preschool special education services (New York City Department of Education, 2001).

Results from this study indicated a range of age difference scores from -78 months to +16 months, with a sample mean of -11.01 (SD=16.68). Of note however, was that the majority of the children's age difference scores were in the negative range, resulting in a negative skew for this measure. Seventy-five percent of the children in the sample achieved an age difference score below 0, with the central tendency of the measure being -6 months. This indicates that most of the children in the sample scored slightly below their expected age equivalence. However, given the scoring framework of this measure a tendency toward a negative result is more expected than a skew in the opposite direction. In a random sample of children, it is unlikely that many would demonstrate global developmental skills significantly above their age level with most demonstrating age appropriate skills. However when a sample of children with development delays is also included, it is expected that these children would demonstrate significant skill deficits and score well below their age level. The issue relating to this skew is addressed further in the results section.

Maternal intervention.

A secondary outcome measure which is used both quantitatively and descriptively in this study is the number of interventions pursued by the mother. Structured analysis of mother-child interaction used in other research was not possible in this study. However, the number of interventions sought by the mother provided some further information regarding parent responsiveness to the child's development. Any mother who indicated that she was concerned about their child's development was asked what if any interventions she had pursued. These interventions were listed in the child development history form.

Procedures

Pilot study.

As stated previously a pilot study was conducted during the months of April 2010. Pilot data were gathered at a government health center in Dar es Salaam. Mothers were approached by medical staff at the health center who had agreed to provide assistance for this portion of the project. Mothers who agreed to participate were read informed consent by the staff member, signed the consent form, and responded to questions from the questionnaires. The six children were assessed separately also at the health center, with mothers also consenting to their children participating. Assent was sought from children over the age of three years. All mothers were compensated 2,500 Tanzanian schillings (equivalent to $2) for their own participation or for that of their child. All were provided a copy of the consent form.

Main study.

Data were gathered during the months of July and August 2010 in Tanzania. The author partnered with staff from *Save the Children*, and also with CCBRT, a non-government organization that provides disability and rehabilitation services to adults and children in the

country. Data collection was conducted both at a government health center and a government hospital in the commercial capital and largest city of the country, Dar es Salaam. Participants were also recruited from one of 12 rural villages in the Lindi and Kilwa provinces of Tanzania. In Dar es Salaam additional recruitment and evaluation of children with identified disabilities was conducted at one of four mobile support units operated by CCBRT. These support units provided physical and occupational therapy to up to 50 patients and were located on-site at churches or schools in the wider Dar es Salaam metro area. In Dar es Salaam, the author traveled to the health center or hospital with one of two locally based research assistants. The mothers and children were assessed on-site in a room provided by the hospital staff. Both research assistants were fluent in both spoken and written English and had been provided with a two-hour training on the parent measures. In addition one of the research assistants had reviewed the measures in both English and Kiswahili prior to the training and concurred with the accuracy of the translation. Interviews and child assessments at the CCBRT support units were conducted on mats on floors where the children were seated while waiting for their therapy session.

In Lindi, the author travelled to the different villages in both Lindi and Kilwa provinces with staff from the *Save the Children* office. Interviews and testing took place at health dispensaries and small health clinics. In the villages, the author worked with two research assistants, one who was fluent in English, and one who was able to read the translated Kiswahili questionnaires, but required some assistance in being able to translate parent responses on the developmental measure. Both were provided with the two-hour training on the parent measure, and one of the research assistants (the one with less fluent English) also spent a morning observing one interview protocol and assessment session. Interviews were conducted in small rooms at the health centers and dispensaries, or on quiet, open porch areas at the back of the

clinics. Additional permission to conduct the research at all government facilities was sought and granted through the District Medical Office of the municipality in which the research was being conducted.

Actual procedures were similar to the study conducted by the author in Cambodia (Naqvi et al., 2009). At the hospital, health centers, and dispensaries, mothers were approached by either the author with a research assistant, or by the research assistant alone and asked if they wanted to participate. All participants were read the informed consent form and acknowledged their agreement with either a signature or thumbprint. Participants from Dar es Salaam were compensated 5000 Tanzanian shillings (equivalent of $3) for their participation in the study. In Lindi/Kilwa provinces, participants were compensated 2500 schillings in Lindi due to the difference in cost of goods in the two areas. All children were provided with a small toy as a reward for participating. In addition, many of the children received toys during the course of the assessment as a way of encouraging their engagement with the assessment process.

All participants were provided with a copy of the consent form; in addition, assent was sought from children over the age of three years. Parent interviews were conducted in Kiswahili by research assistants who read the mothers the questions from the questionnaires and recorded their answers. The child assessment was conducted by the author who read the questions in English which then were translated on-site by the research assistant. The parent interview took between 45 minutes to one hour to complete, depending on the participants. The child interview took between 30 minutes to one hour, depending on the age of the child and the responses provided by the mother. At the two health facilities in Dar es Salaam, the author interviewed one parent at a time with the assistance of only one research assistant. At the CCBRT mobile support

units, and at the health centers in Lindi, the author conducted assessments and interviews, working with two research assistants simultaneously.

Chapter 4- Results

This main aim of this study was to explore the concepts of parent knowledge and parent beliefs about child development in a sample of mothers from Tanzania. This was done by looking at quantitative results from the different parent measures in the study and comparing these to a measure of child developmental outcome. Another aim of the study was to explore the findings of several of the parenting measures from a descriptive perspective in order to learn more about parenting beliefs of mothers in this part of the world.

This chapter provides results for the eight hypotheses outlined at the end of chapter 2 as they relate to parent beliefs and child developmental outcome. The chapter begins with descriptive results of the control and study variables. The sample was either analyzed as a whole, or separated out into two subsamples, mothers of children identified with a disability and mothers of children not identified with a disability.

Descriptive Statistics of Study Measures

Table 16 presents summary statistics of the whole for the control variables, the child development outcome measure, and those parent measures deemed sufficiently reliable to be used for further analysis.

Table 16

Summary Statistics, Codes and Proportions for Study and Control Variables (Whole Sample)

Variable	Code	%	M	SD
Control				
Monthly maternal income (Tanzanian Schilling)			35,864	52,672
Maternal education (years)			5.93	3.43
Maternal age			28.60	6.99
Child gender	Female=1	50.5		
Location of residence	Rural=1	52.4		
Location of child birth	Home=1	13.6		
Disability	Id=1	24.3		
Study				
Battelle age score difference			-10.70	16.57
IHS Battelle age score difference[2]			-1.95	2.08
Health and Safety KIDI			8.11	2.12
Maternal Self-Efficacy Scale			30.78	5.35
Parenting Tasks Checklist (Behavioral)			91.21	29.21
Parenting Tasks Checklist (Setting)			93.69	19.24
Parent Modernity Scale (Traditional Beliefs)			86.60	9.76

Tables 17 and 18 present the summary statistics for the non-identified and identified disability samples respectively. These samples were divided due to an oversampling of children

[2] IHS refers to inverse hyperbolic sign a mathematical transformation of the original Battelle age score difference values. This variable was calculated in order to correct for the negative skew seen in the children's scores on this measure (Burbidge, Magee, Robb, 1988)

with an identified disability within the urban sample. Those children whose developmental age score difference was lower than 12 months and whose parents did not suspect a developmental disability were included in the main sample, as these cases were deemed to be naturally occurring within the population. The total sample size for the non-identified disability sample was 78. Of the 25 children previously identified with developmental delays, 19 were removed from the urban sample, and six were removed from the rural sample.

Table 17

Summary Statistics, Codes and Proportions for Study and Control Variables (Non-Identified Disability Sample)

Variable	Code	%	M	SD
Control				
Monthly maternal income (Tanzanian Schilling)			35,435	57,089
Maternal education (years)			6.06	3.40
Maternal age			28.23	6.44
Child gender	Female=1	55.1		
Location of residence	Rural=1	61.5		
Location of child birth	Home=1	11.5		
Study				
Battelle age score difference			-4.67	8.47
IHS Battelle age score difference			-1.32	1.99
Health and Safety KIDI			8.03	2.11
Maternal Self-Efficacy Scale			30.69	5.21
Parenting Tasks Checklist (Behavioral)			90.65	27.30
Parenting Tasks Checklist (Setting)			92.80	18.74
Parent Modernity Scale (Traditional Beliefs)			86.28	9.89

Note. N=78

Table 18

Summary Statistics, Codes and Proportions for Study and Control Variables (Identified Disability Sample)

Variable	Code	%	M	SD
Control				
Maternal income (Tanzanian Schilling)			37,200	36497.72
Maternal education (years)			5.52	3.55
Maternal age			29.76	8.54
Child gender	Female=1	36		
Location of residence	Rural=1	24		
Location of child birth	Home=1	20		
Study				
Battelle age score difference			-30.84	20.30
IHS Battelle age score difference			-3.896	.714
Health and Safety KIDI			8.40	2.14
Maternal Self-Efficacy Scale			31.08	5.87
Parenting Tasks Checklist (Behavioral)			93.96	35.08
Parenting Tasks Checklist (Setting)			96.44	20.89
Parent Modernity Scale (Traditional Beliefs)			87.60	9.40

Note. N=25

Analysis of Parent Belief Measures

The first hypothesis of the study considered the relationship between maternal education and scores on the parent knowledge, and belief measures for the whole sample. Specifically, higher levels of maternal education were hypothesized to yield higher scores on all of the parent

measures. Only the Health and Safety KIDI was used as a measure of parent knowledge for this analysis, however, as the reliability rating of the Milestone KIDI was too low. All three measures relating specifically to self-efficacy beliefs were analyzed, as reliability of these measures was satisfactory. Only the traditional beliefs section from the parent modernity scale was included, due to the low reliability of the progressive beliefs section, and the questionable applicability of many items in that scale to the Tanzanian population. The issue of oversampling of children with identified developmental disability was addressed by adding an additional control variable labeled, "id disability/non id" in each analysis.

Table 19 presents the correlation results between the control variables and the parent measures. Results indicate that maternal education is significantly correlated with scores on the Health and Safety KIDI ($r=.31$, $p<.01$), the Maternal Self-Efficacy measure ($r=.37$, $p<.05$), and the Parenting Tasks Checklist (setting) ($r= .29$, $p<.01$). Separate regression analyses were conducted to examine if maternal education predicted higher scores in each of these measures and the Parent Modernity Scale, independently of other control variables. Results from these analyses are presented in Tables 20 to 24.

Table 19

Correlations between Health and Safety KIDI, Parent Belief Measures and Control Variables (Whole Sample)

	1	2	3	4	5	6	7	8	9	10	11	12
Health and Safety KIDI	-	.23*	.48**	.44**	.27*	.23	.31**	-.05	.04	-.46**	-.10	.08
Maternal Self-Efficacy		-	.39**	.35**	-.13	.29**	.37**	-.17	.00	-.42**	-.13	.09
Parenting Tasks (behavioral)			-	.74**	.10	.37**	.19	-.21*	.08	-.37**	.12	.04
Parenting Tasks (setting)				-	.18	.35**	.29**	-.08	.10	-.39**	.06	.08
Parent Modernity (traditional beliefs)					-	.13	-.06	.02	-.02	-.14	.00	-.02
Maternal income						-	.41**	-.10	.09	-.39**	.03	.01
Maternal education							-	-.11	-.03	-.30**	-.20*	-.07
Maternal age								-	-.15	.17	-.15	.10
Gender									-	.07	.11	-.16
Location of residence										-	.15	-.32**
Home/Hospital birth											-	-.11
Identified disability/ non-identified												-

*p <.05; **p <.01

Table 20

Predictors of Health and Safety KIDI Scores (Whole Sample)

Variable	B	SEB	β	t	p
Constant	7.93***	1.00		7.95	<.001
Maternal income	-.00	.00	-.02	-.24	.81
Maternal education	.11	.06	.18	1.78	.08
Maternal age	.02	.03	.05	.55	.58
Child gender	.30	.39	.07	.78	.44
Location of residence	-1.90***	.46	-.45	-4.11	<.001
Location of child's birth	.04	.59	.01	.07	.95
Id disability/non id	-.24	.49	-.05	-.50	.62
R^2	.25				
F(7, 95)	4.61				
R^2(adjusted)	.20				

***p <.001

The results in Table 20 show that location of residence significantly predicted scores on the Health and Safety KIDI, as mothers from rural areas scored lower on the measure. Maternal education did not significantly predict scores on the Health and Safety KIDI measure when controlling for other demographic variables, despite the significant correlation between these two variables presented in Table 19.

Table 21

Predictors of Maternal Self-Efficacy Scores (Whole Sample)

Variable		B	SEB	β	t	p
Constant		32.96***	2.18		15.05	<.001
Maternal income		.00	.01	.04	.45	.65
Maternal education		.58***	.14	.38	4.23	<.001
Maternal age		-.11	.06	-.14	-1.67	.10
Child gender		-.63	.86	-.06	-.74	.46
Location of residence		-3.09**	1.03	-.30	-3.01	.003
Location of child's birth		-3.08*	1.31	-.02	-2.34	.02
Id disability/non id		-.20	1.09	.-.02	-.19	.85
R^2	.45					
F(7, 86)	.00					
R^2(adjusted)	.40					

*p<.05; **p <.01; ***p <.001

The results presented in Table 21 indicate that maternal education and location of residence and location of a child's birth significantly predicted scores on the maternal self-efficacy measure independent of control variables. Specifically, higher reported levels of education and urban residence and birth in a hospital/health clinic contributed to higher scores on this self-efficacy measure. As reported in Table 19, the first two variables were significantly correlated with scores on the Maternal Self-Efficacy Scale.

Table 22

Predictors of Parenting Tasks Checklist (Behavioral) Scores (Whole Sample)

Variable		B	SEB	B	t	p
Constant		110.11***	13.34		8.25	<.000
Maternal income		.13*	.06	.23	2.26	.03
Maternal education		.15	.84	.02	.18	.86
Maternal age		-.43	.38	-.10	-1.14	.26
Child gender		-.30	5.18	.01	-.06	.95
Location of residence		-21.45**	6.19	-.37	-3.47	.001
Location of child's birth		14.69	7.79	.18	1.89	.06
Id disability/non id		-7.46	6.53	.11	-1.14	.26
R^2	.29					
F(7, 94)	4.38					
R^2(adjusted)	.24					

*p<.05; **p <.01; ***p <.001

The results presented in Table 22 show that scores on the behavioral section of the Parenting Tasks Checklist were not predicted by maternal education levels. This was expected, as the correlation results presented previously in Table 19 did not indicate a significant relationship between education and scores on this measure (r=.19, p>.05). Income levels however, did predict higher scores on this measure. When controlling for other demographic variables, mothers with higher earnings, and mothers who lived in urban locations, provided higher self-ratings about their perceived ability in managing their children's difficult and non-compliant behavior.

The finding regarding urban residence was also reflected in regression results from the second part of the Parenting Tasks Checklist. Results presented in Table 23 indicate that when controlling for other demographic variables, mothers from an urban setting reported higher self-efficacy ratings about their skill at handling their child's difficult behavior whilst engaged in different tasks (going to the doctor; preparing meals). As with the behavioral portion of the Parenting Tasks Checklist, maternal education did not predict scores on the "setting" set of behavioral statements. This was despite the significant correlation (r= .29, p<.01) between scores on this measure and maternal education values as presented in Table 19.

Table 23

Predictors of Parenting Tasks Checklist (Setting) Scores (Whole Sample)

Variable	B	SEB	β	t	p
Constant	86.16***	9.15		9.42	<.001
Maternal income	.06	.04	.15	1.48	.14
Maternal education	.92	.58	.16	1.59	.12
Maternal age	.13	.26	.05	.51	.61
Child gender	3.40	3.55	.09	0.96	.34
Location of residence	-12.24**	4.23	-.32	-2.89	.005
Location of child's birth	8.25	5.37	.15	1.54	.13
Id disability/non id	-.81	4.47	-.02	-.18	.86
R^2	.23				
F(7, 95)	4.23				
R^2 (adjusted)	.18				

**p <.01; ***p <.001

Table 24 illustrates the significant predictors of scores on the Traditional Scale of the Parent Modernity Scale. Location of residence significantly predicted higher scores on this measure when controlling for other demographic variables. This finding is contrary to results from the correlation results in Table 19, in which there was no significant correlation between traditional beliefs and location of residence (r=-.14). Maternal education levels were not predictive of scores on the Parent Modernity Scale either. Results from Table 19 supports this as the relationship between this scale and maternal education was not significant (r=-.06).

Table 24

Predictors of Parent Modernity Scale (Traditional Belief) Scores (Whole Sample)

Variable	B	SEB	β	t	p
Constant	87.72***	4.67		18.77	<.000
Maternal income	-.01	.02	-.05	-0.41	.69
Maternal education	-.16	.29	-.06	-0.54	.59
Maternal age	.17	.13	.13	1.29	.20
Child gender	1.07	1.84	.06	0.58	.56
Location of residence	-8.04***	2.18	-.44	-3.68	<.001
Location of child's birth	2.22	2.79	.08	0.80	.43
Id disability/non id	-2.69	2.32	-.13	-1.16	.25
R^2	.14				
F(7, 88)	2.12				
R^2 (adjusted)	.08				

***p <.001

In sum, H01 appears to be only partially supported by the results from this study. Only scores on the MSE scale were predicted by mothers' level of education when controlling for

other demographic variables. Maternal education did not predict scores on the Health and Safety KIDI, either sections of the Parenting Tasks Checklist, or results from the traditional scale of the Parent Modernity Scale. What did emerge from the findings however, was that urban residence significantly predicted scores on all the parent measures.

The second hypothesis for this study looked at the correlation between scores on the Parent Modernity Scale (Traditional Beliefs) compared to scores from the MSE scale and the Parenting Tasks Checklist. Based on correlation results from Table 19, there was no significant correlation between the Traditional Beliefs and any of the three self-efficacy measures. This was further illustrated by the partial correlation results presented in Table 25. The only significant relationships were between the two subscales of the Parenting Task checklist ($r=.660$, $p<.01$) and between the Parenting Task Checklist, behavioral items and the Maternal Self Efficacy Scale ($r=.219$, $p<.05$). Based on the results of this study, H02 was not supported.

Table 25

Partial Correlations of Parent Modernity Scale (Traditional Beliefs) and Self-Efficacy Measures

	1	2	3	4
Parent modernity	-	-.19	-.05	.16
Maternal self-efficacy		-	.22*	.19
Parenting tasks (behavioral)			-	.66*
Parenting tasks (setting)				-

Note. Partial correlation run by controlling for demographic variables.
*p <.05; **p <.01

Development of Self-Efficacy

The third hypothesis examined the relationship between the caregiver's child-care experience and self-efficacy. The "child-care experience" derived total score from the COPE was

entered into a correlation analysis with all scores from the parent self-efficacy measures. Results presented in Table 26 indicate that all results on the self-efficacy measures scores are significantly associated with scores from the COPE.

Table 26

Correlations between the COPE and Parent Self-Efficacy Measures (Whole Sample).

	1	2	3	4
COPE	-	.35**	.34**	.32**
MSE		-	.40**	.33*
Parenting Tasks (behavioral)			-	.72**
Parenting Tasks (setting)				-

*p <.05; **p <.01

This was further supported when controlling for demographic variables as demonstrated in the partial correlation results in Table 27. Overall results presented in both Tables 26 and 27 support H03 that greater child care experience is correlated significantly with higher estimates of self-efficacy in Tanzanian mothers in this sample, even when controlling for the demographic variables of the study.

Table 27

Partial Correlations between the COPE and Parent Self-Efficacy Measures (Whole Sample).

	1	2	3	4
COPE	-	.31**	.34**	.34**
MSE		-	.37**	.17
Parenting Tasks (behavioral)			-	.72**
Parenting Tasks (setting)				-

Note. Partial correlation run by controlling for demographic variables
**p <.01

Profile analysis

The fourth and fifth hypotheses of this study investigated the concept of naïve confidence (Conrad et al, 1992). Mothers who had low scores on either the Health and Safety KIDI or the Milestone KIDI and higher scores on MSE measure were hypothesized to have children scoring lower on the child developmental measure, and to be less likely to seek out support services. It was not possible to test H04 as the Milestone KIDI was not reliable with this population of mothers. In order to explore H03, mothers scoring below one standard deviation of the sample mean on the Health and Safety KIDI were parceled out for further analysis. Given that child outcome was one of the study variables in this hypothesis, and the oversampling of children with disabilities in the urban sample, the samples were divided into the "non-identified" and "identified" sub-samples.

In the non-identified disability sub-sample, eight mothers attained a score below 5.92 on the Health and Safety KIDI. Only one mother had a child who scored below one standard deviation from the mean on the child development measure (below a value of -13.14). The self-efficacy score of 30 however was almost identical to the mean value of 30.69.

In the identified disability sample, four mothers had Health and Safety KIDI scores one standard deviation below the mean (below a value of 6.26). Only one of these mothers had a child who scored below one standard deviation below the mean on the child development measure (below a score of -51.14). This mother had a score of 34 which falls within one standard deviation range from the mean of 31.08 (SD=5.87). Based on these results, H03 was not supported with either the identified disability or non-identified disability sub-samples in this study.

Combined Parent Belief Measure and Child Developmental Outcome

The sixth study hypothesis investigated whether a combined parent belief measure would have greater reliability than the reliability of the individual measures. This was assessed by creating a combined measure which included both parent knowledge and beliefs. A combined parent belief measure was thought to tap into the overarching construct of parental beliefs and therefore be as reliable, or more so than measures which assessed aspects of parent beliefs separately. In order to combine the different measures, scores from the Health and Safety, Parent Modernity (Traditional Beliefs), MSE scale and Parenting Tasks Checklist were first converted into z-scores and then added across each subject. Missing data on the MSE scale, and the Parent Modernity Scale meant that a total of 16 cases had to be removed from analysis of the combined parent belief measure[3].

Reliability result for the combined parent belief measure for responses from 87 mothers was .758. This result lends partial support to H06 as this rating is higher than the result of.549

[3] To ensure that there was no bias in the missing data of the MSE and Parent Modernity measures, a series of T-tests were conducted with the demographic variables. Significantly more responses were missing from the two measures in the responses provided by mothers from the rural sample and for those mothers who reported lower levels of income (income and location of residence are highly correlated). The significant difference between these demographic variables is attributed to administrator error on the part of the research assistants who interviewed mothers in the rural location. Both research assistants were relatively in-experienced in data collection. The missing results are not believed to be related to trait characteristics in the mothers.

from the Health and Safety KIDI (whole sample), higher than .703 ("setting" subscale of the Parenting Task Checklist, whole sample), and higher than .623 ("Traditional Beliefs" subscale of the Parent Modernity Scale, whole sample). Only reliability ratings from the MSE scale and the "behavioral" subscale of the Parenting Tasks Checklist were higher (α=. 763 and α=.887 respectively, whole sample). Reliability results among the urban and rural subsamples were lower however. The alpha value for the urban sample was .648 (N=45) and .537 for the rural sample (N=42). This may be related to the comparatively smaller sizes of the subsamples compared to the whole sample.

The seventh hypothesis in this study was developed based on the findings from the pilot study in Cambodia and predicted that children born outside of a health facility and to older mothers were more likely to score lower on the child developmental measure. As with H04 and H05, the sample was divided into the two subsamples of non-identified disability and identified disability, as scores on the child developmental assessment were used as the outcome variable. H08 was also related to overall child developmental outcome and hypothesized that higher scores on the combined parent belief measure would predict better scores on the child developmental outcome measure. Table 28 presents correlation results between the control variables, scores on the combined parent belief measure, and the IHS converted scores on the child development measure in the non-identified disability sub-sample.

Table 28

Correlations between Control Variables and IHS Score Difference (Non-Identified Disability Sample)

	1	2	3	4	5	6	7	8
IHS age score difference	-	.21	.29*	.13	-.12	.11	-.33	-.05
Combined parent belief measure		-	.43**	.45**	-.03	-.18	-.65**	-.23
Income			-	.37**	-.14	.07	-.39**	.06
Maternal education				-	.04	-.04	-.29*	-.20
Maternal age					-	-.06	.19	-.09
Gender						-	.07	.12
Location of residence							-	.20
Location of child birth								-

*p <.05; **p <.01

Results from this correlation table do not suggest support for H07 or for H08. There is no significant association between the IHS scores and children's birth location (r=.038 p>.05), nor parental age (r=-.125, p>.05), and no significant relationship between scores on the combined parent belief measure and IHS (r= .21, p>.05). However, maternal income was significantly correlated with IHS scores (r=.29, p>.05), as mothers with children with higher scores on the developmental measure had higher levels of employment with higher calculated incomes. In addition, higher income and higher levels of education were positively correlated with scores on the combined parental belief measure (r=.45, p>.01; r=.43, p>.01). Coming from an urban location was also correlated with higher scores on the combined parent belief measure (r=-.65, P<.01).

The results of regression analyses presented in Tables 29 and 30 show that neither control variables nor scores on the combined parent belief measure independently predict IHS age scores at the .05 level among the non-id sample.

Table 29

Control Variable Predictors of IHS Age Score Difference (Non-Identified Disability Sample)

Variable		B	SEB	β	t	p
Constant		-1.06	1.18		-.90	.37
Maternal income		.01	.01	.15	1.16	.25
Maternal education		.01	.07	.01	.10	.93
Maternal age		-.01	.04	-.04	.33	.74
Child gender		.55	.45	.14	1.21	.23
Location of residence		-.80	.53	-.20	-1.52	.14
Location of child's birth		.30	.74	.05	.41	.69
R^2	.11					
F(6, 71)	1.52					
R^2 (Adjusted)	.04					

Table 30

Control Variables and Scores on the Combined Parent Belief Measure as Predictors of IHS Age Score Difference (Non-Identified Disability Sample)

Variable		B	SEB	β	t	p
Constant		-.90	1.26		-.72	.48
Combined parent belief measure		-.021	.11	-.04	-.19	.85
Maternal income		.01	.00	.19	1.29	.20
Maternal education		.00	.08	.01	.04	.97
Maternal age		-.01	.04	-.04	-.29	.77
Child gender		.44	.51	.11	.88	.38
Location of residence		-1.10	.68	-.27	-1.62	.11
Location of child's birth		-.18	.85	-.03	-.21	.83
R^2	.15					
F(7, 57)	1.49					
R^2 (Adjusted)	.050					

Correlation and regression analyses in the identified disability sample also refuted H07 and H08. Results in Table 31 illustrate that only child's gender was associated with scores on the child developmental measure ($r = .598$ $p < .01$). Being female was significantly correlated with the less negative age difference scores on the developmental measure (i.e. girls performed better on the child outcome measure). Maternal age, location of the child's birth, and scores on the

combined parent belief measure were not significantly correlated with results on the child developmental outcome measure.

Table 31

Correlations between Control Variables and IHS Age Score Difference (Identified Disability Sample)

	1	2	3	4	5	6	7	8
IHS age score difference	-	.34	.01	.17	-.32	.65**	-.07	-.02
Combined parent belief measure		-	.34	.41	-.38	.53**	-.67**	.25
Maternal income			-	.75**	.08	.26	-.44*	-.34
Maternal education				-	-.29	.16	-.50*	-.20
Maternal Age					-	-.26	.21	-.29
Gender						-	-.23	-.10
Location of residence							-	.22
Location of child's birth								-

*p <.05; **p <.01

When the different control variables were entered into two regression models (see Table 32 and 33), gender was the only stable predictor of IHS adjusted scores. Those girls in the identified disability sample scored significantly better on the developmental measure even when controlling for demographic variables (Table 32), and when accounting for scores on combined parent belief measure (Table 33).

Table 32

Predictors of IHS Age Score Difference (Identified Disability Sample)

Variable		B	SEB	β	t	p
Constant		-4.06***	.75		-5.38	<.001
Maternal income		-.01	.01	-.30	-.97	.34
Maternal education		.06	.07	.30	.94	.36
Maternal age		.01	.02	-.13	-.60	.56
Child gender		.97**	.29	.66	3.32	<.001
Location of residence		.31	.35	.19	.91	.37
Location of child's birth		-.24	.34	-.14	-.72	.48
R^2	.46					
F(6, 18)	2.51					
R^2(Adjusted)	.27					

*$p<.05$; **p <.01; ***p <.001

Table 33

Control Variables and Scores on the Combined Parent Belief Measure as Predictors of IHS Age Score Difference (Identified Disability sample)

Variable		B	SEB	β	t	p
Constant		-4.48***	.72		-6.21	<.001
Combined parent belief measure		.044	.07	.24	.68	.51
Maternal income		-.01	.01	-.59	-1.88	.08
Maternal education		.10	.06	.53	1.63	.13
Maternal age		.00	.02	.01	.06	.95
Child gender		.95*	.32	.68	2.90	.01
Location of residence		.50	.49	.31	1.02	.33
Location of child's birth		-.39	.40	-.24	-.96	.35
R^2	.77					
F(7, 14)	2.90					
R^2(Adjusted)	.59					

*p <.05; ***p <.001

Based on the results from the non-identified and identified disability subsamples, neither parent age, location of a child's birth, nor scores on the parent belief measure predicted scores on the child outcome measure. Thus, H07 and H08 were not supported.

Descriptive Analysis of the Parent Measures

Yea-saying bias.

In order to explore the possibility of a yea-saying bias in the different measures in this study, the responses of mothers from the Health and Safety KIDI, Parenting KIDI and Milestone KIDI were analyzed. These were the same measures used in the pilot study in Cambodia in which a yea-saying bias was found. Both the Health and Safety KIDI and the Milestone KIDI used a dichotomous scoring measure, with "1" for correct and "0" for incorrect. On the Health and Safety KIDI, mothers who endorsed the option "not sure" were scored as having an incorrect response.

On the Health and Safety KIDI, seven out of the total 13 questions called for an "agree" response and six called for a "disagree response." As stated previously, question 8 was removed from the analysis as it asked mothers about the use of formula milk for feeding infants. Table 34 presents the questions to which 50% or more of mothers from the whole sample responded "agree."

Table 34

Questions at least 50% of Participants Responded "Agree" to on the Health and Safety KIDI (Whole Sample)

Question	Key-word	N	Correct response
1	Baby requires doctor visit every few months in 1st year	80	Agree
2	Ok to feed baby small foods	87	Disagree
3	Close to baby when in water	94	Agree
4	Vaccine shots can wait till after 1st year	77	Disagree
5	Baby with colic can cry for 20-30 mins.	78	Agree
7	Introduce new foods one by one	60	Agree
9	Give sugar water when baby has upset stomach	66	Agree
11	Frequent cause of accidents in 1 year olds is heavy objects falling on them	75	Agree
12	Best way to bring down fever is by giving the baby paracetemol drops	99	Agree
14	Putting extra clothes on the baby helps bring down fever	54	Disagree

Three out of the six questions that that called for a "disagree" response were endorsed as "agree" by at least 50% of mothers in the whole sample. This same pattern was consistent across the urban/rural and non-identified/ identified disability samples, with the exception of question 14 in which less than 50% of mothers in the rural sample indicated "agree." All of the questions

which called for an "agree" response were endorsed by at least 50% of mothers in the whole sample and all the subsamples for the study. A yea-saying bias may be present on this measure as three out of six items calling for a "disagree" response were endorsed as "agree," by at least 50% of the sample, and all questions calling for an "agree" response were endorsed by at least 50% of the mothers.

On the Parenting KIDI, mothers were asked to respond to a series of questions regarding different parenting practices. The original dichotomous scoring of this measure was changed to the Likert format in order to capture variability in the responses of the mothers and make the measure more in line with other attitudinal scales. Response choices were based on a 4- point scale ranging from "strongly disagree" to "strongly agree." In order to examine a yea-saying bias in this measure, however, the categories of slightly and strongly were collapsed. In this measure, 11 out of a total of 15 called for a "disagree" response, and the total N of 100 was due to three mothers not being asked questions from this measure due to time constraints.

It is not clear from this analysis if responses support a yea-saying bias on this measure. Among the 10 questions that called for a "disagree" response, five items were endorsed as either "slightly" or "strongly" agree by at least 50% of the sample. Among the different sub-samples there was no clear bias towards marking an "agree" response. In the urban sub-sample only three items were endorsed as "agree" by 50% or more of the mothers; in the rural and non-identified disability sample, five items were endorsed as "agree;" and in the identified disability sample, only four items were endorsed as "agree" by at least 50% of the sample. Table 35 presents the response totals for the whole sample for questions calling for a "disagree" response that were endorsed as either "agree," or "disagree."

Table 35

Response Numbers for "Disagree" Questions on the Parenting KIDI (Whole Sample)

Question	Theme of Question	Number ("agree" responses)	Number ("disagree" responses)
1	Parents need only clothe baby for it to be ok	63	37
2	Baby doesn't need to be held	44	56
3	Ok to give baby candy after you punish them	54	46
5	2 year old who says no doing it intentionally	32	67
6	Fathers clumsy with babies	71	27
9	Holding babies causes them to become spoilt	8	91
10	Baby girls are more fragile	39	61
11	Teach your child not to hit by hitting back	38	60
12	Mood affects your discipline of child	58	40
15	Give the child a toy when it has a temper tantrum	64	34

Note. N=100

Results from Table 35 show that when the correct response was "disagree," a total of five questions were endorsed as "agree" by 50% or more of mothers and a total of five questions were endorsed as "disagree" by more than 50% of mothers. These results do not appear to lend support for a yea-saying bias. Table 36 presents the numbers of disagree versus agree responses by mothers in the whole sample for questions calling for an "agree" response on the Parenting KIDI.

In these results, 50% or more of the sample of mothers responded either strongly or slightly "disagree" on four out of five of the items. Not only is this counter indicative of a yea-saying bias, it also questions the applicability of the Parenting KIDI in its current form among this sample of Tanzanian mothers. This same pattern of response was seen across all sub-samples of the study.

Table 36

Response Numbers for "Agree" Questions on the Parenting KIDI (Whole Sample)

Question	Theme of Question	Number ("agree" responses)	Number ("disagree" responses)
4	Talking to baby helps development	88	12
7	Looking after the baby is overwhelming	38	62
8	Some mothers don't get involved until baby starts to respond	39	60
13	Put things out of baby's reach to stop them playing with them	45	53
14	Best way to deal with temper tantrums is to ignore	19	79

Note. N=100

On the Milestone KIDI, mothers' were asked to indicate "agree" to a statement about a child's developmental milestone. If they disagreed, mothers had to indicate whether they thought the child displayed the skill at an older or younger age. Based on the responses provided by mothers, there was inconsistent evidence of a yea-saying bias. On the 11items which called for an "agree" response, only five were endorsed as "agree" by at least 50% of mothers in the whole sample and subsamples. On items in which mothers had to indicate "older" for the statement indicated, there were only two items in which more than 50% of mothers indicated "agree." This

same pattern of results was seen on all the sub-samples of the study. When the question called for a “younger” response however, two out of the three items were endorsed as “agree’ by at least 50% of the sample. This same trend was seen in the rural and non-identified disability samples. However, amongst the mothers from the urban and identified disability samples, at least 50% of mothers indicated “agree” to all three questions which called for a “younger” response. Table 37 presents the total number of agree responses for the whole sample for each of the questions in the measure.

Table 37

The Number of "Agree" Responses by Participants on the Milestone KIDI (Whole Sample)

Question	Key-word	Number indicating "agree"	Correct response
1	Sitting at 7 months	63	Agree
2	Emotion at 6 months	33	Agree
3	Reality perception at 2 years	5	Older
4	Walking at 12 months	69	Agree
5	Familiar person recognition at 8 months	58	Agree
6	Reaching for items at 7 months	36	Younger
7	Reasoning skills at 2 years	9	Older
8	Moral reasoning at 1 year	5	Older
9	Smiling at 3 months	55	Agree
10	Toilet trained at 1 year	62	Older
11	Response to name at 10 months	70	Younger
12	Laughing in response to event at 4 months	33	Agree
13	Understanding no at 5 months	9	Older
14	Lifting head when lying on stomach at 4 months	69	Younger
15	Babbling at 5 months	55	Agree
16	Cooperative play at 1 year	78	Older
17	Object permanence at 1 year	42	Agree
18	One word utterances at 6 months	19	Older
19	Depth perception at 6 months	16	Agree
20	Speech sound recognition at 2 months	4	Agree

In sum, the yea-saying bias was partially apparent in the responses provided by mothers in the study. On the Health and Safety KIDI, half of the items that called for a "disagree" response were endorsed as "agree" and all the items calling for an "agree" response were endorsed as such by 50% or more of the sample. In the Parenting KIDI, a yea-saying bias is unlikely as mothers tended to disagree with items that called for an "agree" response. On the Milestone KIDI, only those items which called for a "younger" response were endorsed as "agree" by 50% or more of the sample.

Additional descriptive analysis of KIDI measures.

Aside from illustrating the bias in response style, mothers' responses in Table 34 also provide important descriptive information on the understanding surrounding child-care health and safety norms. Examples are questions 1 and 4 which relate to infants seeing a doctor or receiving immunization shots during their first year of life. Table 38 presents the estimated ages mothers in the sample provided for the different milestone questions on the Milestone KIDI. Out of the total sample of 103, 72 mothers were asked to estimate the age at which they believed a child attained a developmental milestone, if they did not agree with the presented statement. These results enabled an approximate mean age calculation for each of the developmental milestones for these 72 mothers[4].

[4] A greater number of responses of mothers in the rural sample are captured in this data.

Table 38

Age Estimates in Months for Developmental Milestone Questions

Question		Mean	SD	Range	N
1	Sitting at 7 months	8.56	6.62	2-36	71
2	Emotion at 6 months	20.03	20.98	3-120	71
3	Reality perception at 2 years	65.69	24.34	4-144	70
4	Walking at 12 months	10.80	1.95	6-18	71
5	Familiar person recognition at 8 months	18.28	18.01	8-84	71
6	Reaching for items at 7 months	15.93	10.17	5-48	73
7	Reasoning skills at 2 years	68.93	30.38	24-144	68
8	Moral reasoning at 1 year	61.25	29.89	12-180	68
9	Smiling at 3 months	6.83	8.48	3-60	73
10	Toilet trained at 1 year	17.15	10.81	1.5-48	72
11	Response to name at 10 months	12.67	7.41	3-48	73
12	Laughing in response to event at 4 months	15.83	15.13	2-60	72
13	Understanding no at 5 months	34.27	29.48	4-144	70
14	Lifting head when lying on stomach at 4 months	5.08	1.88	4-12	73
15	Babbling at 5 months	7.04	3.53	2-24	73
16	Cooperative play at 1 year	17.25	11.35	12-60	72
17	Object permanence at 1 year	22.12	12.69	12-60	69
18	One word utterances at 6 months	14.39	9.97	5-48	70
19	Depth perception at 6 months	23.71	17.77	6-84	69
20	Speech sound recognition at 2 months	24.11	22.28	2-120	65

Responses from mothers in the sample show some clear differences in some areas of development. For example, the vast majority of mothers in the sample estimated that children should be older than two months before they start to differentiate speech sounds (see Figure 2), and more than 50% of mothers in the sample believed that children should be toilet trained by one year of age (see Figure 3). Further breakdown of responses of the different milestones is presented in Appendix L.

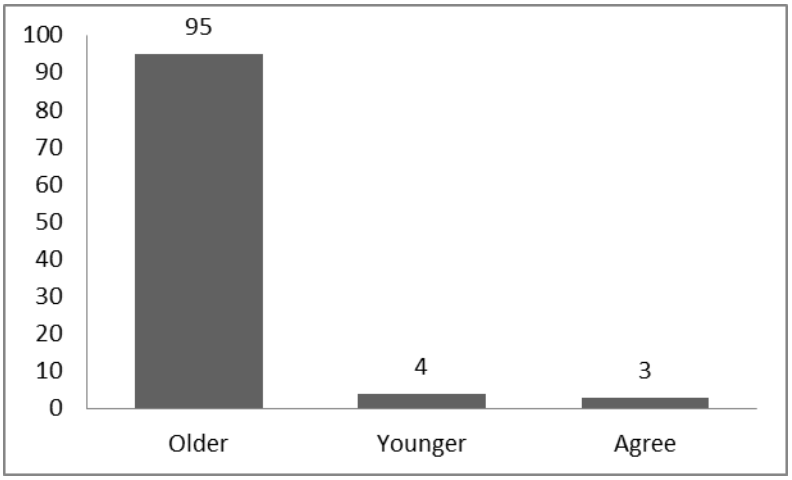


Figure 2. Number of mothers' responses to "2 months old can tell some speech sounds apart" (correct response: "agree")

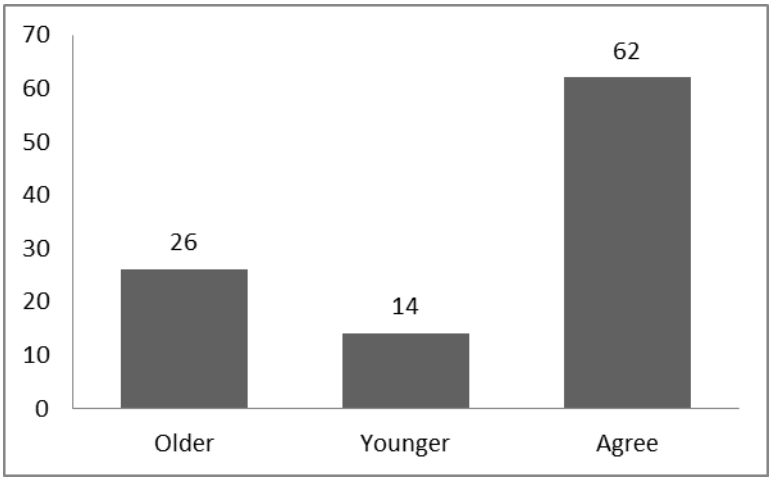


Figure 3. Number of mothers' responses to "most infants are ready to be toilet trained by 1 year of age" (correct response: "older").

Access to medical intervention and childhood illness

All mothers in this study were asked if their child presented any health issues in infancy (below one year of age) and if so which kind of illness. In the urban sample, eight mothers reported that their children had presented with symptoms of malaria before the age of 1 year, with incidence varying between one and five times. In the rural sample, 38 mothers reported malarial symptoms prior to the age of 1 year, with incidence again ranging from one to five times. Other health issues reported in infancy included meningitis, yellow fever, epilepsy/high fevers/convulsions, low birth weight, burns, ear infections and pneumonia/chest infections/asthma.

If mothers had any concerns about their children's health and development they were also asked if they had taken any action to address these concerns. Possible courses of action listed were, "none," "visiting doctor at local health center," "visiting a traditional healer," "visit to the hospital," "visit to the medical specialist," and other types of action. Of the 30 mothers who noted that they had concerns about their child's health or development, eight did not pursue any further action, seven visited the doctor at the local health center, four reported visiting a local healer, 13 reported visiting a hospital and three fell under the category of "other," (categorized as speaking to family members about concerns) These results are summarized in Table 39

Table 39

Participant Numbers Endorsing Specific Type of Action to Address Concern

Type of action	(N= 30)
No further action	8
Visit to doctor at local health center	7
Local Healer	4
Visit to local hospital	13
Other	3

Note. Mothers could choose more than one type of action so the response total of 35 is greater than total N of 30.

Twenty six of the 30 mothers who indicated a concern about their child's health and development lived in the urban environment compared to only four mothers from the rural location. Of these four mothers, three reported visiting a traditional healer in addition to other medical services to address their concerns.

Beliefs about disability.

The last section of the results chapter considers the responses provided by mothers of children with disabilities. Nineteen of these mothers completed the questionnaire relating to their explanatory model regarding their child's illness or disability based on the questions by Kleinman, (as cited in Fadiman (1997). The first question asked the mothers to name the problem that the child presented with. Some of the mothers, for example, were able to state the Swahili name for cerebral palsy "Utindo," or for epilepsy, "Uke deke," meaning convulsions. Several other mothers, however, indicated that they did not know, had forgotten the name, or had never been told what was wrong with their child. When asked what they thought had caused the problem, answers included "yellow fever he had when he was born," "seizures," "high fever in

early infancy," "long delivery and failure to cry at birth," "lack of attention from nurses at birth," "consumption of alcohol" "a curse from the devil," "curse," or "demons."

When asked about treatment, mothers noted a desire for more of the physical exercises, and equipment provided by CCBRT, or mentioned traditional healing practices, such as washing or purifying of the body, and use of traditional, medicinal herbs. Statements from mothers about what they feared most about their child's disability included fear of the child dying, of the child never learning how to talk or walk, of nobody being able to care for the child ("when I am dead, no-one will take care of him like me,") continuation of the disability throughout the life course of the child, concern that the child will never be able to play, that the medical device attached to the child will stop working, and concern that the child will not be independent and manage without assistance from his/her parents. Almost all mothers acknowledged that the disability the child presented with was severe and the course would be long. Three mothers however, did not believe that this disability would have a long course, although their children presented with significant developmental delay, and were all in treatment through CCBRT.

In summary, this chapter presents the results of the nine different hypotheses of the study. In keeping with theoretical support for an overarching measure of parent beliefs, the reliability of a combined parent belief measure was greater than the reliability of most of the individual parent measures. Regression analysis, and partial correlation statistical analysis demonstrated partial support that higher levels of maternal education predicted higher scores on the different parent measures used in the study. Greater experience with child care was found to be significantly correlated with higher scores on parent self-efficacy measures. However, other hypotheses were not supported. There was no significant correlation between traditional child-rearing beliefs and self-efficacy beliefs. In addition, there was no relationship between birth location and parent age

to child outcome in the non-identified and identified disability subsamples, nor was there any relationship between scores on a combined parent belief measure and child developmental outcome.

No support was found for the concept of "naïve confidence" among this sample of Tanzanian mothers through individual profile analysis. Mothers presenting with lower scores on the Health and Safety KIDI, with children scoring low on the child outcome measure did not have higher self-efficacy scores or higher scores on a measure of traditional parenting beliefs. It was not possible to draw conclusive results about a yea-saying bias in the three KIDI measures from this study, although results from at least two of the measures suggest that such a bias was not present. Table 40 further summarizes the results of the study.

Table 40

Overview of Results of Study Hypotheses

H0 Number	Study Hypothesis	Supported/ Not Supported
H01	Higher levels of maternal education independently predict higher scores on all parent knowledge and belief measures	Partially Supported
H02	Scores on the traditional subscale of the Parent Modernity Scale are correlated with scores on all self-efficacy belief measures	Not Supported
H03	Higher scores on the COPE correlate to higher scores on all self-efficacy measures	Supported
H04	Mothers with low scores on the Health and Safety KIDI, high scores on the MSE scale, and high scores on the traditional subscale of Parent Modernity Scale have children with lower scores on the developmental measure, and seek fewer support services	Not Supported
H05	Mothers with low scores on the Milestone KIDI, high scores on the MSE scale, and high scores on the traditional subscale of Parent Modernity Scale have children with lower scores on the developmental measure and seek fewer support services	Not Tested
H06	A combined parent belief measure has greater reliability than the reliability of the individual measures	Partially Supported
H07	Home birth location and greater parental age predicts lower scores on the child developmental measure	Not Supported
H08	Higher scores on the combined parent belief measure predict higher scores on the child developmental measure	Not Supported
H09	A yea-saying bias is present in the responses on the Health and Safety KIDI, Parenting KIDI and Milestone KIDI	Inconclusive

Chapter 5- Discussion

This chapter describes the key findings obtained from the statistical and descriptive analyses in the present study, as well as the health and educational policy implications of the findings, limitations of this study, and directions for future research.

Key Findings

The present study sought to investigate parent knowledge and beliefs about the parenting role in the sub-Saharan African mothers of young children living in urban and rural locations in Tanzania. The sample of children in this study included both typically developing children and children with disabilities. Parental knowledge and beliefs were assessed through different parent measures and were examined in relation to the children's scores on a developmental screening measure. In this study parental beliefs are viewed as encompassing both knowledge and beliefs about the parenting role (Sigel & McGillicuddy De-Lisi, 2002). Knowledge encompasses health and safety rules and awareness of milestones of child development, whereas the beliefs focus on the concept of parental self-efficacy, including self-confidence, style, and competence.

Further aims of this study were to examine the relationship between maternal education and measures of parent knowledge, the relationship between parenting style and self-efficacy beliefs, history of child-care experience on self-efficacy beliefs, and the effect of variables such as home birth and parental age on child developmental outcome. Individual responses on some of the parent measures were analyzed in order to rule out response style biases and understand more about Tanzanian mothers' beliefs surrounding health and safety norms of child development, developmental milestones, and beliefs about parenting. Mothers in the study were also asked questions about access to medical support services in order to understand the type of services they would seek if concerned about their child's health or development. Mothers of

children with disabilities were asked questions about their understanding of the disability in order to gain initial insight into their perception of the disability.

Parent beliefs and child developmental outcome.

The parent knowledge and belief measures that were found to be reliable with this sample of mothers were combined to create a final measure entitled "Combined Parent Belief Measure." The rationale for doing so was based on the premise adopted by Sigel and Kim (1996), that parental beliefs as a concept includes both cognitive and affective aspects and the two cannot be viewed separately. While the literature review section of this dissertation lays the foundation for why parental knowledge and beliefs were analyzed separately in this study, it was also important to investigate the different aspects of parent beliefs in one measure. In this study, a measure which combined parent self-efficacy beliefs, beliefs about child-rearing and knowledge of health and safety rules of child care was found to be reliable among the sample of Tanzanian mothers. When mothers' scores on this combined measure were compared to their children's results on the developmental outcome measure, no link was found between the two, either through correlation analysis, or using prediction regression models. This was the case for both typically developing children (non-identified sample) and children who had previously been identified with a developmental delay or disability (identified disability sample).

While this result appears to be contrary to findings in previous research in this area (Benasich & Brookes-Gunn, 1996; Dichtelmiller, 1992; McGillicuddy De-Lisi, 1980), it highlights the fact that assessment of the relationship between parental beliefs and child outcome is fraught with measurement difficulties, especially when assessing child developmental outcome in Tanzania, a country in which there has been comparatively less research in child development, than in Western countries. Even though the reliability of the combined parent measure is

satisfactory, more analysis would have to be conducted to ensure that it is a valid measure of parent beliefs within this population. In addition, it was beyond the scope of this study to assess either the reliability or validity of the child outcome measure, amongst young children who have limited schooling and whose culture does not lend itself easily to assessment (Harkness & Super, 2008). It is possible that parental beliefs do have an impact on child development within this population; however it remains to be seen what these beliefs might be, and how best to measure child developmental outcome.

Reliability and item analysis of responses in the Parenting KIDI, Health and Safety KIDI, and the Milestone KIDI not only highlight some key differences in the types of beliefs held by Tanzanian mother in both urban and rural locations, but also highlight the potential problems with translating measures developed for use in Western cultures. Despite the use of the KIDI in research studies internationally (Seidl de Moura, 2004; Seo, 2006), the same instrument was not reliable when applied to a Cambodian sample (Naqvi, et al., 2009). In this study, separating the KIDI into the different subscales failed to increase the reliability of two out of three subscales used. Even when the scoring rubric was changed (as in the case of the Parenting KIDI), the reliability is well below that reported in other studies. The extent of literature documenting the huge variability of parenting beliefs in different cultures means that finding a way to accurately measure these beliefs is a challenging task. A clue to this perhaps lies in the higher reliability of the affective measures of belief, such as the self-efficacy measures. Results from the subscales of the KIDI in this study were still valuable in terms of the descriptive information they offered, however, providing specific information about parent beliefs in a Tanzanian context.

Results from the global measure of parent beliefs among this sample supports (at least in terms of reliability) further use with the sample, although more analysis into the validity of the measure is warranted. The positive correlation between maternal education and total scores on the combined parent measure lend support to findings from other studies which established a link between scores on parent knowledge and belief measures and maternal education, internationally (Seidl de Moura et al., 2004), and within the United States (McCune et al., 1984; Reich, 2005).

Another key finding in this study was that there was no relationship between child developmental outcome, parent age, and the birth location of the child (i.e. birth in a clinic versus the home setting). This was in contrast to findings from the pilot study in Cambodia which used the same developmental outcome measure. There were certain key differences between the Cambodian and Tanzanian samples which may have accounted for this, however. Firstly among the children in this sample only 12 out of the total of 103 children were born at home. In the Cambodian sample the number was much greater, with approximately half the sample being born at home (Naqvi et al., 2009). It is possible therefore, that there were simply too few children born at home in this sample to detect any difference in the scores on the child outcome measure.

Due to the oversampling of children with known developmental delays in the urban sample, this study separated out children with known developmental delays from the larger sample of children who were either typically developing or had not yet identified as having a developmental delay. While this meant that the sample of non-identified children was more representative of children in the wider population in the country, it differed from the make-up of children in the Cambodian sample, where approximately half of the children presented with developmental delays, and scored significantly below their age on the developmental measure.

Both the reduced number of home births among this sample of Tanzanian children, and the separation of the two samples based on disability status, are likely to have contributed to the different findings in this study. Given the public health research that documents the risks to both mothers and children when they are not cared for by a skilled attendant at birth in Tanzania (Manji, 2009; PMNCH, 2006), it is likely that the absence of significant findings in this area are due to the small sample. Similarly, in other studies, parent age has been linked to developmental delay in children (Andersen, Hansen, Andersen, & Smith, 2004), miscarriage (De La Rochebrochard & Thonneau, 2002), birth defects (Thong, Ho & Khatijah, 2005) and autism spectrum disorders (Croen, Najjar, Fireman, Grether, 2007). The absence of significant findings with this sample does not preclude the possibility of risk associated with parental age and child developmental status in a larger sample of Tanzanian mothers and children.

Additional findings from other studies using some of the same parent measures were also not found in this study. These include the presence of naïve confidence amongst mothers in the Korean sample reported by Seo (2006). No such results were found on profiles of mothers who presented with low scores on the Health and Safety KIDI. Among these mothers, there was no relation between these scores and scores on the maternal self-efficacy measure or results from the child developmental assessment.

Urban and rural differences.

Mothers in the urban sample scored consistently higher on all parent measures. This is not surprising as the large urban areas in Tanzania have comparatively better infrastructure, there is greater access to health and education services for the population and generally higher income levels. When controlling for other demographic variables such as income and education, mothers in the urban sample obtained higher scores on measures relating to the Health and Safety of child

care, and reported greater self-efficacy beliefs in infant child-care and in managing the difficult behavior of their children. Urban residence was also predictive of higher scores on the traditional subscale of the Parent Modernity Scale. This latter finding is counter-intuitive since mothers in rural locations would be expected to hold more traditional views about child-rearing, and be less exposed to western media, which might, for example, advocate for more permissive parenting approaches.

No differences were found amongst children living in rural and urban populations on the child developmental outcome. This finding suggests either that there is no significant difference in developmental outcome between children living in the two locations, or that the child developmental outcome measure did not accurately captures any differences. Only twelve of the 103 children assessed in this study had received any form of education and there was no clear difference between the rural and urban populations in this respect (five children from the rural location were reported to have attended school compared to seven from the urban location). Based on the data analysis so far, no evidence indicates that children living in rural locations were performing at lower levels of the child developmental outcome measure.

Self-efficacy beliefs.

In this study child-care experience as measured on the COPE was significantly related to scores on all the self-efficacy measures even when controlling for demographic variables. This lends support to the idea that previous child-care experiences play a part in the development of concepts of self-efficacy (Gross, Rocissano, & Roncoli, 1989). Whilst this is not a central finding for the study, it is important in a context in which there is little known about self-efficacy. It is also important as experience with child-care was related to both self-efficacy in caring for small

infants, and self-efficacy in managing children's behavior when they are older (as measured on the Parenting Tasks Checklist).

As in the study in Cambodia, scores on the maternal self-efficacy scale were significantly predicted by maternal education levels. However, education did not predict scores on either of the sub-scales of the Parenting Tasks Checklist. It appears therefore, that amongst this sample of Tanzanian mothers, education levels were only predictive of greater self-efficacy beliefs when caring for very young children, but not in terms of their beliefs about managing the difficult behavior of their children. This corroborates findings from the study by Sanders and Wooley (2005) in which no correlations were found between "sociodemographic risk factors" (p. 69) (which included lower levels of education) and self-efficacy ratings on the Parenting Tasks Checklist.

Exploratory analyses into the association between traditional beliefs about child-rearing and self-efficacy beliefs were based on the high value that East African culture places on concepts of obedience and respect for authority among children (LeVine et al.,1994; Harkness & Super, 1992). This was demonstrated in the findings from the pilot data of 16 Tanzanian mothers gathered in April 2010. It was hypothesized that mothers who uphold the norm of traditional values of parenting within the culture would also then believe themselves to be good parents within that culture and have high self-efficacy beliefs. This ties into research in the development of self-efficacy outlined by Coleman and Karraker (1997), in which self-efficacy develops through social learning. Watching other parents demonstrate traditional parenting techniques, and subscribing to these normative social values might then lead to greater self-efficacy beliefs as a parent. Preliminary results did not support a significant relationship between mothers' scores on the traditional subsection of the Parent Modernity Scale and scores on the two self-efficacy

belief measures. Undoubtedly development of self-efficacy is a complex process that goes beyond just subscribing to the normative beliefs about parenting within the society, and is an area that warrants further exploration.

Overall the key findings indicate that a combined parent measure may have more meaning for this sample of Tanzanian mothers than individual measures that assess parental beliefs. A positive correlation was found between this combined measure and maternal education as has been found on other measures of parenting beliefs (specifically knowledge) and levels of education. Experience with child-care also appears to be related to higher reported self-efficacy beliefs in both caring for very young children and in managing children's behavior when they are older. This lends support to previous research in the area of development of self-efficacy. Finally, significant differences were seen among the responses in all the measures of mothers living in urban compared to rural environments, even when controlling for other demographic variables such as income and levels of education.

Health and Educational Implications

This study explored the concepts of parent knowledge and beliefs from an ethnocentric perspective. It was possible to learn about parental beliefs of Tanzanian mothers from both urban and rural locations of the country, by analyzing individual responses on the different measures, and overall scores on the different measures in relation to demographic variables.

Response style bias.

Firstly, the hypothesis relating to a yea-saying bias amongst the responses from the participants was not clearly supported. On the Health and Safety KIDI approximately half of the questions required an "agree" response and more than half of the sample indicated that they agreed. On the six responses which called for a "disagree" endorsement, three were endorsed as

"agree" by more than half of the sample. However, there could be other reasons that account for this besides a yea-saying bias. It is possible that the wording of the items have a different meaning for Tanzanian mothers. For example, the wording of question 2 (it's ok to feed nine month old babies small foods like nuts or popcorn) was endorsed as "agree" by 87 women in the sample (the correct response is "disagree.") However responses to this questions are likely to be affected by the dietary restrictions of mothers, especially in rural areas of the country, and the fact that children are breast fed until at least one year of age (17 months in the case of the Gusii women (LeVine et al., 1994), and the exclusive breast-feeding policy adopted by the Tanzanian government (Manji, 2009). A question phrased in a different way which also addresses the understanding that infants choke on small items might have resulted in a different response pattern.

Nonetheless, the fact that many mothers in the sample did indicate agreement to this statement is suggestive of future intervention into appropriate feeding habits for young children. Infants older than six months should start consuming other foods besides breast milk in order to reduce the chances of malnutrition and stunting (Lucas, Jitta, Jones, &Wilczynska-Ketende, 2008, PMCH, 2006). However, mothers may not know what they should feed their children, and intervention by community workers, child health days within local communities, feeding and cooking demonstrations and introduction of agricultural gardens are examples of interventions that can lead to increases in food intake for children. Such practices have been documented as leading to the substantial increase in complimentary feeding practices in the Southern African region (Lucas et al., 2008).

Responses on the Parenting KIDI did not suggest a yea-saying bias. In fact, out of the five questions which called for an "agree" response, 50% or more of mothers in the sample

indicated that they disagreed (with the exception of item 4, "talking to a baby about things he/she is doing helps the baby's development and later competence"). On the Milestone KIDI no clear yea-saying bias was apparent either, with only nine out of the total of 20 questions being endorsed as "agree" by more than 50% of the sample.

The probable absence of the yea-saying bias supports the use of measures which adopt an agree/disagree format in future survey research. In addition, absence of a yea-saying bias among the sample of mothers in this study, many of whom had limited exposure to formal education, supports the separation of the different KIDI subscales. Amongst mothers in the Cambodian sample (many of whom also had little or no exposure to formal education), the KIDI was administered as a whole measure with the same response options on all questions asked (with the exception of the Milestone KIDI section). Given the different content of the questions in the different subscales, it is likely that the yea-saying bias was minimized by separating the sub-scales based on their different content areas. Nevertheless, the item about feeding in the Health and Safety KIDI illustrates that statements must be worded in such a way as to ensure that they accurately capture the understanding of the construct that they are trying to measure.

Implications based on item-analysis findings.

Results of item analysis of responses on the three subscales of the KIDI have implications for health and child-care education for mothers in the country. On the Health and Safety KIDI, for example, 77 mothers indicated that they agreed that children could wait until at least one year of age to receive vaccinations. This is an important finding, especially given the Tanzanian government's adoption in 1996 of the Integrated Management of Childhood Illness (IMCI) (Manji, 2009). According to Lucas et al. (2008), a complete course of all childhood vaccinations in the child's first year of life requires at least five health worker visits. According to Manji

(2009), basic health facilities are within 5 kilometers of 75% of the population (with greater concentration of facilities in urban areas.) Despite this, children living in rural areas of the country have lower rates of vaccinations and higher levels of mortality.

A higher proportion of mothers in the urban sample indicated that they agreed that children can wait till at least one year of age until they receive vaccinations , suggesting that access to health care is not the main reason for this belief. While Tanzanian mothers' beliefs about their children's natural protection from illness were not examined further in this study, it is an established medical fact that immunizations prevent death and disease in young children. Additional community practices to ensure that mothers understand the need for their children to receive multiple vaccinations prior to their first birthday can increase the chances of their infant's survival (Lucas et al., 2008)

Responses from the Parenting KIDI and Milestone KIDI are interesting from a parental ethnotheoretical perspective. As noted by Gaskin (2000), it is important to fully understand parents' beliefs in relation to their children's development to avoid misinterpretations of children's behavior, or placing value judgments on the behavior observed. One example of this from the parenting KIDI is that 71 mothers in the sample indicated "agree" to the statement "fathers are naturally clumsy when it comes to taking care of babies." This kind of response highlights the beliefs mothers hold about fathers' involvement in direct childcare responsibilities. In Tanzania, mothers typically bear responsibility for most childcare; often this is due to men having to travel to work far from where their family lives, and to higher levels of mortality among men compared to women (Richter & Morrell, 2008). In addition, the work of Hollos (2008) on the importance of motherhood among women in Tanzania, suggests that mothers may perceive themselves as more expert in the direct child care compared to men. Such thinking may

also be related to why 62 women in the sample indicated "disagree" to the statement "taking care of a baby leaves the parent/caregiver feeling tired, frustrated and overwhelmed." Since motherhood is viewed as a vital identity within the culture and a social norm (women in Tanzanian culture are typically addressed as "mama-first name of their first child"), it is likely that mothers will have a different perception of the stress that care-giving involves, especially compared to women in other cultures where motherhood is considered more a choice. In addition, this affects how they perceive themselves as care-givers in relation to fathers.

One further discussion point relates to discipline strategies by parents in developing countries (Lansford & Deater-Deckard, in press). Question 12 on the Parenting KIDI reads "some days you need to discipline your baby; other days you can ignore the same thing. It all depends on the mood you are in that day." This item was endorsed by 58 of the mothers in the sample. In addition, 79 mothers indicated "disagree" responses to the statement "if a two year old doesn't get his/her own way, the best way to avoid future problems with tantrums is to ignore the temper tantrum." These types of responses are suggestive of more erratic or inconsistent methods of discipline, an important consideration in a culture in which child obedience is considered the norm of child behavior (as emphasized by the high means on the traditional subscale of the Parent Modernity measure) and the findings of high levels of punitive parenting practices in countries similar to Tanzania (Lansford & Deater-Deckard, in press). While clearly it is important to respect the traditions of parenting from one culture to the next, the impact of punitive discipline practices on young children should also not be underestimated.

Item analysis results from the Milestone KIDI provide some key information about the estimated ages that mothers in the sample believed children attain their developmental milestones. This in turn has implications for early child development programs, such as those

listed by Engle et al. (2007), and the Madrasa preschools in Zanzibar. Development of effective preschools in the East African region can be based on developing several behaviors in parents which include talking and listening to children, allowing children autonomy and encouraging children's verbal discourse and encouraging play (Cabañero-Verzosa & Elaheebocus, 2008). Mothers in the sample of this study estimated that infants utter their first words at 14 months, recognize speech sounds at the age of 24 months, laugh in response to an event at approximately 16 months of age, respond to their name at 12 months, respond differently to display of emotions at 20 months, and reach for items of interest at the age of 16 months. In reality, children are perform these behaviors at a much younger age, but these differences in perception need to be taken into account when developing intervention programs for parents in the areas of child development.

In contrast to the reports of Super (1976), mothers in this sample estimated that children start to walk at approximately 11 months, and lift their heads while lying on their stomachs at 5 months, well within the range expected for these areas of motor skill development in the United States (Voress and Pearson, 2006). Thus in this sample, no clear differences emerged in terms of motor milestone perception.

Implications for the work of school psychologists

School psychology as a field of study tends to focus on a medical model with the primary focus resting on the student who has been referred for an evaluation (Sheridan & Gutkin, 2000). The assessment approach used in this study highlights the advantages of using a more holistic approach with at least two sources of information; direct child assessment and parent interview, in order to understand the functioning of the child. While such an approach is vital especially when working with very young children, the variance in responses provided by the mothers in

this study both from each other, and from typical U.S. based norms, highlights why it is important to have a clear assessment of parental beliefs when assessing children of different ages. This is especially pertinent given that mothers provide opportunities for their youngsters based on their beliefs about development (Huang et al.,2005; Hunt & Paraskevopoulos,1980). Even though initial social history interviews are required under the provisions of the 2004 reauthorized Individuals with Disabilities Education Act when first evaluating a student's need for special education services (Jacob & Hartshorne, 2007), reporting of the ages at which children attained milestones can at times be brief. Responses from this study illustrate that parents may hold different expectations about milestone development, and this may have a subsequent impact on the parents' interaction with the child. In addition, as children move through their school career and continue to receive special education services, there may be no little or no follow-up assessment of parental expectations about their child's development, since it is not a federally mandated requirement as it is with an initial evaluation. Therefore, the only time parental input is gathered in any in-depth manner may be when the child is first referred for services. Given that parents interact with their children on a daily basis, nuanced parental input is recommended for all assessments given the literature documenting the interaction between child-rearing and parent expectations regarding development, and results showing the different normative beliefs about child development held by mothers in this study.

Parent beliefs about disability and access to services.

Insights into mothers' beliefs about their child's disability come from the responses provided to the list of questions adapted from Kleinman's questions on an explanatory model of illness (as cited in Fadiman, 1997). It is clear from the responses that many mothers were justifiably concerned about the future of their children, especially since many of the children

with disabilities had significant motor impairments. One slightly surprising finding (given that almost all the mothers with children with disability were being seen through the rehabilitation program provided by CCBRT) was the lack of familiarity with the name of the disorder. Some of the mothers indicated that their children presented with cerebral palsy, when they also presented with Downs Syndrome, macrocephaly, and behaviors consistent with a diagnosis of autism. Through consultation with a specialized Autism Unit in Dar es Salaam, the author was able to establish that conditions such as autism are very rarely labeled as such in Tanzania, largely because of the lack of services to address this condition. In rural areas, the author observed children with clear facial features of Downs Syndrome, but whose parents were not aware that their children presented with this particular genetic condition, or the developmental delays associated with it.

The situation for mothers of children with disabilities in rural areas of the country is particularly difficult. One mother of a child with significant developmental delays and recurrent epileptic seizures reported that he had never been seen by a doctor at a hospital, and had only received traditional medicine, which had had limited effect on reducing the seizures. Another mother of a child with albinism, who was non-verbal and had many behaviors consistent with autism, described how she had fled from her village to the city to avoid her son being killed. She described different traditional healing practices which included the placement of burning herbs in her child's mouth and throat in order to try to encourage him to speak.

On a positive note, all the mothers in the urban areas, who received services through CCBRT, indicated that they were very grateful for the support, and described clearly that their children had made improvements through the physical and occupational therapy they received. Many indicated that they would like to receive more services and the author was asked on

several occasions if she knew of any schools that could meet the needs of their children. A recent policy brief by Betts and Lata (2009) documents the lack of inclusion of children with disabilities in early childhood programs in different countries, and this is clearly an area that requires further attention. Some special programs for children with different disabilities do exist in Tanzania such as the Autism Unit at Msimbazi Mseto Primary School (Mankoski et al. 2006), but they are very scarce and services are not specialized. In rural areas the provision for children with disabilities remains almost non-existent. Anecdotal observations based on visits to at least 14 different villages during the data collection process of this study corroborated findings by Omigbodun (2008) of the use of traditional healing practices because health clinics are far less accessible. For example, three out of the four mothers from rural areas who reported being concerned about their child's development and who identified services they had sought, indicated they had done so from a traditional healer. The "locking up" of children with disabilities (p. 230) was also likely as the author was informed on several occasions when visiting villages that no children with disabilities existed in the village. Not only did this account for the overrepresentation of children with disabilities in the urban sample, it also attests to the fact that children with milder disabilities are either not identified as such within the rural communities, or those with severe issues are not taken outside into the community. The current community intervention initiatives by *Save the Children* in the rural areas in which the data was collected for this study, do substantially address the health needs of children (such as provision of nutritional supplements and nutritional education for families in which children are malnourished). However, this support does not presently extend to the provision of on-going, direct intervention for children with disabilities and developmental delays such as those provided by CCBRT. It is possible to implement support in rural areas by way of mobile clinics, for

example. This was evidenced by the outreach support provided to rural communities in Siem Reap province by the pediatric hospital, Angkor Hospital for Children, the non-profit that participated in the study in Cambodia (Naqvi et al., 2009).

Clearly, provision of services for children with disabilities is still in the early stages in Tanzania. Results of this study, however, indicate that in urban areas, parents of children with disabilities actively seek out services that are available; and in the rural areas, some children with disabilities have been identified as in need of service by community members and staff from *Save the Children*. Mothers in both locations were willing to talk about their children's issues and were eager to have them evaluated. Given that very little is known about the long term effect of disability in very young children (Manji, 2009), and the increased difficulty in access to early education and intervention programs for young children with disabilities (Betts & Lata, 2009), further steps need to be taken to assess the developmental progression of children at risk for delayed development. This can come in the form of inclusive early childhood education programs that provide appropriate early childhood intervention services for children with disabilities especially in rural areas of the country.

Further implications.

The fact that location of residence significantly predicted scores on each of the parenting measures analyzed in the study suggest that there are some clear differences in beliefs among mothers living in urban and rural locations. Given the basic infrastructure in rural villages in the country (many of the villages where the research was conducted had no electricity or running water, with the closest paved road several miles away), it is not surprising that location of residence amongst mothers predicted significant differences in scores on each of the parent

measures. Such findings suggest the development of different measures for use in urban and rural settings, or at least of the creation of separate norms for mothers living in rural locations.

Perhaps one of the main implications of this study is the existence of questions about the usefulness of the KIDI measure of parenting in different cultures. This measure is used in many child development studies (Benasich & Brookes-Gunn, 1996; Bornstein & Cote, 2004; Conrad et al, 1992; Dichtelmiller et al, 1992; Hess et al, 2004; Seidl de Moura et al. 2004; Seo, 2006; Veddovi et al, 2001). In this study however, the very low reliability ratings found on two out of the three subscales, the varying estimates of developmental milestones, the difference in parental beliefs on the Parenting KIDI on several items, and possible differences in understanding items on the health and safety measure, suggest that the KIDI may not be the most suitable measure to use when assessing parent beliefs in different cultures.

In addition, the use of a measure of "knowledge" of child development suggests that there are right and wrong perceptions about parenting. Results from this study illustrate that parenting beliefs within the Tanzanian context vary significantly from beliefs of mothers living in the United States. This is evident in results from the Milestone KIDI measure and responses from the Parenting KIDI. The higher reliability of a combined parent measure which includes measures of self-efficacy and attitude ratings about child-rearing from the traditional subscale on the Parent Modernity Scale, lends support to the premise by Sigel and Kim (1992) that a belief model must include aspects of cognition and affect. Certainly, the KIDI alone does not appear to be an appropriate measure to use to measure parent "knowledge" in this sample of Tanzanian mothers. This limitation of using essentially western based normative measure from a reliability perspective is further supported by the low reliability ratings of the whole KIDI in the study conducted in Cambodia (Naqvi et al., 2009). The higher reliability ratings of the KIDI in other

studies in different countries such as Korea (Seo, 2006) and Brazil (Seidl de Moura, 2004) may be as a result of the relatively higher educational status of these samples (compared to Cambodia and Tanzania), and also possibly, the exposure to Western based values of child-care expressed in the KIDI.. In addition, the heterogeneity of the sample in this study, comprising women of different ages and from different parts of the country might also have affected the reliability results of adapted KIDI parent measures used.

The findings of this study can be further examined by considering the interactions between the development of children, the cultural perspectives and also the different economic conditions of the mothers in the sample. Not only does one have to consider the applicability of say, the child development measure to the experiences of that individual child and the family, but also the economic differences between the urban and rural samples of the study, and also the cultural differences between Tanzania and the United States for example. The interplay of the child, location of residence and culture likely interact together in ways that have not been assessed in other contexts in which the same measures have been used. This interaction of child development with cultural development and economic development, may account for some of the low reliability results seen on many of the parent measures in the study, since the measures are unlikely to have taken these three dimensions sufficiently into account (having been developed for use in an industrialized country with middle income participants). Reliability results from measures such as the KIDI, illustrate that a one-size-fits-all approach to measuring parental belief is limited to say the least.

Limitations of the Current Study

There are several limitations to the current study which attempted to measure parent beliefs in relation to child development. First, a major study limitation was the sample size.

Given the study's purpose of examination of mothers' beliefs, a sample of only 103 responses is low in order to draw firm conclusions about these beliefs. Given also the differences between mothers in the urban and rural samples, the sample size of approximately 50 women in each subsample renders even greater limitations to externalizing the results of this study to other women in the population. The difficulty in recruitment of children with developmental delay in the rural sample was an unexpected and significant limitation to the study. Whilst some of the mothers in the urban sample had moved from rural locations in order to access more services for their children, this explanation can only account for part of the difficulty in locating children with developmental delays in more remote areas, especially given the challenges in the integration of children with significant disabilities in rural communities (Omigbodun, 2008).

A second limitation of this study relates to the translation of the parent measures and the training of the field assistants in reading the questions to the mothers. It was not possible to formally back translate the measure, although the Kiswahili translation was verified for its accuracy by two members of staff at *Save the Children* who were fluent in both English and Swahili. Any further studies in this area should implement translation and back translation of all measures and be more in line with recommendations from the International Test Commission in regards to adapting psychological and educational tests (International Test Commission, 2000). Whilst the field assistants did receive explicit instruction to read each question from the measure to the mothers and to explain the meaning of the wording only if the mothers did not understand the question, it was not possible for the author to verify this was happening at all times as she was not a fluent speaker of Kiswahili. As data collection progressed, the author did become familiar with some Kiswahili words and at times intervened to ensure that mothers' responses were being accurately recorded. This was not possible on all the interviews, however. Minor

adaptations to the questionnaires such as recording the actual ages children attained developmental milestones on the Milestone KIDI assisted in part in reducing errors in recording. This was not possible on other measures, however.

A third limitation of this study relates to the use of the screening measure to assess child development. As noted in the literature, assessment of developmental level in children who are not accustomed to being tested and whose skills are being assessed using tools that they have never encountered before (many children from the villages had never held a crayon before, or played with blocks) presented some unique challenges to the validity of the measure. The fact, however, that the adjusted age score difference on the child developmental measure was only one month below the child's actual age, is suggestive that at least at this preliminary stage, the test did not over-identify children with developmental delay. The combination of both parental reports and direct child assessment on the screening measure may have contributed to this finding. Other studies which are similar in design to this research use observational techniques to assess interaction between parent beliefs and child outcome (Benasich &Brooks-Gunn, 1996; Seo, 2006). Given the time frame of this study, use of observational techniques to assess child development was not possible. The absence of such a tool, however, restricted understanding of child development to results on the screening measure alone.

Another limitation relates to the design of the study. The survey or interview approach adopted is in contrast to the anthropological or field based research techniques adopted by LeVine et al. (1994), Harkness and Super (1992), and deVries et al. (1984) all in East Africa. While there is validity in conducting survey research among this population in order to understand cultural beliefs and health practices, there is the need to use anthropological techniques in order to first develop the tools that can be used in the survey research. Examples of

this are seen in the work of Betancourt et al. (2009), where a culturally valid and reliable instrument was developed to assess depression, anxiety, and conduct problems in adolescents living in war-affected regions of Uganda. It is not possible to generalize the results of the findings of this study to other mothers in Tanzania until it is established that constructs such as self-efficacy and traditional understanding of care-giving reflect the values of the population. It is likely that these measures missed out key concepts that are important to Tanzanian mothers, and the data presented here were not able to capture these aspects of mothers' beliefs.

In addition, the correlational design of the study means that no causal statements can be made regarding any of the significant findings. A longitudinal design similar to the one adopted by Benasich and Brooks-Gunn (1996) in their study on child outcome, maternal knowledge, and attitudes about child-rearing would provide greater strength to any findings about the link between parent beliefs and child developmental outcome.

Directions for future research

The future directions for research presented here address the identified limitations of the study. First, future research in this area would recruit many more participants from both urban and rural areas and expand data collection to other parts of the country, particularly in the north and the eastern (non-costal) regions. A larger sample of mothers from different areas of the country would provide more information about the beliefs of mothers from different areas of Tanzania. In addition, in order to draw firm conclusions about beliefs of mothers even in the areas that were sampled, the sample size would need to be significantly larger, Hollos (2008) for example, interviewed over 2000 mothers about beliefs surrounding parenthood and was able to make clear statements about the perception of motherhood within the community that she studied. Increases in the sample size would also include an increase in the number of children

who present with developmental delays from rural areas, in order to address the significant oversampling of children with developmental delays coming from the urban areas.

The use of parent belief measures would need to be adapted to incorporate the findings from these studies. Future studies in this area would have to address the issue of both translation of the measures, training of researchers to administer the measures, inter-rater reliability estimates, and significant modifications to the subscales of the KIDI. Questions from a health and safety measure might be better developed using the criteria set out by PMNCH (2006), which are more in line with the millennium development goals. These include knowledge about exclusive breastfeeding prior to the age of 6 months, comprehensive feeding between 6 and 9 months, timely immunizations, understanding about vitamin A supplements, use of bed net coverage (to prevent malarial infection), care seeking for malaria and pneumonia, and understanding about the use of oral rehydration in the case of childhood sickness. Results from these surveys would therefore be directly in line with government health policy initiatives in the country. In addition, all children under the age of five years in Tanzania have a card which records their height and weight, incorporation of the statistics of this card along with mothers' reporting of the health status could also be used as a way of measuring their understanding of their child's health status.

Accurate assessment of the mother's understanding of developmental milestones would have to be measured using local norms as opposed to those described on the Milestone KIDI measure. The age estimates reported in the results section of this dissertation are a starting point for gathering normative data on each area of child development in preparation for a measure that more accurately assesses expectations regarding milestone development for Tanzanian mothers. The key is to develop a reliable and valid instrument that measures parental beliefs and is able to

balance the accurate representation of Tanzanian mothers' beliefs about child development from an ethnocentric perspective, and also reflect the health and development policy initiatives in the country. For example, how do you reconcile the cultural belief among Tanzanian mothers in this study that children do not recognize different speech sounds until they are 24 months, with the established research that early cognitive interaction with infants increases cognitive development later in childhood (Walker et al, 2007)? Or the fact that mothers in this sample estimated that babies will not laugh or respond to their name until they are at least a year old, when they can engage in both these behaviors at a much younger age. Again, while intervention programs must account for the ethnotheories that parents hold regarding their child's development (Gaskin, 2000), it is also widely established in the literature that early stimulating interaction has a significant positive impact on later child development (Siddiqi et al., 2007). In addition the measures should also capture the holistic framework of ECD concepts as developed by the TEAM-ECD model (Siddiqi et al., 2007).

Engle et al. (2007) lay out some key characteristics for successful early childhood development interventions, one of which states "blend traditional child-rearing practices and cultural beliefs with evidence-based approaches" (p. 234). This same blend needs to be applied to culturally sensitive parenting measures in order to effectively measure parental beliefs within their cultural context, but at the same time providing much needed information to guide widespread health and education initiatives in the country.

In order to address the limitations regarding the use of the screening tool as the only measure of child outcome, further studies could include an observational tool which assess mother-child interaction. This is based on the fact that many of the child development studies reviewed in this paper indicated that parental beliefs were linked to parent behaviors, i.e., the

creation of a more stimulating environment for their children (Benasich & Brookes-Gunn, 1996; Conrad et al, 1992; Kuhn & Carter, 200; Leerkes & Crockenberg, 2002; Teti & Gelfand,1991; Seo, 2006). As with the application of survey and child assessment measures, the development of an observational tool would require lengthy and in-depth investigation, based on a series of observations and interviews about the expectations of appropriate child-care and caregiver child interaction within the community which incorporates the parental ethnotheory. An example of such an approach is demonstrated by Bower (2011) in the use of ethograms to analyze the play behaviors of children in Western parts of Tanzania.

Alternative designs of the study could also include a longitudinal model where data is collected at two to three points in time during the child's life (at 12 months and then at 36 months for example). In addition, further analysis could be taken regarding the direction of effect on the variables. In this study, child outcome and results on the parent measures were the outcome variables. Future studies could look at the predictive effect of child developmental outcome on constructs such as self-efficacy, particularly in view of the fact that caring for a child with a developmental delay may affect the emotional status of parents, which in turn could affect their self-efficacy ratings. The link between emotional state and affect among mothers of children with developmental disabilities was reported by Kuhn and Carter (2006) who looked at self-efficacy ratings in a sample of mothers of children with autism, and found a connection between feelings of guilt and self-efficacy ratings.

The findings regarding the differences in perception of milestone development, health and safety beliefs and the inapplicability of items from the "progressive" subscale on the Parent Modernity Scale highlight the importance of incorporating the belief system model of parents who comprise the study sample. Using an assessment approach that incorporates known parental

ethnotheories from previous research would provide more meaningful results and help to guide intervention more effectively. This approach can only be developed following preliminary analysis of what these ethnotheories are however, and this study marks the beginning for further research in this area. Modified parent measures could be administered to each group of respondents (i.e. have a parent measure specific for mothers coming from Lindi province in Tanzania). Based on the results of this study, having generic parent measures for all Tanzanian mothers has its limitations, likely based on the different parental ethnotheories held by mothers in different parts of the country.

Conclusion

This present study sought examined the constructs of parenting knowledge and beliefs in a Tanzanian context, among mothers living in both urban and rural parts of the country. These were compared to the outcome of both typically developing children and children with developmental delays and disabilities on a child outcome measure. Other goals of the study were to examine the relationship between the participants' education levels and their knowledge and beliefs, the relationship between parenting style and self-efficacy beliefs, the development of the construct of self-efficacy with this population, and the effects of variables such as birth location and parent age on child developmental outcome. Parental knowledge and beliefs about child development from an ethnocentric perspective were presented along with the beliefs the mothers held about the disability of their children.

Overall the study showed that a combined measure of parent beliefs was preferable to using individual measures of knowledge and beliefs, supporting research by Sigel and Kim (1992). However, there was no relationship between these combined beliefs and child developmental outcome. Additional findings indicated a significant relationship between

maternal education and results on the combined parental belief measure in correlational analysis, but only significant prediction of education for scores on the MSE scale. Significant differences were found between the responses from mothers from rural and urban samples in all measures when controlling for demographic variables. This suggests that future research in this area might consider the use of different measures in different locations in the country. Child-care experiences was significantly correlated with self-efficacy ratings on all measure, supporting previous research that greater experience in this area is related to greater self-efficacy beliefs. There was no relationship between child outcome, birth location and parental age in this sample of Tanzanian children.

Individual item analysis on the subscales from the KIDI indicates some clear differences in perception about parenting beliefs in terms of health and safety norms, child-rearing and developmental milestones compared to responses provided by mothers in other countries. These findings have important health policy implications and also highlight the importance of incorporating parent ethnotheories into any study into parent knowledge and beliefs in relation to child care. In addition, this study highlighted the chronic lack of services for children with disabilities in rural areas and the need for inclusion of children with disabilities into mainstream education in the country. Many mothers of children with disabilities were not aware of the condition that their child presented with, and none of the mothers in the rural sample had access to continued intervention for their children. The intervention support provided by CCBRT for children with disabilities in Tanzania is vital, but at present does not extend to directly servicing the needs of children living outside of the main urban centers.

Appendix A- Health and Safety KIDI

These questions ask you about the behavior and health care of a typical or normally developing infant/young child and what could affect their development. You are asked to mark each item as whether you agree or disagree or are not sure. We want to know what you think about the care of most young children or young children in general. Please check only one answer for each item.

	Agree	Disagree	Not Sure
1. A baby needs to see a doctor every few months in the first years of life.	1	2	NS
2. It's ok to feed nine month old babies small foods like nuts, popcorn.	1	2	NS
3. You must be close to your baby when they are in the water or when you are washing them.	1	2	NS
4. Immunization shots can wait until at least one year of age as babies have natural protection from illness in the first year of life.	1	2	NS
5. A baby with stomach pains can cry for 20 to 30 minutes at a time, no matter how much they are comforted	1	2	NS
6. Putting a soft pillow where the baby sleeps is a good, safe way to help the baby sleep better.	1	2	NS
7. New foods should be introduced to the infant one at a time, with 4 to 5 days in between each new food.	1	2	NS
8. If a baby is fed formula milk, he/she needs extra vitamins and iron.	1	2	NS
9. When a baby less than 12 months gets diarrhea, the parent should stop feeding the baby solids and give it a little sugar water.	1	2	NS
10. If a baby has trouble making a bowel movement, it's a good idea to give it warm milk.	1	2	NS
11. A frequent cause of accidents for one year olds is pulling something like a frying pan, a tablecloth, or a lamp` down on top of them.	1	2	NS
12. The best way to bring down a baby's fever is by giving paracetamol.	1	2	NS
13. The best way to bring down a baby's fever is to put a cold cloth on the forehead.	1	2	NS
14. The best way to bring down a baby's fever is to put extra clothes on the baby.	1	2	NS

Appendix B- Milestone KIDI

Each of the following asks you about the age at which infants and young children can do something. If you decide the age is about right, mark "Agree." If you don't agree, then decide whether a "Younger" or "Older" infant/young child could do it.

	Agree	Younger	Older
1. Most babies can sit on the floor without falling over by 7 months.			
2. A baby of 6 months will respond to someone differently depending on whether the person is happy, sad, or upset.			
3. Most two year olds can tell the difference between a make-believe story and a true one.			
4. Infants are usually walking by about 12 months of age.			
5. An eight-month old acts differently with a familiar person than with someone not seen before.			
6. A baby is about 7 months old before he/she can reach for and grab things.			
7. A two-year-old is able to reason logically, much as an adult would.			
8. A one-year-old knows right from wrong.			
9. An infant of 3 months often will smile when he/she sees and adult face.			
10. Most infants are ready to be toilet trained by one year of age.			
11. An infant will begin to respond to his/her name at 10 months.			
12. Babies begin to laugh at things around 4 months of age.			
13. Five-months-old know what "no" means.			
14. A four-month-old lying on his/her stomach can lift his/her head.			
15. Babbling begins around 5 months.			
16. One year olds often cooperate and share when they play together.			
17. An infant of 12 months can remember toys he/she has watched being hidden.			
18. The baby usually says his/her first real word at 6 months.			
19. Infants have depth perception by 6 months of age (can tell that they are on a high place).			
20. Two months old can tell some speech sounds apart.			

Appendix C- Catalog of Previous Experience with Infants

The following questions ask you about your experiences with babies. Please circle the answer that best describes how much you know or have learned about infants (birth to 2 years old).

1. If you have ever taken care of an infant brother or sister, how much time did it take per month?
   Never An hour or so/month once a week several hours at a time
   Regularly (every day for several hours at a time).
2. How much time have you spent babysitting other infants (before becoming a parent)?
   Never have 1 or 2 times More than twice but never regularly
   Have been a regular babysitter (several times a month)
3. If you have ever worked in a nursery school or day care center, how much time did it involve?
   Never have once a month or less once a week
   Part-time (10-20 hours/week) Full-time(30-40 hours/week)

Parents: How often do (did) you do the following for or with your baby?

	Never	Sometimes	Fairly Often	Regularly
4. Give baths	0	1	2	3
5. Change diapers	0	1	2	3
6. Dress him or her	0	1	2	3
7. Take charge of feeding	0	1	2	3
8. Play with him or her	0	1	2	3
9. Put him or her to bed	0	1	2	3
10. Read or sing to him or her	0	1	2	3

11. Parents: On the average, how many hours a day are/ were you around your infant when he/she is/was awake? _____Hours (around= available to care for but not necessarily interacting with your child. Assume that the most your infant was awake was 16 hours).

Parents: How much time have you spent caring for your child and another infant (informal babysitting)
Never have 1 or 2 times more than twice but never regularly

once a regular basis (several times a month or more often)

Circle one number for each question below

How much have you learned about infants from:

	Very Little	Some but not much	A fair amount	A lot
12. The mass-media-radio, movies, television, or newspapers				
13. Reading magazine articles or books about infants or toddlers				
14. watching infants and their parents when you were younger				
15. talking to your own family (mother; father; sister; grandparent)				
16. talking to friends or other adults who have babies of their own				
17. comparing your baby or child to others whom you see or know				
18. talking to doctors or nurses before or after your baby was born				
19. talking to your husband or wife				

20. How many infants do you know well, other than your own? That is, how many infants have you babysat for or observed over at least several months? _____

21. How many children do you have? _____

Appendix D-Child Developmental History

Code #_____ **Child Developmental history**

Where was the child born: Home Hospital/Health facility (Circle one)

Delivery was: C-section Vaginal (Circle one)

Any complications with delivery? Yes No (Circle one)

If yes what were the complications?_____

_____

Any health issues with child in infancy (below one year of age) Yes No (Circle one)

If yes what were the issues?

_____

_____

Does the child have any current health issues?

If yes what are the current health issues:

_____

_____

Does the parent have any concerns about the child's development? Yes No (Circle one)

If yes what are the concerns:

_____

_____

What if anything has been done to address these concerns? (circle all that apply)

No action taken

Visit to doctor at local health center

Visit to local traditional healer

Visit to hospital

Visit to medical specialist (pediatrician/occupational therapist)

Other (Please specify)_____

Appendix E- Parenting KIDI

These questions ask you about the behavior or a typical or normally developing infant/young child and what could affect their development. You are asked to mark each item as whether you agree a lot (strongly agree), agree a little (slightly agree), disagree a little (slightly disagree) or disagree a lot (strongly disagree). We want to know how you think most young children behave and develop and how to care for them in general. Please check only one answer for each item.

	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree
1. Parents just need to feed, clean and clothe the baby for it to turn out fine	1	2	3	4
2. The baby should not be held when he/she is fed because this will make the baby want to held all of the time.	1	2	3	4
3. If you punish your child for doing something bad, its ok to give him/her a piece of candy to stop them crying or being upset.	1	2	3	4
4. Talking to a baby about things he/she is doing helps the baby's development.	1	2	3	4
5. The two year old who says "no" to everything and tries to order you around is doing this just to make you upset.	1	2	3	4
6. Fathers are naturally clumsy when it comes to taking care of babies.	1	2	3	4
7. Taking care of a baby leaves the parent/caregiver feelings tired, frustrated and overwhelmed.	1	2	3	4
8. Some mothers do not get really involved with their babies until the baby starts to smile and look at them.	1	2	3	4
9. If you comfort your baby when they are crying you are spoiling them.	1	2	3	4
10. Baby girls are fragile and sick more often, so they need to be treated more carefully than boys.	1	2	3	4
11. A good way to teach your child not to hit is to hit back.	1	2	3	4
12. Some days you need to discipline your baby; other days you can ignore the same thing. It all depends on the mood you are in that day.	1	2	3	4
13. The best way to deal with a one year old who keeps playing with breakable things in the living room is to put the things out of reach until the child is older.	1	2	3	4

14. If a two year old doesn't get his/her way and has a temper tantrum, the best way to avoid future problems with tantrums is to ignore the temper tantrum.	1	2	3	4
15. If a two year old doesn't get his/her way and has a temper tantrum, the best way to avoid future problems with tantrums is to give the child a new toy.	1	2	3	4

Appendix F- Maternal Self-Efficacy Scale

We want to ask you some questions about yourself and your baby. We are trying to get a general idea of how you usually handle different situations with your baby. We realize that no one is always effective or always ineffective. We all do better in some situations than in others. So we would like to have you think about some situation that all mothers encounter.

1. When your baby is upset, fussy, or crying, how good are you at soothing him or her?	Not good at all	Not good enough	Good enough	Very good
2. How good are you at understanding what your baby wants or needs? For example do you know when your baby needs to be changed or wants to be fed?	I do not understand my baby	I understand my baby some of the time	I understand my baby most of the time	I understand my baby all of the time
3. How good are you at making your baby understand what you want him/her to do? For example if you want your baby to eat dinner or play quietly, how good are you at making him/her do that?	Not good at all	Not good enough	Good enough	Very good
4. How good are you at getting your baby to pay attention to you? For example, when you want your baby to look at you, how good are you at making him/her do it?	Not good at all	Not good enough	Good enough	Very good
5. How good are you at getting your baby to have fun with you? For example, how good are you at getting your baby to smile and laugh with you?	Not good at all	Not good enough	Good enough	Very good
6. How good are you at knowing what activities your baby will enjoy? For example, how good are you at knowing what games and toys your baby will like to play with?	Not good at all	Not good enough	Good enough	Very good
7. How good are you at keeping your baby occupied when you need to do housework? For example, how good are you at finding things for the baby when you need to do the dishes	Not good at all	Not good enough	Good enough	Very good
8. How good do you feel you are at feeding, changing, and bathing your baby?	Not good at all	Not good enough	Good enough	Very good
9. How good are you at getting your baby to show off for visitors? For example, how good are you at making your baby smile or laugh for people who visit?	Not good at all	Not good enough	Good enough	Very good
10. In general, how good a parent do you feel you are?	Not good at all	Not good enough	Good enough	Very good

Appendix G-Parenting Tasks Checklist

Using the scale provided, write down the number next to each item that best describes how confident you are that you can successfully deal with your child if they engage in difficult behaviour in each situation.

Rate your confidence from 0 (Certain I can't do it) to 10 (Certain I can do it)

How confident are you in successfully handling your child's difficult behaviour when:

Waking and getting your child out of bed	
Helping your child with bathing	
Going to the doctor	
Getting your child ready to go out	
Getting your child ready to use the toilet	
Shopping with your child	
Travelling in the car with your child	
Leaving your child at daycare/kindergarten/school	
Visiting friends or relatives with your child	
Visitors arrive at your home	
You are speaking to another adult	
You are on the telephone	
You are preparing meals	
You are busy with chores	
Your child refuses to do as they have been told	
Your child gets upset when they do not get their own way	
You child acts defiantly when asked to do something	
Your child throws a tantrum	
Your child yells	
Your child answers back	
Your child whines or whinges	
Your child interrupts	
Your child refuses to eat their food	
Your child refuses to do chores or jobs as asked	
Your child argues with you about rules	
Your child constantly seeks attention	
Your child takes too long when dressing	
Your child takes too long when eating	

Appendix H-Parent Modernity Scale

Here are some statements people have made about rearing and educating children. For each one please circle the answer that best indicates how you feel

	Strongly Disagree	**Mildly Disagree**	**Not Sure**	**Mildly Agree**	**Strongly Agree**
1. Since parents lack special training in education they should not question the teacher's teaching methods	1	2	3	4	5
2. Children should be treated the same regardless of differences among them	1	2	3	4	5
3. Children should always obey the teacher	1	2	3	4	5
4. Preparing for the future is more important than enjoying today	1	2	3	4	5
5. Children will not do the right thing unless they must	1	2	3	4	5
6. Children should be allowed to disagree with their parents if they feel their own ideas are better	1	2	3	4	5
7. Children should be kept busy with work and study at home and at school	1	2	3	4	5
8. The major goal of education is to put basic information into the minds of children	1	2	3	4	5
9. In order to be fair, a teacher must treat all children alike	1	2	3	4	5
10. The most important thing to teach children is absolute obedience to whoever is in authority	1	2	3	4	5
11. Children learn best by doing things themselves rather than listening to others	1	2	3	4	5
12. Children must be carefully trained early in life or their natural impulses will make them unmanageable	1	2	3	4	5
13. Children have the right to their own point of view and should be allowed to express it	1	2	3	4	5
14. Children's learning results mainly from being presented basic information again and again	1	2	3	4	5
15. Children like to teach other children	1	2	3	4	5
16. The most important thing to teach children is absolute obedience to parents	1	2	3	4	5
17. The school has the main responsibility for a child's education	1	2	3	4	5
18. Children generally do not do what they should unless someone sees to it	1	2	3	4	5
19. Parents should teach their children that they should be doing something useful at all times	1	2	3	4	5
20. It's alright for a child to disagree with his/her parents	1	2	3	4	5
21. Children should always obey their parents	1	2	3	4	5
22. Teachers need not be concerned with what goes on in a child's home	1	2	3	4	5
23. Parents should go along with the game when their	1	2	3	4	5

child is pretending something					
24. Parents should teach their children to have unquestioning loyalty to them	1	2	3	4	5
25.Teachers should discipline all the children the same	1	2	3	4	5
26. Children should not question the authority of their parents	1	2	3	4	5
27. What parents teach their child at home is very important to his/her school success	1	2	3	4	5
28. Children will be bad unless they are taught what is right	1	2	3	4	5
29. A child's ideas should be seriously considered in making family decisions	1	2	3	4	5
30. A teacher has no right to seek information about a child's home background	1	2	3	4	5

Appendix I- Questions to Elicit a Patient Explanatory Model

(Fadiman, 1997, pp.260-261).

1. What do you call the problem?

2. What do you think caused the problem?

3. Why do you think it started when it did?

4. What do you think the sickness does? How does it work?

5. How severe is the sickness? Will it have a short or long course?

6. What kind of treatments do you think the patient should receive? What are the most important results you hope he/she receives from this treatment?

7. What are chief problems the sickness caused?

8. What do you fear most about the sickness?

Appendix J- English Text of consent form

My name is Nilofer Naqvi, I am a student in Psychology at the Graduate Center of the City of New York (CUNY), a university in New York City in the United States of America. I am working on a project with the charity Save the Children who are based here in Tanzania. The project looks at your thoughts about caring for children and how you see your child's development. We are doing this project to understand how parents in Tanzania think about their child's development and how they see themselves as parents. Today we would like to ask you some questions and then do a brief test with your child. This will take about 2 hours in total.

All the answers you and your child give us will be kept secret and no-one else will see your answers except myself and my advisor Dr. Alfred Sanga. We will keep all the papers locked up in a safe place.

If you want to be part of the study it is completely up to you. There will be no problem if you do not want to take part. If you do take part, you will receive TZS 5000/2500 from us. If you have to travel to take part in this study, we will pay you to come from your home to here and back again. There are no risks we know of for you to be part of this study. The study should help us find out more information about your child's development and help Save the Children in their work in different projects in Tanzania.

If you would like a copy of the results of the study please let us know. We will make sure that a copy is ready for you to pick at the main office of Save the Children. If you want to have written information about your child's development I can write a report for you also.

If you have any questions about this research, you can contact me or Dr. Alfred Sanga at +255 22 270172. If you want to contact us by email, my email address is nnaqvi@gc.cuny.edu. Dr Sanga's is a.sanga@savethechildren.or.tz. If you have any questions about your rights in being in this study, you can also contact Kay Powell, IRB administrator at my university in the U.S. at kpowell@gc.cuny.edu.

If you agree to be part of this study please sign the letter. Thank you very much. We will give you a copy of this letter.

Nilofer Naqvi
CUNY Doctoral student and Principal Researcher

_____

Check one:

I agree to be part of this study_____I do not agree to be part of this study_____

_____
Signature

_____ _____
Witness Signature Date

Appendix K- Demographic Information

Demographic Information

(Attached to consent form and to be kept separate from protocols)-To be completed by research assistant

Parent Name:_____Child Name:_____

Child Date of Birth:_____Parent Age:_____

Child Chronological Age:_____

Parent Occupation:_____

Address: Rural Urban (Circle one)

Number of siblings (circle one) 1 2 3 4 5 6 7 8

If more than 8 indicate number:_____

Members of household:_____

Number of years of parent schooling (circle one)

0 1 2 3 4 5 6 7 8 9 10 11 12

If more than 12 indicate number:_____

Number of years of child's schooling:

0 1 2 3 4 5 6 7 8

Code Number assigned:_____

Payment of 5000/2500TZS received: Yes/ No Parent Initial:_____Date:_____

Witness signature:_____

Appendix L- Participant Response to Milestone KIDI Questions

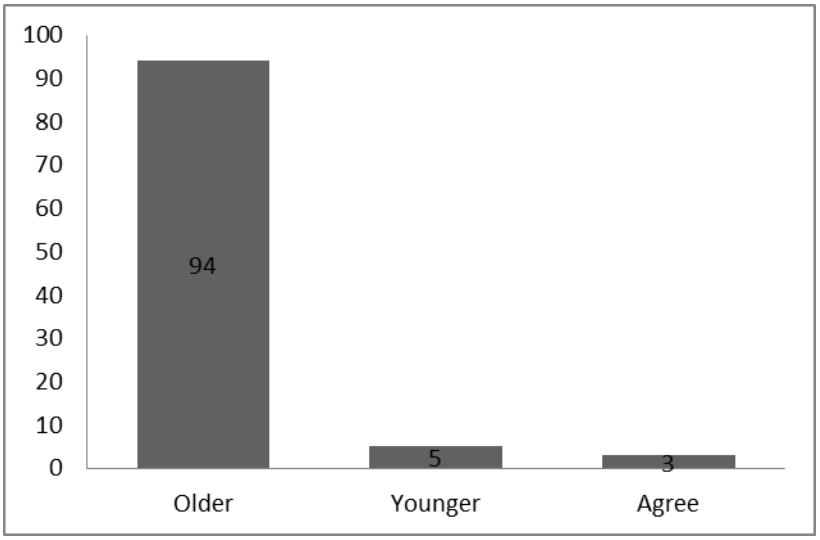


Figure 4. Number of responses to "5 month olds know what 'no' means" (correct response: older).

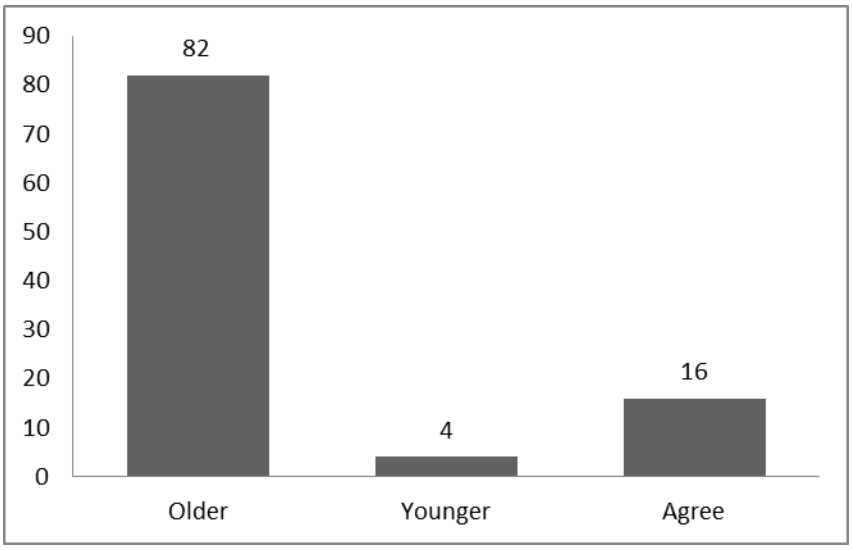


Figure 5. Number of responses to "infants have depth perception by 6 months of age" (correct response: agree).

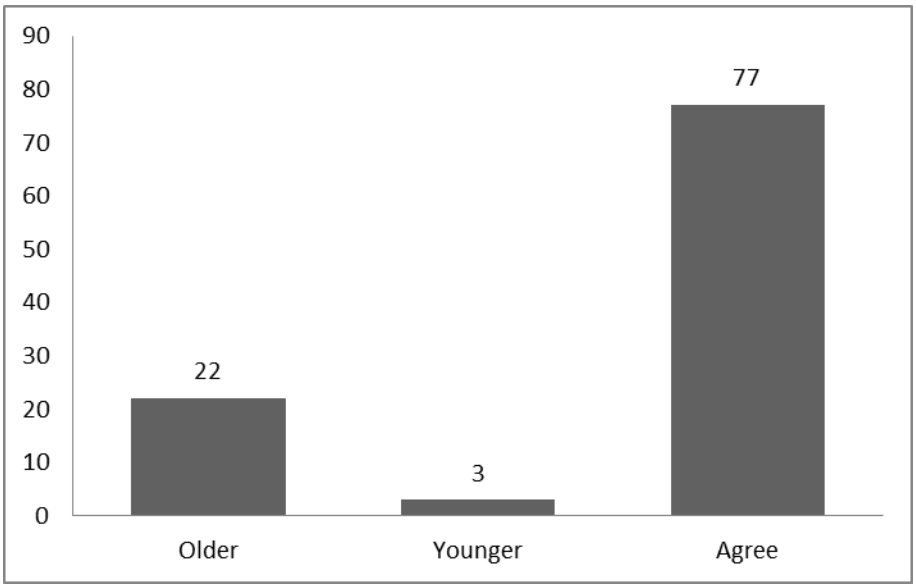


Figure 6. Number of responses to "1-year-olds often cooperate and share when they play together" (correct response: older).

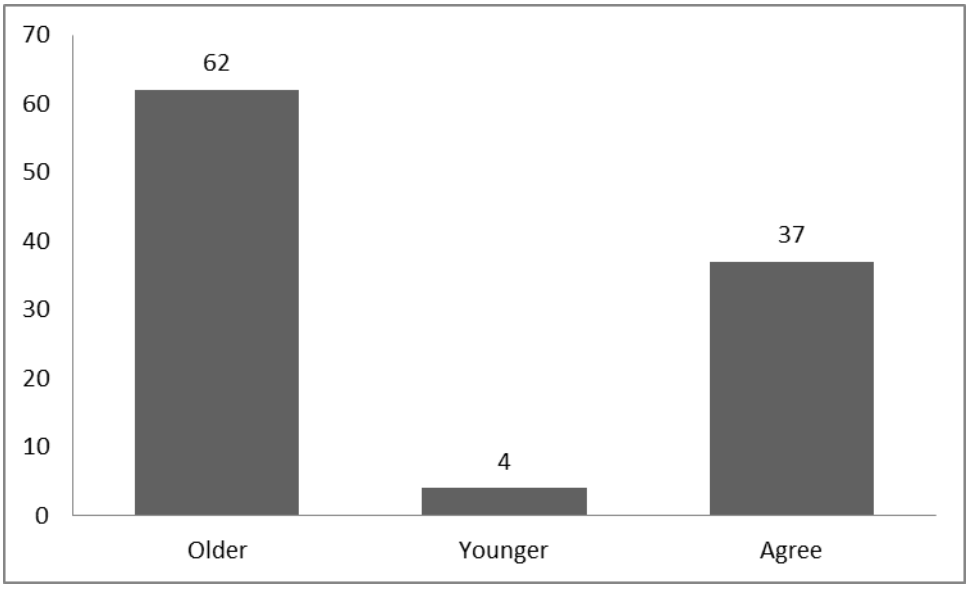


Figure 7. Number of responses to "a baby is about 7 months old before he/she can reach for and grab things" (correct response: younger).

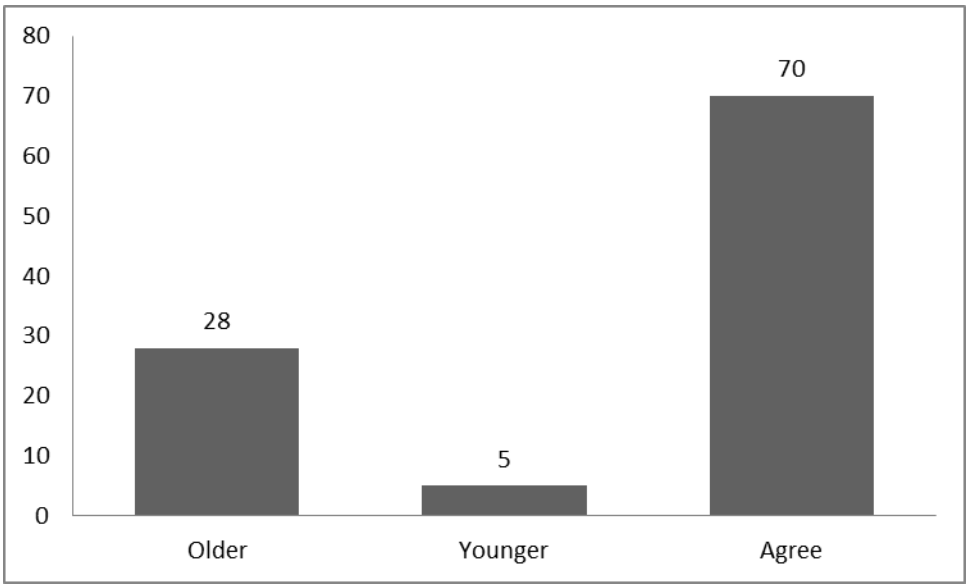


Figure 8. Number of responses to "an infant will begin to respond to his/her name at 10 months" (correct response: younger).

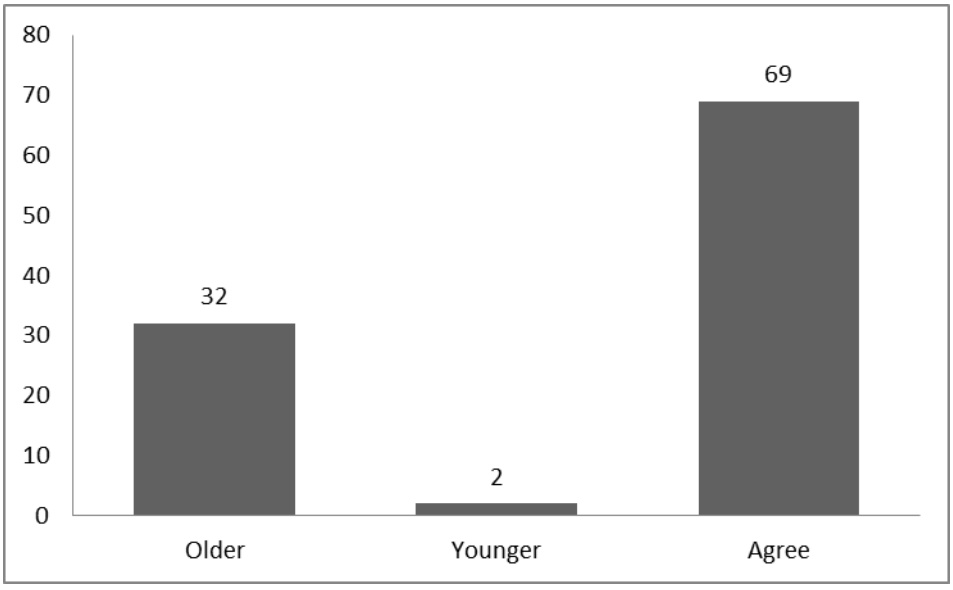


Figure 9. Number of responses to "a 4-month-old lying on his/her stomach can lift his/her head" (correct response: younger).

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